

ENCLOSURE 2

PROCEDURE S023-V-3.5,
INSERVICE TESTING OF VALVES

INSERVICE TESTING OF VALVES PROGRAM

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INSERVICE TESTING OF VALVES PROGRAM

1.0 OBJECTIVES, SCOPES AND EXCLUSIONS

1.1 To establish the requirements for preservice and inservice testing to assess the operational readiness of valves and pressure relief devices (and their actuating and position indicating systems) in accordance with Reference 2.1.5. See discussion in Section 3 of Reference 2.5.1.

1.1.1 Test results are used in assessing operational readiness of valves during their service life to perform a specific function in shutting down the reactor, bringing it to cold shutdown or in mitigating the consequences of an accident.

1.2 To establish test intervals, parameters to be measured and evaluated, acceptance criteria and requirements for corrective action, and records. [Reference 2.1.3, Para. 1.1]

1.3 To meet the requirements of References 2.1.1, 2.5.1, 2.1.3 and 2.1.4.

NOTE: Organizational responsibilities for meeting References 2.1.1, 2.5.1, 2.1.3 and 2.1.4 are described in Reference 2.2.1.

1.4 Scope

1.4.1 This program is applicable to safety related components including, but not limited to ASME Class 1, 2 and 3. Certain non-ASME components are included in this program as recommended and discussed in Reference 2.1.9, Position 11, IST Program Scope.

NOTE: For some non-ASME Section III valves, testing is not in full conformance with OM-10. Where testing departs from the OM-10 rules the testing is consistent with the safety significance of the non-code valve and consistent with Reference 2.5.2, Question 53. See the valve-by-valve discussion of these cases in Attachment 3.

1.4.2 The active or passive valves covered in this program procedure are those which are required to perform a specific function in shutting down a reactor to the cold shutdown condition, in maintaining the cold shutdown condition, or in mitigating the consequences of an accident.

1.4.3 The pressure relief devices covered are those identified in accordance with the 90055 document, Reference 2.1.1.

1.0 OBJECTIVES, SCOPES AND EXCLUSIONS (Continued)

- 1.4.4 This Procedure may include the testing of components in addition to those listed in References 2.1.1, 2.5.1 and 2.1.4 (Paragraph IWA-1200), but shall, as a minimum, require testing of at least all of the components (meeting the above scope description) in those references.
- 1.4.5 The Check Valve Program, and its interrelationship with the IST Program are defined in the Station Order addressing the Check Valve Program, Reference 2.2.2.

1.5 Exclusions

- 1.5.1 The following are excluded from the scope of this program provided that the valves are not required to perform a specific function as specified above (Reference 2.1.3, Para. 1.2]:
- .1 Valves used only for operating convenience such as vent, drain, instrument, and test valves;
 - .2 Valves used only for system control, such as pressure regulating valves;
 - .3 Valves used only for system or component maintenance.
- 1.5.2 External control and protection systems responsible for sensing plant conditions and providing signals for valve operation are excluded from the requirements of this program.
- 1.6 The Inservice Testing of Valves Program delineated herein covers a ten (10) year interval commencing on August 18, 1993 and terminating on August 17, 2003. The date for implementing the second 10 year interval was extended until April 1, 1994.
- 1.7 In accordance with Reference 2.2.1, the Manager, Station Technical Division is responsible for this program and its implementation at the San Onofre Site.
- 1.8 Administrative requirements are identified in this program procedure where appropriate. These requirements are necessary for the orderly execution and documentation of program operations. Administrative requirements also provide for documenting program changes and for management of the implementing procedures.
- 1.9 The collection and review of data trends to detect component degradation is governed by Reference 2.3.1.

2.0 REFERENCES

2.1 NRC Commitment(s)

- 2.1.1 M-90055, Rev. 0, Selection of Valves and Determination of Valve Inservice Testing, latest version
- 2.1.2 OM-1, ASME/ANSI OM-1987, Operation and Maintenance of Nuclear Power Plants, Part 1, Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices
- 2.1.3 OM-10, ASME/ANSI OM-1987, Operation and Maintenance of Nuclear Power Plants, Part 10, Inservice Testing of Valves in Light-Water Reactor Power Plants (including ASME/ANSI OMA-1988 ADDENDUM)
- 2.1.4 ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition with no addenda (July 1, 1989), Rules for Inservice Inspection of Nuclear Power Plant Components
- 2.1.5 Units 2 and 3 Technical Specification 4.0.5, Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2 and 3 components
- 2.1.6 Technical Specifications, Units 2 and 3, Section 1.0, Definitions
- 2.1.7 Topical Quality Assurance Manual (TQAM), Chapter 7, ASME Code Program Scope, Responsibilities and Program Controls, latest revision
- 2.1.8 Updated Final Safety Analysis Report (UFSAR)
- 2.1.9 NRC Generic Letter 89-04, Guidance on Developing Acceptable Inservice Testing programs, April 3, 1989
- 2.1.10 10CFR50, § 50.55a, Codes and Standards
- 2.1.11 10CFR50, § 50.55a(f), Inservice Testing Requirements
- 2.1.12 10CFR50, Appendix J, Primary Reactor Containment Leakage Testing for Water Cooled Power Reactors
- 2.1.13 Generic Letter 91-18, Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Nonconforming Conditions and on Operability, November 7, 1991

2.0 REFERENCES (Continued)

2.2 Orders

2.2.1 S0123-IN-1, Inservice Inspection Program

2.2.2 S0123-CV-1, Check Valve Program

2.3 Procedures

2.3.1 S0123-V-5.15, Inservice Testing (IST) Coordination and Trending

2.3.2 S0123-XV-5, Nonconforming Material, Parts or Components

2.3.3 S0123-XXI-1.11.11, Engineering Training and Qualification Program Description

2.3.4 S0123-XXIV-10.15, Preparation Review and Approval of Facility Change Evaluations (FCEs) for SONGS 1, 2 and 3 (including the Site Procedures Impact Assessment, Form 26-404)

2.3.5 S023-V-3.13, Containment Penetration Leak Rate Testing

2.3.6 S023-XV-6, Technical Specification Response Time Surveillance Implementing Procedure Master List

2.4 Operating Instructions

2.4.1 S0123-0-20, Use of Procedures

2.4.2 S0123-0-23, Control of System Alignments

2.5 Other

2.5.1 Inservice Testing Topical Report, Design Bases Document, DBD-S023-TR-IS2, latest revision

2.5.2 Letter, J. G. Partlow, NRC, to All Licensees, etc, Minutes of the Public meetings on Generic Letter 89-04, October 25, 1989

2.5.3 Draft NUREG 1482, Guidelines for Inservice Testing at Nuclear Power Plants, November 1993

3.0 PREREQUISITES

NOTE: Reference to SDMS, ON-LINE, with a PC is the preferred method to verify which version of the Procedure and TCNs are current.

CAUTION CDM-SONGS Controlled copies are updated as soon as their resources permit, however, this might sometimes mean that controlled copies in the Technical Library, for example, are updated several days after the new TCN or revision is issued. This is not the case with the on-line SDMS system.

3.1 Prior to use of a user-controlled copy of this document, it is the user's responsibility to verify the revision and any TCNs are current by using one of the following methods:

- 3.1.1 Access the San Onofre Document Management System (SDMS) [San Onofre local area network (SLAN) or online system] (preferred methods).
- 3.1.2 Check it against a Corporate Documentation Management-SONGS (CDM-SONGS) controlled copy and any TCNs.
- 3.1.3 Contact CDM-SONGS by telephone or through counter inquiry.
- 3.1.4 Obtain a user-controlled copy of this procedure from CDM-SONGS or SDMS SLAN.

4.0 PRECAUTIONS

- 4.1 Testing required in this program procedure shall not be conducted in Modes or under conditions that place the Plant in an unsafe condition. Likewise, care shall be exercised that no test will be conducted so a failure of the test would put the plant in an unsafe condition.
- 4.2 Special care must be exercised to ensure that the allowed test interval is not exceeded. For valves routinely tested at one or three month intervals, a test interval extension is allowed. This extension shall not exceed twenty-five percent of the test interval. See Technical Specification 4.0.5 (Reference 2.1.5). The twenty-five percent (25%) interval extension is allowed to accommodate plant conditions that may not be suitable for conducting a surveillance (such as transient conditions or other surveillance in progress). It also provides flexibility for refueling interval surveillance.

5.0 CHECKLIST(S)

- 5.1 None

6.0 PROCEDURE

6.1 Determination of Program Scope

- 6.1.1 The Nuclear Engineering Design Organization (NEDO) is responsible for determining the scope of the Inservice Testing Program. This responsibility is accomplished using documented methods for design engineers such as Reference 2.1.1, and the documents identifying the results of the analysis required thereby.
- 6.1.2 Additional guidance for establishment of Program Scope is included in References 2.5.1, 2.1.3, 2.1.8, 2.1.9, 2.5.2 and 2.1.6.

6.2 Terminology

NOTE: Many of the definitions in this section are derived from Reference 2.1.3. Consistency with this Reference provides a common basis for understanding among (a) ourselves, as the owner, (b) the ASME documents with which we must comply and (c) the individuals who audit our program, such as the NRC, ANII, etc.

active valves - valves which are required to change obturator position to accomplish the required function(s) as specified in this program procedure, above.

cold shutdown - The Code uses Cold Shutdown "CS" for all modes other than Operating and Refueling and therefore ("CS" as used in the IST Program) includes Technical Specification Modes 3, 4 or 5. All valves identified for Cold Shutdown testing are not testable in all modes. Accordingly, applicable implementing procedures (Operating Instructions) will specify which valves can be tested in a given Mode. (For additional information, see the NOTE following step 6.6.2.4.)

exercising - the demonstration based on direct visual or indirect positive indications that the moving parts of a valve function.

full-stroke time - the time interval from initiation of the actuating signal to the indication of the end of the operating stroke.

Inservice Testing Coordinator - an individual appointed by the Station Technical Division Manager to coordinate the procedures, program and testing associated with the inservice testing program in accordance with Reference 2.3.1.

plant operation - the conditions of startup, operation at power, hot standby, and reactor cooldown, as defined by the plant technical specifications.

obturator - valve closure member (disk, gate, plug, ball, etc.)

6.0 PROCEDURE (Continued)

operational readiness - the ability of a valve to perform its intended function.

passive valves - valves which maintain obturator position and are not required to change obturator position to accomplish and required function(s), as specified under 1.4, above.

preservice test period - the period of time following completion of construction activities related to the valve and prior to first electrical generation by nuclear heat in which component and system testing takes place.

reactor coolant system pressure isolation - that function which prevents inter-system over-pressurization between the reactor coolant system and connected low-pressure systems.

reference values - one or more values of test parameters measured or determined when the equipment is known to be operating acceptably.

SRO Operations Supervisor - Any Operations individual holding an SRO license (active or inactive) who has qualified to the position of Shift Superintendent or Control Room Supervisor [See Reference 2.4.1, Attachment 1, Definitions].

Test Interval - This program uses the same test interval definitions as those used in the Technical Specifications, namely, one month is defined as 31 days and one quarter is defined as 92 days [Reference 2.1.6].

6.3 Categories of Valves

6.3.1 Valves within the scope of this program shall be placed in one or more of the following categories.

NOTE: When more than one distinguishing category characteristic is applicable, all requirements of each of the individual categories are applicable, although duplication or repetition of common testing requirements is not necessary. [Reference 2.1.3, Para. 1.4]

Category A - valves for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of their required function(s), as specified in 1.4, above.

Category B - valves for which seat leakage in the closed position is inconsequential for fulfillment of the required function(s), as specified in 1.4, above.

6.0 PROCEDURE (Continued)

Category C - valves which are self actuating in response to some system characteristic, such as pressure (relief valves) or flow direction (check valves) for fulfillment of the required function(s), as specified in 1.4, above.

- NOTES:
1. Category D is defined in the Code, however there are no Category D valves at San Onofre and therefore this program procedure omits all discussion thereof.
 2. The listing of valves in this program and the Section XI category applicable to each valve is provided in Attachment 2.

6.3.2 **CHECK VALVES:** All check valves are Category "C"; however, some require that their seat leakage be limited to a specific amount. In these cases they are categorized as Category "AC".

- .1 The categorization of a check valve is not dependent solely on the function performed by the valve, such as whether it is a containment isolation valve. If any of the considerations from Reference 2.1.1 indicate that Category "C" testing may not be adequate, the check valve may be assigned Category "AC" and receive a seat leak test as required by this program [See Reference 2.5.2, Question 107].

6.4 Owners Responsibilities

- 6.4.1 This program procedure lists testing required to be performed under various implementing procedures. When this program procedure is changed, implementing procedures should be updated to reflect these changes prior to the next due date for the affected testing in the plant, or within one month, whichever is later.
- .1 The Technical Division shall be responsible for the update and issuance of changes to this program procedure.
 - .2 The Operations, Station Technical and Maintenance Divisions shall be responsible for update and issuance of implementing procedures applicable to the testing for which they are responsible. This includes such documents as Operating Instructions and Repetitive Maintenance Orders [Reference 2.2.1].

6.0 PROCEDURE (Continued)

- 6.4.2 Following the issuance of each significant change to the inservice testing program, the IST Coordinator shall alert Nuclear Licensing with a request that they transmit it to the NRC. (See Reference 2.5.2, page 5.)

NOTE: The Inservice Testing Program is updated at 120 month intervals. The current interval ends August 17, 2003.

- 6.4.3 When the edition and addendum of the Code are adopted by SONGS such as at the beginning of a new ten year interval, the following individuals and agencies shall be notified and provided a copy of the new program: NRC, State of California (See Reference 2.1.7) and the ANII. In addition, the following documents may need updating and shall be reviewed and updated as necessary: UFSAR (Reference 2.1.8), Valves Relief Requests, TQAM (Reference 2.1.7), and the Technical Specifications (Reference 2.1.5).

6.4.4 Other Owner's Responsibilities:

- .1 The Station Technical Division or NEDO shall specify acceptance criteria and required test conditions. [Reference 2.1.3, Para. 2.]
- .1.1 For each valve to be tested under the IST Program, Attachment 2 identifies the Code Class, Section XI Category and testing requirements. This reflects the IST Program (see IST DBD Topical, Reference 2.5.1) as discussed in paragraph 1.0, above.
- .1.2 Acceptance Criteria and test conditions are specified in this program procedure and/or the implementing procedures.
- .2 The Station Technical and Nuclear Engineering Design Division shall assure that the design and arrangement of system components includes allowances for adequate access and clearances for conduct of the examination and tests [Reference 2.1.4, Para. IWA-1400(b)].
- .2.1 This is addressed in procedures governing design activities. See Reference 2.3.4.
- .3 Plans, schedules and reports to control Inservice Testing [Reference 2.1.4, Para. IWA-1400(b)].
- .3.1 Each Division responsible for testing identified in this program procedure shall be responsible for the planning and scheduling of their own tests, including quarterly testing, cold shutdown testing and reactor refueling testing. See Reference 2.2.1.

6.0 PROCEDURE (Continued)

- 6.4.4.3.2 The Station Technical Division shall make known to the appropriate divisions the priority of testing for components experiencing problems or suspected of having trouble. This shall be communicated through the IST Coordinator to the respective division contacts as needed.
- .4 Implementing procedures identifying the methods of testing and the components to be tested shall be prepared, issued and controlled by the responsible divisions for their testing [Reference 2.1.4, Para. IWA-1400(d)].
- .5 Qualification of personnel who perform the Inservice Testing to the required level of responsibility shall be verified by the responsible divisions for their testing [Reference 2.1.4, Para. IWA-1400(e) and Reference 2.3.3].
- .6 Each division shall perform the required Inservice Testing for which their division is responsible [Reference 2.1.4, Para. IWA-1400(g) and Reference 2.2.1].
- .7 Each division shall record their Inservice Testing results such that the results provide a basis for evaluation and facilitate comparison with the results of subsequent Inservice Testing [Reference 2.1.4, Para. IWA-1400(e)].
- .8 Each division shall provide evaluation of the Inservice Testing results for which they are responsible [Reference 2.1.4, Para. IWA-1400(i)].

NOTE: The Technical Division Cognizant Engineers, Supervisors and the IST Coordinator may be called upon to assist in the evaluation of valve operability when test results indicate a potential problem. See Reference 6.6.4 below.

- .9 Maintenance of adequate Inservice Testing records, such as test data and description of procedures used and evidence of personnel qualifications shall be the responsibility of each Division for the testing under its responsibility [Reference 2.1.4, Para. IWA-1400(k)].
- .10 Each Division responsible for the creation of the records required by this program procedure shall be responsible for formally transmitting these records to CDM on a timely basis for CDM retention.
- .11 Corporate Document Management Center (CDM) shall retain Inservice Testing records for the service lifetime of the components [Reference 2.1.4, Para. IWA-1400(l)].

6.0 PROCEDURE (Continued)

6.5 Testing Requirements

6.5.1 Preservice Testing

- NOTES:
1. This program procedure applies to the second 120 month interval for San Onofre Units 2 and 3. The initial preservice test period is past for the valves in this program. Accordingly, many of the valves will not have a reference value for stroke time from a preservice examination stroke test. In these cases, a reference stroke time is identified from past test data when the valves were known to be operating properly. This reference value will be noted in the records.
 2. Preservice Examination for our plant is conducted on newly installed components as a result of plant design modifications.

- .1 Each valve shall be tested during the preservice test period as required by Reference 2.1.3. These tests shall be conducted under conditions as near as practical to those expected during subsequent inservice testing. Only one preservice test of each valve is required except in the following cases [Reference 2.1.3, Para. 3.1]:
 - .1.1 Any valve that has undergone maintenance that could affect its performance after the preservice test shall be tested in accordance with 6.5.4, below;
 - .1.2 safety and relief valves shall meet the preservice test requirements of IST DBD Topical Report, Reference 2.5.1.

6.5.2 Inservice Testing

- .1 Inservice testing in accordance with this program procedure shall commence when the valves are required to be operable to fulfill their required function(s), as specified in 1.4, above. [Reference 2.1.3., Para. 3.2]

6.5.3 Reference Values

- .1 Reference values shall be determined from the results of preservice testing or from the results of inservice testing. These tests shall be performed under conditions as near as practicable to those expected during subsequent inservice testing.

6.0 PROCEDURE (Continued)

6.5.3.2 When reference values are changed, the reason shall be documented, a statement of the adequacy of the new value shall be provided as well as appropriate level of review and approval of the new value before it is used for valve stroke time evaluation.

.3 When Reference values are initially established or changed, they shall be documented in a controlled manner.

NOTE: The new reference value may be used as soon as the record discussed in paragraphs 6.5.3.2 and 6.5.3.3 (which includes an explanation of the reasons for the new value) is approved.

.4 Reference values shall only be established when the valve is known to be operating acceptably. If the particular parameter being measured can be significantly influenced by other related conditions, then these conditions shall be analyzed.

6.5.4 Effect of Valve or Actuator Replacement, Repair, and Maintenance on Reference Values

NOTE: Adjustments, removal or replacement of stem packing, limit switches, control system valves, bonnet, stem assembly, actuator, obturator, or other control system components are examples of maintenance that could affect valve performance parameters such as stroke time.

.1 When a valve or its control system has been replaced, repaired, or has undergone maintenance that could affect the valve's performance, a new reference value shall be determined or the previous value reconfirmed by an inservice test run prior to the time it is returned to service or immediately if not removed from service, to demonstrate that performance parameters which could be affected by the replacement, repair, or maintenance are within acceptable limits.

.2 Deviations between the previous and new reference values shall be identified and analyzed.

.3 Verification that the new values represent acceptable operation shall be documented in the record of tests.

.4 Safety and Relief valves shall be tested as required by the replacement, repair, and maintenance requirements of IST DBD Topical Report, Reference 2.5.1. [Reference 2.1.3, Para. 3.4]

6.0 PROCEDURE (Continued)

- 6.5.5 Establishing an Additional Set of Reference Values
- .1 If it is necessary or desirable for some reason, other than stated in paragraph 6.5.4, to establish additional references values, an inservice test shall first be run at the conditions of an existing set of reference values, or, if impractical, at the conditions for which the new reference values are required, and the results analyzed.
 - .2 If operation is acceptable in accordance with 6.6.2.6 and 6.6.3, a second test shall be performed under the new conditions as soon as practical. The results of the second test shall establish the additional reference values.
 - .3 Whenever additional reference values are established, the reasons for doing so shall be justified and documented in the record of tests. [Reference 2.1.3., Para. 3.5]

6.5.6 Inservice Test Requirements

- .1 Active and passive valves in the categories defined under Section 6.3, shall be tested in accordance with the sections specified in the following Table [Reference 2.1.3, Para. 3.6]:

TABLE 1

INSERVICE TEST REQUIREMENTS

NOTE: When more than one distinguishing category characteristic is applicable, all requirements of each of the individual categories are applicable, although duplication or repetition of common testing requirements is not necessary.

Category	Valve Function	Leakage Test Procedure	Exercise Test Procedure	Position Indication Verification
A	Active	See 6.6.5, below.	See 6.6.5, below.	See 6.6.1, below.
A	Passive		None	
B	Active	None	See 6.6.2, below.	
B	Passive		None	
C (Safety and Relief)	Active	See 6.6.6.1, below.	See 6.6.6.1, below.	
C (Check valves)	Active		See 6.6.6, below.	

6.0 PROCEDURE (Continued)

6.5.7 Establishing New Stroke Time Limits

- .1 New stroke time limits are established and documented in the program following review by engineering of the historical trends for stroke time. This is accomplished approximately annually. When valve has a safety analysis or Technical Specification limit for stroke time, it is listed in Attachment 4 to this procedure.
- .2 Stroke Time Limits are identified in safety analyses and are used for the absolute limits for valves affected. See References 2.1.8 and 2.3.6.
- .3 The objective of the Engineering review is to establish reasonable stroke time limits based on historical performance. Guidance in Reference 2.1.9 is used as the basis of this review.

6.6 Testing Methods

6.6.1 Valve Position Verification

- .1 Valves with remote position indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated.
- .2 Where practicable, this local observation should be supplemented by other indications such as use of flow meters or other suitable instrumentation to verify obturator position. These observations need not be concurrent.
- .3 Where local observation is not possible, other indications shall be used for verification of valve operation.

6.6.2 Inservice Tests for Category A and B Valves

- .1 **Exercising Test Frequency.** Active Category A and B valves shall be tested nominally every 3 months, except as discussed in Attachments 2 and 3 [Reference 2.1.3, Para. 4.2.1.1].

NOTE: "Every 3 months" is the same as quarterly, or every 92 days, see Reference 2.1.6.

- .2 **Exercising Requirements.** Valves shall be tested as follows [Reference 2.1.3, Para. 4.2.1.2]:
 - .2.1 Full Stroke during plant operation to the position(s) required to fulfill its function(s);

6.0 PROCEDURE (Continued)

6.6.2.2.2 If full stroke exercising during plant operations is not practicable, it may be limited to part stroke during plant operation and full stroke during cold shutdowns;

- NOTES:
1. If the test requires entry into a Technical Specification Action Statement, and failure could put the plant at risk of either a Technical Specification 3.0.3 immediate shutdown, or increase the risk of (or severity of) an accident or plant trip, then the test interval will be reviewed and may require rescheduling at cold shutdown or refueling intervals.
 2. Frequent entry into LCO action statement(s) and hence aggravated unavailability of safety systems will also be considered, however, this in itself, is not sufficient to defer testing until a cold shutdown or refueling outage. See Reference 2.5.3, Paragraph 3.1.2 for further guidance.
 3. Other reasons for classifying a quarterly test interval as impracticable include, but are not limited to (See Reference 2.5.3, NUREG 1482),
 - a) the requirement for abnormal system lineups or operations such that the SRO Operations Supervisor determines the test to pose a risk to the safe operation of the plant (confusion and distraction in the Control Room is an example of this).
 - b) A valve which, when cycled, could subject a system to pressures in excess of their design pressures.
 - c) Valves whose failure in a non-conservative position during the cycling test would cause a loss of system function.
 - d) Valves whose failure to close during a cycling test would result in a loss of containment integrity.
 4. The basis for testing at an interval other than quarterly shall be documented. See the valve-by-valve discussion of these cases in Attachment 3.

6.0 PROCEDURE (Continued)

- 6.6.2.2.3 If exercising is not practicable during plant operation, it may be limited to full stroke exercising during cold shutdowns;
- .2.4 If exercising is not practicable during plant operation and full stroke during cold shutdowns is also not practicable, it may be limited to part stroke during cold shutdowns, and full stroke during refueling outages;
- .2.5 If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full stroke during refueling outages;
- .2.6 Valves full stroked at cold shutdowns shall be exercised during each cold shutdown, except as specified in the following paragraph. Such exercise is not required if the time period since the previous full stroke exercise is less than 3 months.

NOTE: Three (3) months means 1 quarter or 92 days, see Paragraph 6.2, above.

- .3 **Cold Shutdown Testing:** Valve exercising during cold shutdowns shall commence within 48 hours of achieving cold shutdown, and continue until all testing is complete or the plant is ready to return to power. For extended outages, testing need not be commenced in 48 hours provided all valves required to be tested during cold shutdown will be tested prior to plant startup. However, it is not the intent of this requirement to keep the plant in cold shutdown in order to complete cold shutdown testing.
- .4 **Refueling Interval Testing:** All valve testing required to be performed during a refueling outage shall be completed prior to returning the plant to operation.

NOTE: Before beginning power ascension, we normally complete the tests of those valves tested at each refueling outage. However, to test any valves that can only be tested during power ascension, we raise power level and change modes in accordance with our Technical Specification requirements and test the applicable valves when the plant conditions allow testing. If maintenance has been performed on a valve during the outage, we are required to consider the valve inoperable until completing post-maintenance testing in accordance with the operability requirements in our Technical Specifications. See Reference 2.5.3, Para. 3.1.1.2.

6.0 PROCEDURE (Continued)

6.6.2.5 **Valve Obturator Movement:** The necessary valve obturator movement shall be determined by exercising the valve while observing an appropriate indicator, such as indicating lights which signal the required change of obturator position, or by observing other evidence, such as changes in system pressure, flow rate, level, or temperature, which reflect change of obturator position.
[Reference 2.1.3, Para. 4.2.1.3]

.6 **Power-Operated Valve Stroke Testing**

.6.1 Where applicable, Attachment 2 specifies the limiting value(s) of full-stroke time of each power-operated valve. Criteria are established in accordance with paragraph 6.5.7, above.

.6.2 The stroke time of all power-operated valves shall be measured to at least the nearest second.

.6.3 The valve stroke time is measured with a stopwatch or appropriate timing device. The timing device is started when the valve is actuated and stopped when the back light for the desired valve position is the only one illuminated.

.6.4 The testing organization (typically the Operations Division) shall record any abnormality or erratic action and evaluate the valve stroke regarding the need for corrective action. The Station Technical Division may be called upon to assist in this evaluation.
[Reference 2.1.3, Para. 4.2.1.4]

.7 **Valves in Regular Use:** Valves which operate in the course of plant operation at a frequency which would satisfy the exercising requirements of this Program Procedure need not be additionally exercised, provided that the observations otherwise required for testing are made and analyzed during such operation and are recorded in the plant records at intervals no greater than specified under 6.6.2.1, above. [Reference 2.1.3, Para. 4.2.1.5]

.8 **Fail-Safe Valves.** Valves with fail-safe actuators shall be tested by observing the operation of the actuator upon loss of valve actuating power in accordance with the exercising frequency specified under 6.6.2.1, above.
[Reference 2.1.3, Para. 4.2.1.6]

.8.1 Fail-safe testing is required only for those valves which are required to be (a) stroke tested, and, (b) for which the fail-safe feature is a required safe function of the valve.

6.0 PROCEDURE (Continued)

- 6.6.2.9 **Valves in Systems Out of Service.** For a valve in a system declared inoperable or not required to be operable, the exercising test schedule need not be followed. Within 3 months prior to placing the system in an operable status, the valves shall be exercised and the schedule followed thereafter in accordance with this program procedure. [Reference 2.1.3, Para. 4.2.1.7]
- 6.6.3 **Stroke Time Acceptance Criteria.** Stroke test results shall be compared to the initial reference values or reference values established in accordance with 6.6.2.2 or 6.5.7, above. [Reference 2.1.3, Para. 4.2.1.8]
- .1 Electric-motor-operated valves with reference stroke times greater than 10 seconds shall exhibit no more than $\pm 15\%$ change in stroke time when compared to the reference value.
 - .2 Other power-operated valves with reference stroke times greater than 10 seconds shall exhibit no more than $\pm 25\%$ change in stroke time when compared to the reference value.
 - .3 Electric-motor-operated valves with reference stroke times less than or equal to 10 seconds shall exhibit no more than $\pm 25\%$ or ± 1 sec change in stroke time, whichever is greater, when compared to the reference value.
 - .4 Other power-operated valves with reference stroke times less than or equal to 10 seconds shall exhibit no more than $\pm 50\%$ change in stroke time when compared to the reference value.
 - .5 Valves that stroke in less than 2 seconds are exempted from .3 and .4 above. In such cases the maximum limiting stroke time shall be 2 sec. This is summarized in the following table:

TABLE 2

SUMMARY OF REFERENCE RANGE LIMITS FOR VALVE STRIKE TIME TESTING

Valve Actuator Type	Reference Stroke Time [T] Range	Limits of Reference Range
Electric-Motor Operated	$T > 10$ sec	$\pm 15\%$ of T
Other Power Operated	$T > 10$ sec	$\pm 25\%$ of T
Electric-Motor Operated	$2 \leq T \leq 10$ sec	$\pm 25\%$ of T
Other Power Operated	$2 \leq T \leq 10$ sec	$\pm 50\%$ of T
Any Operator Type	$T < 2$ sec	2 sec

6.0 PROCEDURE (Continued)

6.6.4 Corrective Action

NOTE: The requirements to initiate a Nonconformance Report (NCR) apply to the IST Program. See Reference 2.3.2 for NCR initiation criteria.

- .1 **Stroke Time Exceeding the Limiting Value:** If a valve fails to exhibit the required change of obturator position or exceeds the limiting values of full-stroke time, see 6.6.2.6, above, the valve shall be immediately declared inoperable and a Nonconformance report shall be initiated by the Division discovering the inoperability. [Reference 2.1.3, Para. 4.2.1.9(a)]
 - .1.1 The NCR shall be validated, the operability assessment completed and Operations notified as required by Reference 2.3.2.
- .2 **Stroke Time Outside the Reference Range:** Valves with measured stroke times which do not meet the acceptance criteria discussed under 6.6.3, above, but are less than the maximum stroke time limit, shall be immediately retested or declared inoperable.
 - .2.1 A Nonconformance report shall be initiated by the Division discovering the inoperability.
 - .2.2 If the valve is retested and the second set of data also does not meet the acceptance criteria, the data shall be analyzed within 96 hours to verify that the new stroke time represents acceptable valve operation, or the valve shall be declared inoperable. Although 96 hours is allowed, our policy is to complete the analysis as soon as is practical. See discussion in Section 6.7
 - .2.3 If the second set of data meets the acceptance criteria, the cause of the initial deviation shall be analyzed and the results documented in the record of tests by referencing the Nonconformance report containing the evaluation and data. [Reference 2.1.3, Para. 4.2.1.9(b)]
- .3 Valves declared inoperable may be repaired, replaced, or the data may be analyzed to determine the cause of the deviation and to show the valve to be operating acceptably. [Reference 2.1.3, Para. 4.2.1.9(c)]
 - .3.1 If valve operability is based upon analysis, the results of the analysis shall be in the record of tests by referencing the Nonconformance report number containing the evaluation and data. [Reference 2.1.3, Para. 4.2.1.9(d)]

6.0 PROCEDURE (Continued)

- 6.6.4.3.2 When corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before startup.
- .4 **Post-Maintenance Testing:** Prior to returning a repaired or replacement valve to service, a test demonstrating satisfactory operation shall be performed. [Reference 2.1.3, Para. 4.2.1.9(e)]
- 6.6.5 Valve Seat Leakage Rate Test
- .1 **Scope.** Category A valves shall be leakage tested, except that valves which function in the course of plant operation in a manner that demonstrates functionally adequate seat leak-tightness need not be additionally leakage tested. In such cases, the valve record shall provide the basis for the conclusion that operational observations constitute satisfactory demonstration. [Reference 2.1.3, Para. 4.2.2.1].
- .2 **Containment Isolation Valves.** Category A valves, which are containment isolation valves, shall be tested in accordance with Federal Regulation 10CFR50, Appendix J (Reference 2.1.12). Containment isolation valves which also provide a reactor coolant system pressure isolation function shall additionally be tested in accordance with 6.6.5.3, below. [Reference 2.1.3, Para. 4.2.2.2].
- .2.1 Leakage rate measurements will be compared with previous measurements and with the permissible leakage rates specified using Reference 2.3.5. The acceptance criterion (permissible Leak Rate) for each valve can be determined by taking the "0.6La" and subtracting the leak rates of all penetrations in the Appendix J Program except the valve under test. These are available from the records created in accordance with Reference 2.1.12. The result is the seat leakage acceptance criterion of the valve under test in standard cubic centimeters per minute or other appropriate units.
- .2.2 The test medium used for Appendix J, Containment Penetration leak rate tests will be specified in Reference 2.3.5.
- .2.3 [Reference 2.1.10, Paragraph (b)(2)(vii), *Inservice Testing of Containment Isolation Valves*] "When using Subsection IWV in the 1988 Addenda or the 1989 Edition of Section XI, Division 1, of the ASME Boiler and Pressure Vessel Code, leakage rates for Category A containment isolation valves that do not provide a reactor coolant system pressure isolation function must be analyzed in accordance with paragraph 4.2.2.3(e) of Part 10 [see paragraph 6.6.5.3.5, below], and corrective actions for these valves must be made in accordance with paragraph 4.2.2.3(f) of Part 10 of ASME/ANSI OMA-1988 Addenda to ASME/ANSI OM-1987. [See paragraph 6.6.5.4, below]"

6.0 PROCEDURE (Continued)

- 6.6.5.3 **Leakage Rate for Other Than Containment Isolation Valves.** Category A valves, which perform a function other than containment isolation, shall be seat leakage tested to verify their leak-tight integrity. Valve closure prior to seat leakage testing shall be by using the valve operator with no additional closing force applied. [Reference 2.1.3, Para. 4.2.2.3]
- .3.1 *Frequency.* Valve Seat Leakage tests shall be conducted at least once every 2 years [Reference 2.1.3, Para. 4.2.2.3(a)].
- .3.2 *Differential Test Pressure.* Valve seat leakage tests shall be made with the pressure differential in the same direction as when the valve is performing its function, with the following exceptions [Reference 2.1.3, Para. 4.2.2.3(b)].
- .3.2.1 Globe-type valves may be tested with pressure under the seat.
- .3.2.2 Butterfly valves may be tested in either direction, provided their seat construction is designed for sealing against pressure on either side.
- .3.2.3 Double-disk gate valves may be tested by pressurizing between the disks.
- .3.2.4 Leakage tests involving pressure differentials lower than function pressure differentials are permitted in those types of valves in which service pressure will tend to diminish the overall leakage channel opening, as by pressing the disk into or onto the seat with greater force. When leakage tests are made in such cases using pressures lower than function maximum pressure differential, the observed leakage shall be adjusted to the function maximum pressure differential value. This adjustment shall be made by calculation appropriate to the test media and the ratio between test and function pressure differential, assuming leakage to be directly proportional to the pressure differential to the one-half power. Gate valves, check valves, and globe-type valves, having function pressure differential applied over the seat, are examples of valve applications satisfying this requirement.
- .3.2.5 Valves not qualifying for reduced pressure testing as defined above shall be tested at full maximum functional pressure differential.
- .3.3 *Seat Leakage Measurement.* Valve seat leakage shall be determined by one of the following methods [Reference 2.1.3, Para. 4.2.2.3(c)]:

6.0 PROCEDURE (Continued)

6.6.5.3.3.1 measuring leakage through a downstream telltale connection while maintaining test pressure on one side of the valve;
or

.3.3.2 measuring the feed rate required to maintain test pressure in the test volume or between two seats of a gate valve, provided the total apparent leakage rate is charged to the valve or valve combination or gate valve seat being tested, and that the conditions required by 6.6.5.3.2, above, are satisfied; or

.3.3.3 determining leakage by measuring pressure decay in the test volume, provided the total apparent leakage rate is charged to the valve or valve combination or gate valve seat being tested, and that the conditions required by 6.6.5.3.2, above, are satisfied.

.3.4 *Test Medium.* The test medium shall be specified by the Test Implementing Procedure, in those cases where it is not obvious, such as in system piping where either gas and water may be present during normal system operation [Reference 2.1.3, Para. 4.2.2.3(d)].

.3.5 *Analysis of Leakage Rates.* Leakage rate measurements shall be compared with the permissible leakage rates specified by the implementing procedure for a specific valve or valve combination. If leakage rates are not otherwise determined, for implementing procedures, the following rates shall be used [Reference 2.1.3, Para. 4.2.2.3(e)].

- a) for water 0.5D gpm or 5 gpm, whichever is less, at function pressure differential;
- b) for air, at function pressure differential, 7.5D standard cu ft/day

where

D = nominal valve size, in.

.4 *Corrective Action.* Valves or valve combinations with leakage rates exceeding the values specified by the above criteria (or the implementing procedure for the leakage test) shall be declared inoperable and either repaired or replaced.

.5 A retest demonstrating acceptable operation shall be performed following any required corrective action before the valve is returned to service [Reference 2.1.3, Para. 4.2.2.3(f)].

6.0 PROCEDURE (Continued)

6.6.6 Inservice Tests for Category C Valves

- .1 **Safety Valve and Relief Valve Tests.** Safety and Relief Valves listed in Attachment 2 to this program procedure shall be tested in accordance with the inservice testing requirements of the IST DBD Topical Report, Reference 2.5.1.
- .2 **Exercising Test Frequency.** Check Valves listed in Attachment 2 shall be exercised nominally every 3 months, except as discussed in Attachment 2 and 3 [Reference 2.1.3, Para. 4.3.2.1]. Three (3) months means one (1) quarter or 92 days, see paragraph 6.2, earlier in this program procedure.
- .3 **Exercising Requirements.** During plant operation, each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full-open or partially open position required to fulfill its function [Reference 2.1.3, Para. 4.3.2.2(a)].
 - .3.1 If full-stroke exercising during plant operation is not practicable exercising may be limited to part-stroke during plant operation and full-stroke during cold shutdowns [Reference 2.1.3, Para. 4.3.2.2(b)].
 - .3.2 If exercising is not practicable during plant operation, it may be limited to full-stroke exercising during cold shutdowns [Reference 2.1.3, Para. 4.3.2.2(c)].
 - .3.3 If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, exercising may be limited to part-stroke during cold shutdowns, and full-stroke during refueling outages [Reference 2.1.3, Para. 4.3.2.2(d)].
 - .3.4 If exercising is not practicable during plant operation or cold shutdowns, it may be limited to full-stroke during refueling outages [Reference 2.1.3, Para. 4.3.2.2(e)].
 - .3.5 Valves full-stroke exercised at cold shutdowns shall be exercised during each cold shutdown, except as specified below. Such exercise is not required if the time period since the previous full-stroke exercise is less than 3 months [Reference 2.1.3, Para. 4.3.2.2(f)].
 - .3.6 The rules of paragraph 6.6.2.3 shall apply to check valve testing at cold shutdown intervals. [Reference 2.1.3, Para. 4.3.2.2(g)].
 - .3.7 All valve testing required to be performed during a refueling outage shall be completed prior to returning the plant to operation [Reference 2.1.3, Para. 4.3.2.2(h)].

6.0 PROCEDURE (Continued)

6.6.6.4 **Valves in Regular Use.** The rules of Paragraph 6.6.2.7 shall apply to check valve testing for check valve in regular use. [Reference 2.1.3, Para. 4.3.2.3].

.5 **Valve Obturator Movement**

.5.1 The necessary valve obturator movement shall be demonstrated by exercising the valve and observing that either the obturator travels to the seat on cessation or reversal of flow, or opens to the position required to fulfill its function, as specified under 1.4, above [Reference 2.1.3, Para. 4.3.2.4(a)].

.5.1.1 Observation may be by a direct indicator such as a position indicating device, or by other indicator(s) such as changes in system pressure, flow rate, level, temperature, seat leakage testing or other positive means.

NOTE: Currently there are no check valves in this program that use a mechanical exerciser.

.5.2 **Disassembly Testing:** As an alternative to the testing in the above paragraph, disassembly every refueling outage to verify operability of check valves may be used [Reference 2.1.3, Para. 4.3.2.4(c)]. A sampling program is also available, see paragraph 6.6.6.6, below.

.5.3 For valves identified in Attachments 2 and 3 that are to be tested by disassembly, the internals shall be visually inspected for worn or corroded parts, and the valve disks shall be manually exercised. It shall be verified that the valve is capable of full-stroking and that the internals of the valve are structurally sound. This testing shall be conducted at each refueling outage (or at refueling outages on a rotating basis, see paragraph 6.6.6.6, below).

.5.4 One valve of this group (a group is identified as all the valves of the same manufacturer, size, model and service) will be tested each successive refueling outage, until the entire group has been tested.

NOTE: Refer to Attachment 1 for the population of each of the identified valve groups in the IST Program.

6.0 PROCEDURE (Continued)

- 6.6.6.5.5 If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of the valve internals, the remaining valves in this group shall also be disassembled, inspected, and manually full-stroke exercised during the same outage. A partial flow test shall be performed on the disassembled valve following reassembly, but before it is returned to service.
- .6 **SAMPLING DISASSEMBLY PROGRAM FOR CHECK VALVES:** When we have determined that it is burdensome to disassemble and inspect all applicable valves each refueling outage, a sample disassembly and inspection plan for groups of identical valves in similar applications may be employed in accordance with References 2.1.3 and 2.1.9, Position 2, "Alternative to Full Flow Testing of Check valves".
- .6.1 The sample disassembly and inspection program involves grouping similar valves and testing one valve in each group during each refueling outage.
- .6.2 The sampling technique requires that each valve in the group be the same design (manufacturer, size, model number, and materials of construction) and have the same service conditions including valve orientation. Additionally, at each disassembly it shall be verified that the disassembled valve is capable of full-stroking and that the internals of the valve are structurally sound (no loose or corroded parts). Also if the disassembly is to verify the full-stroke capability of the valve, the disk should be manually exercised.
- .6.3 A different valve of each group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been tested.
- .6.4 If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of valve internals, the remaining valves in that group must also be disassembled, inspected and manually full-stroke exercised during the same outage. Once this is completed, the sequence of disassembly must be repeated unless extension of the interval can be justified.
- .7 Extension of the valve disassembly/inspection interval to one valve every other refueling outage or expansion of the group size above four valves should only be considered in cases of extreme hardship where the extension is supported by actual in-plant data from previous testing. Considerations and methodology for justifying this testing is addressed in Generic Letter 89-04 Position 2 (Reference 2.1.9).

6.0 PROCEDURE (Continued)

- 6.6.6.8 **Disassembly Group Size Reassessment:** When disassembly/inspection data for a valve group show a greater than 25% failure rate, a determination will be made and documented (for example, in a memo) by the Cog. Supervisor, assisted by the Cog. Engineer and IST Coordinator, whether the group size should be decreased or whether more valves from the group should be disassembled during every refueling outage (Reference 2.1.9, Position 2).
- .9 **Valves in Systems Out of Service.** Paragraph 6.6.2.9, above applies to check valves in system out of service. [Reference 2.1.3, Para. 4.3.2.5].
- .10 **Open Stroke Testing of Check Valves Using Flow.** Full Stroke testing (open) of check valves is normally done using flow.
- .10.1 The flow test shall be designed such that degradation of check valve performance can be detected. This means that rather than specifying only the minimum flow for the test (example: "greater than 2000 gpm"), a range of acceptable flow shall be used (examples: "2000 + 150 gpm", or, "1850 to 2150 gpm").
- .11 **Corrective Action:** If a check valve fails to exhibit the required change of obturator position it shall be declared inoperable. A retest showing acceptable performance shall be run following any required corrective action before the valve is returned to service [Reference 2.1.3, Para. 4.3.2.6].
- .12 When corrective action is required as a result of testing during cold shutdown, the condition shall be corrected before startup.

NOTE: The requirements to initiate a Nonconformance Report (NCR) apply to the IST Program. See Reference 2.3.2 for NCR initiation criteria.

6.6.7 Inservice Tests for Category D Valves

- .1 Not applicable. There are no safety-related or important-to-safety Category D valves at SONGS.

6.7 Acceptance Criteria and Corrective Action

- 6.7.1 Acceptance criteria and corrective actions for Category A, B and C valve testing are contained in the implementing procedures, and as described in this program procedure, in the above sections 6.6.3, 6.6.4, 6.6.5.3.5, 6.6.5.4 and 6.6.6.11. [Reference 2.1.3, Para. 5].

6.0 PROCEDURE (Continued)

- 6.7.2 During a test, anomalous data with no clear indication of the cause must be attributed to the valve under test. When data is recognized as anomalous, a prompt determination of operability is appropriate with follow-on corrective action as necessary. *Recalibrating test instruments and then repeating valve tests is an acceptable alternative to the corrective action of repair or replacement, but is not an action that can be taken before declaring the valve inoperable.* However, if during a test it is obvious that a test instrument is malfunctioning, the test may be halted and the instruments promptly recalibrated or replaced. [See NRC Generic Letter 91-18, "Information to Licensees Regarding ... Operability"]
- 6.7.3 It is appropriate to validate the data prior to declaring a valve inoperable. Validation (verifying the test was conducted using the required system lineup, instruments were not obviously out-of-calibration, a second check of calculations, etc.) **must be completed as soon as practical following completion of data gathering phase of the test when it is probable that the test results do not meet the limiting values for operability.** The validation period is provided to obtain management concurrence that the Inservice Test results are valid and entry into an applicable action statement is required. A retest using recalibrated instrumentation is not allowed as a validation step.
- 6.7.4 If supervision and the assigned tester conclude that the test is invalid, the test may be invalidated and the test records not used. **IN THIS CASE, A VALID TEST SHOULD BE COMPLETED ON THE VALVE IN QUESTION AS SOON AS POSSIBLE TO CONFIRM VALVE OPERABILITY.** Performing an invalid test in no way absolves those responsible from compliance with the surveillance requirements and schedules of the Technical Specifications (e.g., IST requirements) as they apply to the components under test.

NOTE: NRC POSITION: The NRC guidance on Technical Specification Clock Policy states that when a test result fails to meet the acceptance criterion, regardless of whether the limit is equal to or more conservative than the TS limit, the valve must be immediately declared inoperable and the TS action statement for the associated system must be entered. In cases where the required action range limit is more conservative than its corresponding TS limit, the corrective action may not be limited to replacement or repair, but rather it may consist of an analysis to demonstrate that the specific performance degradation does not impair operability and that the valve will still fulfill its function, such as delivering the required flow. A new REFERENCE RANGE and OPERABILITY LIMIT [as necessary] may be established after such analysis which would then allow a new determination of operability.

6.0 PROCEDURE (Continued)

NOTE: (Continued)

"The durations specified by the Code for analyzing test results have not been accepted by the NRC for postponing entering a TS action statement. As soon as the data are recognized exceeding the OPERABILITY LIMIT of full-stroke time for valves, the associated component must be declared inoperable and, if subject to the TS, the Allowed Outage Time (AOT) specified in the action statement must be started at the time the component was declared inoperable." (See Reference 2.1.13.)

6.7.5 If supervision determines that the test was valid and the data are outside of the REFERENCE RANGE or exceed the OPERABILITY LIMIT, then supervision shall immediately assure that an NCR is initiated and validated (including an operability assessment) and notify the SRO Operations Supervisor.

6.8 Instrumentation

6.8.1 Instrumentation used during valve inservice testing shall be selected with range and accuracy suitable to the measurements to be made and shall be in the calibration program here at SONGS, with an appropriate recall date for recalibration.

6.8.2 Instrumentation shall not be used for Inservice testing if the recall date has expired.

6.8.3 Instrumentation requirements for safety and relief valve testing are provided in the IST Topical (Reference 2.5.1).

7.0 RECORDS AND REPORTS

7.1 Valve Records

7.1.1 It is the responsibility of the record originator to provide the record to CDM for retention. For vendor supplied records and similar non-SCE generated records, the Division in receipt of the record is responsible for providing the record to CDM for retention.

7.1.2 The Corporate Document Management Division (CDM) shall maintain a record which shall include the following for each valve tested under this program procedure [Reference 2.1.3, Para. 6.1]:

.1 The manufacturer and manufacturer's model and serial or other unique identification number

7.0 RECORDS AND REPORTS (Continued)

- 7.1.2.2 A copy or summary of the manufacturer's acceptance test report if available
- .3 Preservice test results
- .4 Limiting value of full stroke time (this is specified in Attachment 2).

7.2 Test Plans (Program and Implementation Procedures)

- 7.2.1 CDM shall maintain a record of test plans (Program and Implementation Procedures).

NOTE: Implementing Procedures for the Inservice Testing Program should be consistent with the requirements of References 2.4.1 and 2.4.2.

- 7.2.2 The test plans shall include this program procedure and implementing procedures from each division for the valve(s) under its responsibility.
- 7.2.3 Attachment 2 identifies all valves subject to test, the Section XI category of each valve, the tests to be performed. Attachment 3 provides justifications for testing at other than quarterly intervals. [Reference 2.1.3, Para. 6.2]

7.3 Records of Tests

- 7.3.1 CDM shall maintain a record of each test.
- 7.3.2 Each Division shall (for the valves under its responsibility) include the following in its records of tests sent to CDM valve identification (including unit 2, common or 3), date of test, reason for test (e.g., post maintenance, routine inservice test establishing reference values, etc.), values of measured parameters, identification of instruments used, comparisons with allowable ranges of test values and analysis of deviations, requirement for corrective action, signature of the person or persons responsible for conducting and analyzing the test. [Reference 2.1.3, Para. 6.3]

7.0 RECORDS AND REPORTS (Continued)

7.4 Record of Corrective Action

- NOTES:
1. The Nonconformance Report (NCR) is the normal vehicle for documenting the record of corrective action.
 2. The requirements to initiate an Nonconformance Report (NCR) apply to the IST Program. See Reference 2.3.2 for NCR initiation criteria.

7.4.1 CDM shall maintain records of corrective action for cases where it is not on secure electronic media (such as the NCRS, see Reference 2.3.2).

7.4.2 Each Division shall provide a record of corrective action that includes a summary of the corrections made and the subsequent inservice tests and confirmation of operation adequacy and the signature of the individual responsible for corrective action and verification of results [Reference 2.1.3, Para. 6.4].

LISTING - CHECK VALVE AND RELIEF VALVE GROUPS (VALVES GROUPED FOR TESTING)

NOTE: Check valves are grouped on the basis of make/model, size, system, service, orientation and other factors as appropriate to individual systems. Pressure relief/safety valves are grouped similarly. These groupings are used to determine and justify testing and/or disassembly intervals.

GROUP 1: SAFETY INJECTION SYSTEM CHECK VALVES

S2(3)1204MU001 (24-001-C-724), RW Tank 2(3)T005 to Spray Pump 2(3)P012 Suction Header,
S2(3)1204MU002 (24-002-C-724), RW Tank 2(3)T005 to Spray Pump 2(3)P013 Suction Header

GROUP 2: SAFETY INJECTION SYSTEM CHECK VALVES

S2(3)1204MU003 (24-003-C-724), Outlet Check Valve - Containment Emergency Sump
S2(3)1204MU004 (24-004-C-724), Outlet Check Valve - Containment Emergency Sump

GROUP 3: SAFETY INJECTION SYSTEM CHECK VALVES

S2(3)1204MU006, 10-006-C-675, HPSI Pumps 2(3)P017 and 2(3)P018 Suction Check Valve, and,
S2(3)1204MU008, 10-008-C-675, HPSI Pumps 2(3)P018 and 2(3)P019 Suction Check Valve.

GROUP 4: SAFETY INJECTION SYSTEM CHECK VALVES

S2(3)1204MU040, 12-040-A-551, Safety Injection Tank T008 Outlet Check Valve,
S2(3)1204MU041, 12-041-A-551, Safety Injection Tank T007 Outlet Check Valve,
S2(3)1204MU042, 12-042-A-551, Safety Injection Tank T009 Outlet Check Valve,
and,
S2(3)1204MU043, 12-043-A-551, Safety Injection Tank T010 Outlet Check Valve.

GROUP 5: SAFETY INJECTION SYSTEM CHECK VALVES

S2(3)1204MU077, 16-077-C-645, LPSI Pump 2(3)P016 Suction Header Check Valve,
S2(3)1204MU084, 16-084-C-645, LPSI Pump 2(3)P015 Suction Check Valve,
S2(3)1204MU199, 16-199-C-645, LPSI Pump 2(3)P016 Suction Header Check Valve,
and,
S2(3)1204MU201, 16-201-C-645, LPSI Pump 2(3)P015 Suction Header Check Valve.

GROUP 6: CONTAINMENT SPRAY SYSTEM CHECK VALVES

S2(3)1206MU004, 8-004-C-406, Containment Isolation Stop Check Valve - Spray Header #1, and,
S2(3)1206MU006, 8-006-C-406, Containment Isolation Stop Check Valve - Spray Header #2.

LISTING - CHECK VALVE AND RELIEF VALVE GROUPS (VALVES GROUPED FOR TESTING)

GROUP 7: MAIN STEAM SYSTEM CHECK VALVES

S2(3)1301MU003, 4-003-D-620, Steam Supply - S/G E088 to AFP Turbine K007 Check Valve, and,
S2(3)1301MU005, 4-005-D-620, Steam Supply - S/G E089 to AFP Turbine K007 Check Valve.

NOTE: We disassemble and inspect both S2(3)1301MU003 and S2(3)1301MU005 every refueling. This change in interval was made as the result of poor valve performance trends.

GROUP 8: CONDENSATE AND FEEDWATER SYSTEM CHECK VALVES

S2(3)1305MU036, 20-036-C-609, Main Feed Check at Steam Generator E089, and,
S2(3)1305MU129, 20-129-C-609, Main Feed Check at Steam Generator E088.

GROUP 9: MAIN STEAM VALVES

2(3)HV8419, Main Steam Dump to Atmosphere, and,
2(3)HV8421, Main Steam Dump to Atmosphere

GROUP 10: REACTOR COOLANT SYSTEM VALVES

2(3)PSV0200, Pressurizer Safety Valve, and,
2(3)PSV0201, Pressurizer Safety Valve

GROUP 11: MAIN STEAM RELIEF VALVES

2(3)PSV8401, 2(3)PSV8402, 2(3)PSV8403, 2(3)PSV8404, 2(3)PSV8405, 2(3)PSV8406,
2(3)PSV8407, 2(3)PSV8408, 2(3)PSV8409, 2(3)PSV8410, 2(3)PSV8411, 2(3)PSV8412,
2(3)PSV8413, 2(3)PSV8414, 2(3)PSV8415, 2(3)PSV8416, 2(3)PSV8417, 2(3)PSV8418

GROUP 12: SAFETY INJECTION SYSTEM RELIEF VALVE

2(3)PSV9349, Shutdown Cooling System Relief Valve From RCS Loop No. 2

NOTE: Although this group consists of a single valve, it is considered a group for purposes of the Code rules for testing of safety/relief valves.

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM

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GENERAL NOTES

- GENERAL NOTE NO. 1 - The numbers in the following table of valve tests which follow the designations "BTO" or "BTC" indicated the limiting stroke time in seconds. (i.e., "BTO 16/OP", indicated a quarterly open stroke test with a time limit of 16 seconds.)
- GENERAL NOTE NO. 2 - Certain valves are grouped for testing in accordance with this program and the Code (Reference 2.1.3). Attachment 1 to this Program Procedure, **Listing - Check Valve and Relief Valve Groups (Valves Grouped for Testing)**, identifies the valves in each group. Uses of these groupings are discussed in the provisions of Section 6 of this Program Procedure.
- GENERAL NOTE NO. 3 - Definition of Test Types used in the Valve IST Listing:

Abbreviation	Definition
AT	Seat Leakage Test
BMO	Manual Stroke Open
BMC	Manual Stroke Closed
BMPO	Partial Manual Stroke Open
BMPC	Partial Manual Stroke Closed
BTO	Stroke Test Open
BTC	Stroke Test Closed
BTPO	Partial Stroke Test Open
BTPC	Partial Stroke Test Closed
PIT	Position Indication Test
CVTO	Check Valve Stroke Test Open
CVTC	Check Valve Stroke Test Closed
CVPO	Partial Check Valve Stroke Test Open
FSTO	Fail Safe Test Open
FSTC	Fail Safe Test Closed
RVT	Relief Valve Test

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

GENERAL NOTES (Continued)

GENERAL NOTE NO. 4 - Definition of Test Intervals used in the Valve IST Listing:

Abbreviation	Definition
QP	Quarterly (At Least every 92 days)
CS	Cold Shutdown
RR	Reactor Refueling

- Twenty-five percent (25%) interval extension is allowed to accommodate plant conditions that may not be suitable for conducting a surveillance (such as transient conditions or other surveillance in progress). It also provides flexibility for refueling interval surveillance.
- See Section 6.6.2.3 for a discussion of Cold Shutdown intervals and testing rules applicable to the cold shutdown interval.
- The nominal interval for Reactor Refueling is every two years. Specific tests are governed by the Technical Specifications, Appendix J, or OM-10. Exceptions (and the bases therefore) to the two year interval are identified in this attachment and accompanying notes.

SPECIFIC NOTES USED IN THE VALVE IST TABLE

1. This valve will be tested by disassembly, the valve internals shall be visually inspected for worn or corroded parts, and the valve disk shall be manually exercised. See Section 6.6.6 for additional details. Check valve groups exercised by disassembly and hand stroking are identified in Attachment 1.
2. This valve is a safety valve or relief valve and will be tested at the frequency stated in Reference 2.1.2. Pressure Relief valve groups exercised in accordance with OM-1 (Reference 2.1.2) by disassembly and hand stroking are identified in Attachment 1.

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

3. The maximum stroke times associated with these valves are protected values and may only be changed under certain circumstances. See Attachment 4 for a summary of the safety analysis and technical specification stroke time limits for valves in this program. The Required action limits in the following table (even when less than the safety analysis or technical specification limits) must be met, but do not necessarily result in inoperability. If a valve stroke time exceeds the safety analysis or technical specification limit, it shall be considered inoperable and the Technical Specification action statements implemented immediately. On the other hand, if a valve exceeds a required action stroke time limit even if it is less than the T-S limit, an NCR shall be generated and the valve evaluated for operability in accordance with the NCR program, see Reference 2.3.2. For valves that do not appear in Attachment 4, the limit shown in the following table is the only limit and if a valve exceeds this limit, it shall be considered inoperable.
4. The maximum allowable stroke times for valves 2(3)HV4705, 2(3)HV4706, 2(3)HV4715, 2(3)HV4716 and 2(3)HV4730 are protected values and may not be relaxed without revision to the disposition of Non-conformance Report (NCR) G-992.
5. This valve cannot be partially stroke exercised during Plant operation.
6. All motor operated valves fail as is and, therefore, do not require a fail-safe test as described in Reference 2.1.3.
7. The closed stroke test was added at the recommendation of INPO to mitigate an inter-system LOCA in the RCP heat exchanger even though this test is not identified as required in S023-IST-1203.
8. This valve is tested when the Containment spray system is tested as required in the Technical Specifications.
9. Main Steam Isolation Valves 2(3)HV8204 and 2(3)HV8205 shall be full stroke tested at cold shutdown intervals. (NOTE: Although not part of the IST Program, solenoid pilot valves 2(3)HY8204X1, 2(3)HY8204X2, 2(3)HY8205X1 and 2(3)HY8205X2 should each be exercised semi-annually. Solenoid pilot valves 2(3)HY8204Y1, 2(3)HY8204Y2, 2(3)HY8205Y1 and 2(3)HY8205Y2 should be exercised at cold shutdowns. "X1" and "Y1" are train "A" and "X2" and "Y2" are train "B".) Also, see Technical Specification Requirement 4.7.1.5.
10. The seat leakage test for this valve will be performed in accordance with 10 CFR 50, Appendix J (Reference 2.1.12) (see Procedure paragraph 6.6.5).
11. In addition to the tests called out in the following table, additional testing of the atmospheric dump valves shall comply with Technical Specification 4.7.1.6.

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

12. Stroke timing not required. The successful exercise testing of the associated isolation valve (HV4714 or HV4731) confirms the operability of these solenoid valves. See S023-IST-1305.
13. Disassemble and inspect both S2(3)1301MU003 and S2(3)1301MU005 every refueling. This change in interval was made as the result of poor valve performance trends.
14. The IST Program requires only specific tests of these valves in accordance with the analysis provided pursuant to document 90055 (reference 2.1.1). [Note: OM-10, Reference 2.1.3, if used alone, would exempt these valves from testing as passive, category "B." Accordingly, all Code testing is not necessarily required for each of these valves.]
15. Test pressure relief valve 2(3)PSV9349 at the frequency stated in the Technical Specifications.
16. Valves S31206MU012, S31206MU014, S31206MU029, and S31206MU030 do not have the vent valves as do the same valves at Unit 2. Consequently, radiography is necessary to verify completion of the close exercise test (see NCR Nos. 92010186, 92010188, 92010189, and 92010190). Station Technical Division is responsible for the completion of the radiographic examination.
17. See Attachment 3 discussion under "Diesel Generators".
18. This check valve is required to undergo a partial stroke test (as a minimum) using flow following disassembly, inspection and reassembly. See GL 89-04, Reference 2.1.9.
19. The manual stroke test specified for these valves is only required to be a partial stroke to the extent necessary to demonstrate the operation of the valve manually, including the ability to engage the clutch.
20. Several valve tests cannot be conducted until the completion of plant modifications. See Work Request (WR) 6988.
21. See S023-IST-1203. The valves are not ASME-III. The interval of "RR" has been determined to be sufficient to provide assurance of operability for these valves. The stroke time of these control valves cannot be measured. Passing the specified flow through the valves verifies the open stroke. In accordance with analysis provided pursuant to document M90055, the following table requires only certain tests of these valves. The test interval of reactor refueling ("RR") provides sufficient assurance of operability for these valves. [NOTE: OM-10, Reference 2.1.3, if used alone, would exempt these valves from testing as control valves. Accordingly, all Code testing is not necessarily required for each of these valves.]

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

22. This requires close verification only. Stroke testing (or exercise testing) is not required.
23. S023-IST-1500 calls for a Position Indication Test (PIT) on 2(3)HCV9918 and 2(3)HCV9945. S023-IST-1312 calls for a Position Indication Test (PIT) on S2(3)1312MU037 and S2(3)1312MU038. These valves are locked in their safety position at all times when they are required by plant mode to perform their safety function. As a consequence, no actual PIT test is required. See S023-O-17, Locking of Safety-Related Critical Valves and Breakers. Note that if the locking requirement is removed, a PIT test will be required.
24. Stroke time is not required for Chilled Water system valves 2/3HYJ888A, Emerg. Chiller Water Loop A - Chiller E336, 2/3TV9720, Control Room Complex Emerg A/C E-419 Coil Temp Cont Valve and 2/3TV9749, Control Room Complex Emerg A/C E-418 Coil Temp Cont Valve. Operability of these valves is confirmed in conjunction with the Technical Specification testing of the chiller. See T-S, Paragraph 4.7.5, S023-IST-1417 and S023-IST-1513.
25. This is a control valve exempted from testing under the OM-10 Code (Reference 2.1.3), Paragraph 1.2, Exclusions. Nevertheless, some testing is appropriate due to its safety function and therefore it is listed in this program.
26. There is a pending DCN to remove this valve from the IST Program. If approved, this valve will not be required to be tested under the IST Program.
27. The leakage tests for Nuclear Sampling System valves S2(3)1212MU008, Isolation Valve - SI System to Liquid Sample System Flush, cannot be performed without a modification. This is a Cycle 8 commitment.
28. The seat leakage testing for these valves is controlled and conducted in accordance with Technical Specification Surveillance requirement 4.4.5.2.2.
29. The seat leakage testing for these valves is controlled and conducted in accordance with Appendix J and Technical Specification Surveillance requirement 4.4.5.2.2.
30. A "Verify Close" test is called out for S2(3)1901MU573 in S023-IST-1901 and for S2(3)2423MU017 in S023-IST-2423 in addition to the Seat Leakage Test. The leak test is itself verification of "valve closed" and no additional testing need be specified.
31. The open stroke exercise test for 2(3)HV5686, SA2301MU061 and SA2310MU095 is conducted in accordance with the Technical Specification 4.7.8.1.1, Fire Suppression Water System. See S023-IST-2301.

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

32. Reactor Coolant pumps need not be shut down for cold shutdown valve testing. See Reference 2.5.3 (NUREG 1482), Paragraph 3.1.1.4.
33. This is a control valve. Operability is verified during the IST of pump P140. Turbine speed is measured during the test which indicates that this valve is controlling turbine speed. No Code (OM-10) tests are required. See S023-IST-1301.

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

INSERVICE TESTING PROGRAM SYSTEM VALVE LIST: UNITS 2 AND 3

AIR CONDITIONING SYSTEM

2(3)HCV9918, Hydrogen Purge Exhaust Control Valve
(Code/Category 2/A)(6" Butterfly/Manual) Dwg 40172B
AT/RR (Notes: 10&23)

2(3)HCV9945, Hydrogen Purge Unit A-080 Discharge Valve
(Code/Category 2/A)(6" Butterfly/Manual) Dwg 40172B
AT/RR (Notes: 10&23)

2(3)HV9917, Containment Hydrogen Purge Outlet Valve
(Code/Category 2/A)(6" Butterfly/Motor) Dwg 40172B
AT/RR (Notes: 6&10)
PIT/RR

2(3)HV9946, Containment Hydrogen Purge Inlet
(Code/Category 2/A)(6" Butterfly/Motor) Dwg 40172B
AT/RR(Notes: 6&10)
PIT/RR

S2(3)1500MU038 (3/4-038-C-396), ILRT Pressurization Connection
(Code/Category 2/A)(3/4" Globe/Manual) Dwg 40171B
AT/RR(Note: 10)

S2(3)1500MU039 (3/4-039-C-396), ILRT Pressurization Connection
(Code/Category 2/A)(3/4" Globe/Manual) Dwg 40171B
AT/RR(Note: 10)

AUXILIARY BOILER SYSTEM

S2(3)1312MU037 (2-037-C-387), Auxiliary Steam Inside Containment Isolation
Valve (Code/Category 2/A)(2" Gate/Manual) Dwg 40169C
AT/RR(Notes: 10&23)

S2(3)1312MU038 (2-038-C-387), Auxiliary Steam Outside Containment Isolation
Valve (Code/Category 2/A)(2" Gate/Manual) Dwg 40169C
AT/RR(Notes: 10&23)

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

AUXILIARY FEEDWATER

2(3)HV4705, AFW Control Valve - Steam Generator E088
(Code/Category 3/B)(4" Globe/Motor) Dwg 40160A
BTC 33.5/OP(Notes: 3,4&6)
BTO 35/OP
PIT/RR

2(3)HV4706, AFW Control Valve - Steam Generator E089
(Code/Category 3/B)(4" Globe/Motor) Dwg 40160A
BTC 33.5/OP(Notes: 3,4&6)
BTO 35/OP
PIT/RR

2(3)HV4712, AFW Pump 2(3)P504 Discharge to Steam Generators Globe/Motor)
Dwg 40160A
BTC 36/OP(Notes: 3&6)
BTO 36/OP
PIT/RR

2(3)HV4713, AFW Pump 2(3)P141 Discharge to Steam Generators
(Code/Category 3/B)(4" Globe/Motor) Dwg 40160A
BTC 36/OP(Notes: 3&6)
BTO 36/OP
PIT/RR

2(3)HV4714, AFW Isolation Valve to Steam Generator E088
(Code/Category 2/B)(6" Globe/Electro Hydraulic) Dwg 40160A
BTC 10/OP(Note: 3)
BTO 10/OP
FSTC/OP
PIT/RR

2(3)HV4715, AFW Isolation Valve to Steam Generator E089
(Code/Category 2/B)(6" Globe/Motor) Dwg 40160A
BTC 10/OP(Notes: 3,4&6)
BTO 10/OP
PIT/RR

2(3)HV4716, AFW Pump Turbine Trip and Throttle Valve
(Code/Category NA/B)(4" Globe/Motor) Dwg 40160B
BTO 13.5/OP(Notes: 3,4&6)
PIT/RR

2(3)HV4730, AFW Isolation Valve to Steam Generator E088
(Code/Category 2/B)(6" Globe/Motor) Dwg 40160A
BTC 10/OP(Notes: 3,4&6)
BTO 10/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV4731, AFW Isolation Valve to Steam Generator E089
(Code/Category 2/B)(6" Globe/Electro Hydraulic) Dwg 40160A
BTC 10/OP(Note: 3)
BTO 10/OP
FSTC/OP
PIT/RR

2(3)HV4762, E/H Bypass Valve for AFW Valve 2(3)HV4712
(Code/Category 3/B)(4" Globe/Electro Hydraulic) Dwg 40160A
BTC 40/OP(Note: 3)
PIT/RR

2(3)HV4763, E/H Bypass Valve for AFW Valve 2(3)HV4713
(Code/Category 3/B)(4" Globe/Electro Hydraulic) Dwg 40160A
BTC 40/OP(Note: 3)
PIT/RR

2(3)HY47142, AFW HV4714 Energize to Open Solenoid Valve
(Code/Category NA/B)(1/4" 3-Way/Solenoid) Dwg 40160C
BTC/OP(Note: 12)
BTO/OP
FSTC/OP

2(3)HY47311, AFW HV4731 Energize to Open Solenoid Valve
(Code/Category NA/B)(1/4" 3-Way/Solenoid) Dwg 40160C
BTC/OP(Note: 12)
BTO/OP
FSTC/OP

2SV4700, AFW Pump K007 Speed Controller
(Code/Category NA/B)(4" Globe/Electro Hydraulic) Dwg 40160B
BTO/OP(Note: 33)
FSTO/OP

S2(3)1305MU088 (8-088-D-212), Drain Valve From Condensate Storage Tank T121
to T120 Sump (Code/Category 3/B)(8" Gate/Manual) Dwg 40150D
BMO/CS

S2(3)1305MU121 (6-121-D-598), AFW Pump 2(3)P140 Supply to Steam Generator
E089 (Code/Category 3/C)(6" Check/Self Actuated) Dwg 40160A
CVTC/CS(Note: 5)
CVTO/CS

S2(3)1305MU126 (6-126-D-598), AFW Pump 2(3)P141 Discharge Check Valve
(Code/Category 3/C)(6" Check/Self Actuated) Dwg 40160A
CVTC/CS(Note: 5)
CVTO/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1305MU468 (8-468-D-212), AFP P140 Suction Isolation Valve
(Code/Category 3/B)(8" Gate/Manual) Dwg 40160A
BMC/CS

S2(3)1305MU469 (8-469-D-212), AFP P141 Suction Isolation Valve
(Code/Category 3/B)(8" Gate/Manual) Dwg 40160A
BMC/CS

S2(3)1305MU496 (1/2-496-D-617), Ammonia Discharge Check to AFP P140 Suction
(Code/Category 3/C)(1/2" Check/Self Actuated) Dwg 40160A
CVTC/OP

S2(3)1305MU497 (1/2-497-D-617), Hydrazine Pump P037 Discharge Check to AFP
P140 (Code/Category 3/C)(1/2" Check/Self Actuated) Dwg 40160A
CVTC/OP

S2(3)1305MU498 (1/2-498-D-617), Ammonia Discharge Check to AFP P141 Suction
(Code/Category 3/C)(1/2" Check/Self Actuated) Dwg 40160A
CVTC/OP

S2(3)1305MU499 (1/2-499-D-617), Hydrazine Pump P037 Discharge Check to AFP
P141 (Code/Category 3/C)(1/2" Check/Self Actuated) Dwg 40160A
CVTC/OP

S2(3)1305MU532 (6-532-D-598), AFW Pump 2(3)P504 Discharge Check Valve
(Code/Category 3/C)(6" Check/Self Actuated) Dwg 40160A
CVTC/CS(Note: 5)
CVTO/CS

S2(3)1305MU538 (8-538-D-212), AFP P504 Suction Isolation Valve
(Code/Category 3/B)(8" Gate/Manual) Dwg 40160A
BMC/CS

S2(3)1305MU539 (1/2-539-D-617), Ammonia Discharge Check to AFP P504 Suction
(Code/Category 3/C)(1/2" Check/Self Actuated) Dwg 40160A
CVTC/OP

S2(3)1305MU541 (1/2-541-D-617), Hydrazine Pump P037 Discharge Check to AFP
P504 (Code/Category 3/C)(1/2" Check/Self Actuated) Dwg 40160A
CVTC/OP

S2(3)1305MU547 (6-547-D-598), AFW Pump 2(3)P140 Discharge Check Valve
(Code/Category 3/C)(6" Check/Self Actuated) Dwg 40160A
CVTC/CS(Note: 5)
CVTO/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

BORIC ACID MAKEUP

2(3)FV9253, Makeup Water to Volume Control Tank
(Code/Category 3/B)(3" Globe/Air) Dwg 40125B
BTC 2/OP
FSTC/OP
PIT/RR

2(3)HV9231, Boric Acid Makeup Pump 2(3)P175 Recirculation to Tank T072
(Code/Category 3/B)(2" Globe/Air) Dwg 40125A
BTC 2/OP
FSTC/OP
PIT/RR

2(3)HV9235, BAMU Tank T072 to Gravity Feed to Charging Pump Suction
(Code/Category 3/B)(3" Gate/Motor) Dwg 40125A
BMPO/CS(Note: 19)
BTO 12/CS(Notes: 5&6)
PIT/RR

2(3)HV9236, Boric Acid Makeup Pump 2(3)P174 Recirculation to Tank T071
(Code/Category 3/B)(2" Globe/Air) Dwg 40125A
BTC 2/OP
FSTC/OP
PIT/RR

2(3)HV9240, BAMU Tank T071 to Charging Pump Suction Header Control Valve
(Code/Category 3/B)(3" Gate/Motor) Dwg 40125A
BMPO/CS(Note: 19)
BTO 12/CS(Notes: 5&6)
PIT/RR

2(3)HV9247, BAMU Pump to Charging Pump Suction Control Valve
(Code/Category 3/B)(3" Gate/Motor) Dwg 40125B
BMPO/CS(Note: 19)
BTO 12/CS(Notes: 5&6)
PIT/RR

S2(3)1218MU033 (3-033-D-675), BAMU Pump 2(3)P175 Discharge Check Valve
(Code/Category 3/C)(3" Check/Self Actuated) Dwg 40125B
CVTC/OP
CVTO/CS

S2(3)1218MU035 (3-035-D-676), BAMU Pump 2(3)P174 Discharge Check Valve
(Code/Category 3/C)(3" Check/Self Actuated) Dwg 40125B
CVTC/OP
CVTO/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1218MU046 (3-046-Y-675), Demineralized Water to Boric Acid Mixing Tee
(Code/Category 2/C)(3" Check/Self Actuated) Dwg 40125B
CVTC/OP

CHEMICAL AND VOLUME CONTROL

2(3)HV9200, Charging Pumps to Regenerative Heat Exchanger E063
(Code/Category 2/A)(2" Globe/Air) Dwg 40123A
AT/RR(Notes: 5&10)
BTC 8/CS
BTO 25/CS
FSTO/CS
PIT/RR

2(3)HV9205, Regenerative Heat Exchanger to Letdown Heat Exchanger
(Code/Category 2/A)(2" Globe/Air) Dwg 40123A
AT/RR(Notes: 3,5&10)
BTC 4/CS
FSTC/CS
PIT/RR

2(3)LV0227B, VCT Outlet Valve (Code/Category 2/A)(4" Gate/Motor) Dwg 40124A
AT/RR(Note: 20)
BTC 11/CS(Notes: 5&6)
PIT/RR

2(3)TV9267, Letdown Containment Isolation Valve
(Code/Category 2/A)(3" Gate/Motor) Dwg 40123A
AT/RR(Notes: 3,5,6&10)
BTC 13/CS
PIT/RR

S2(3)1201MU031 (3-031-C-170), Purification Valve - Letdown Return to
Shutdown Cooling (Code/Category 2/A)(3" Gate/Manual) Dwg 40112B
AT/RR(Note: 20)

S2(3)1208MU005 (2-005-C-036), CVCS to No. 2 HPSI Header Isolation Valve
(Code/Category 2/B)(2" Gate/Manual) Dwg 40112C
BMO/OP

S2(3)1208MU015 (4-015-C-675), VCT to Charging Pump Suction Check Valve
(Code/Category 2/AC)(4" Check/Self Actuated) Dwg 40124A
AT/RR(Note: 20)
CVTC/CS

S2(3)1208MU017 (2-017-C-554), Charging Pump 2(3)P192 Discharge Check Valve
(Code/Category 2/C)(2" Check/Self Actuated) Dwg 40124B
CVTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

- S2(3)1208MU045 (1/2-045-C-611), Chemical Addition Tank T001 to Charging Pump Suction Header (Code/Category 2/C)(1/2" Check/Self Actuated)
Dwg 40124B
CVTC/CS(Note: 22)
- S2(3)1208MU065 (2-065-C-036), Charging Pump Combination Discharge Valve to HPSI Header (Code/Category 2/B)(2" Gate/Manual) Dwg 40124B
BMO/OP
- S2(3)1208MU066 (2-066-C-554), Charging Pump Combined Discharge Valve to HPSI Header (Code/Category 2/C)(2" Check/Self Actuated) Dwg 40124B
CVTO/CS
- S2(3)1208MU067 (2-067-C-554), Charging Pump 2(3)P190 Discharge Check Valve (Code/Category 2/C)(2" Check/Self Actuated) Dwg 40124B
CVTO/OP
- S2(3)1208MU069 (2-069-C-554), Charging Pump 2(3)P191 Discharge Check Valve (Code/Category 2/C)(2" Check/Self Actuated) Dwg 40124B
CVTO/OP
- S2(3)1208MU082 (3-082-C-675), Gravity Feed - BAMU Tanks to Charging Pump 2(3)P190 Suction (Code/Category 2/C)(3" Check/Self Actuated) Dwg 40124B
CVTC/CS
CVTO/CS(Note: 5)
- S2(3)1208MU083 (3-083-C-675), BAMU Pumps to Charging Pumps Suction Header (Code/Category 2/C)(3" Check/Self Actuated) Dwg 40124B
CVTO/CS(Note: 5)
- S2(3)1208MU084 (2-084-C-334), Charging Pump Discharge to Regen Heat Exchanger (Code/Category 2/B)(2" Globe/Manual) Dwg 40123A
BMC/CS
- S2(3)1208MU094 (1 1/2-094-C-611), Coolant Polishing Demineralizer to Charging Pump Suct Hdr (Code/Category 2/C)(1-1/2" Check/Self Actuated) Dwg 40124A
CVTC/CS(Note: 22)
- S2(3)1208MU122 (2-122-C-554), Charging Pumps Check Valve to Regen Heat Exchanger E063 (Code/Category 2/AC)(2" Check/Self Actuated) Dwg 40123A
AT/RR(Note: 10)
CVTC/RR
CVTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1208MU130 (2-130-C-334), Contmt Isol - Chg Pump Disch to Aux Spray
Regen HX Bypass (Code/Category 2/A)(2" Globe/Manual) Dwg 40123A
AT/RR(Note: 10)
BMC/CS
BMO/CS
PIT/RR

CHILLED WATER

2/3HYJ888A, Emerg. Chiller Water Loop A - Chiller E336
(Code/Category NA/B)(1" Gate/Solenoid) Dwg 40179A
BTO/OP(Note: 24)

2/3TV9720, Control Room Complex Emerg A/C E-419 Coil Temp Cont Valve
(Code/Category 3/B)(4" 3-Way/Electro Hydraulic) Dwg 40180B
BTC/OP(Note: 24)
BTO/OP

2/3TV9749, Control Room Complex Emerg A/C E-418 Coil Temp Cont Valve
(Code/Category 3/B)(4" 3-Way/Electro Hydraulic) Dwg 40179B
BTC/OP(Note: 24)
BTO/OP

2(3)HV9900, Containment Cooling Supply Isolation Valve Penetration 45
(Code/Category 2/A)(8" Butterfly/Motor) Dwg 40170A
AT/RR(Notes: 3,6&10)
BTC 14/OP
PIT/RR

2(3)HV9920, Containment Isolation Valve - Cooling Supply
(Code/Category 2/A)(8" Butterfly/Air) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 12/OP
FSTC/OP
PIT/RR

2(3)HV9921, Containment Isolation Valve - Cooling Return
(Code/Category 2/A)(8" Butterfly/Air) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 26/OP
FSTC/OP
PIT/RR

2(3)HV9971, Containment Isolation Valve - Cooling Return, Pen 46
(Code/Category 2/A)(8" Butterfly/Motor) Dwg 40170A
AT/RR(Notes: 3,6&10)
BTC 13/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

SA1417MU136 (1-136-D-639), (ME 335) Check Valve to Prevent Leakage and BackFlow on NSW (Code/Category 3/AC)(1" Check/Self Actuated) Dwg 40180A
AT/RR
CVTC/OP

SA1417MU138 (1-138-D-639), (ME 336) Check Valve to Prevent Leakage and BackFlow on NSW (Code/Category 3/AC)(1" Check/Self Actuated) Dwg 40179A
AT/RR
CVTC/OP

SA1513MU830 (1 1/8-830-D-*), Aux Bldg Emerg Chiller E336 Oil Cooler Outlet Check Valve (Code/Category 3/C)(1-1/8" Check/Self Actuated) Dwg 40179E
CVTO/OP

SA1513MU835 (1 1/8-835-D-*), Aux Bldg Emerg Chiller E335 Oil Cooler Outlet Check Valve (Code/Category 3/C)(1-1/8" Check/Self Actuated) Dwg 40180D
CVTO/OP

COMPONENT COOLING WATER

2(3)HV6211, Containment Isolation Valve - CCW Non-Critical Loop
(Code/Category 2/A)(10" Butterfly/Motor) Dwg 40127F
AT/RR(Notes: 3,5,6&10)
BMPO/CS(Note: 19)
BTC 15/CS
BTO 15/CS
PIT/RR

2(3)HV6212, CCW from Heat Exchanger E001A to Non-Critical Loop
(Code/Category 3/A)(28" Butterfly/Air) Dwg 40127D
AT/RR
BMPO/CS(Note: 19)
BTC 13/CS(Note: 3)
BTO 15/CS
FSTC/CS
PIT/RR

2(3)HV6213, Component Cooling Discharge to Non-Critical Loop
(Code/Category 3/A)(28" Butterfly/Air) Dwg 40127D
AT/RR
BMPO/CS(Note: 19)
BTC 14/CS(Note: 3)
BTO 15/CS
FSTC/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV6216, Containment Isolation - CCW Non-Critical Loop Return
2/A)(10" Butterfly/Motor) Dwg 40127F
AT/RR(Notes: 3,5,6&10)
BMPO/CS(Note: 19)
BTC 15/CS
BTO 15/CS
PIT/RR

2(3)HV6218, Component Cooling Water Pump Suction From Non-Critical
(Code/Category 3/A)(28" Butterfly/Air) Dwg 40127A
AT/RR(Note: 5)
BMPO/CS(Note: 19)
BTC 18/CS(Note: 3)
BTO 18/CS
FSTC/CS
PIT/RR

2(3)HV6219, Component Cooling Water Pump Suction From Non-Critical
(Code/Category 3/A)(28" Butterfly/Air) Dwg 40127A
AT/RR
BMPO/CS(Note: 19)
BTC 16/CS(Note: 3&5)
BTO 16/CS
FSTC/CS
PIT/RR

2(3)HV6220, CCW Pump P025 Miniflow Block Valve to Critical Loop "A" Hdr
(Code/Category 3/A)(10" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6221, CCW Pump P025 Miniflow Block Valve to Critical Loop Hdr
(Code/Category 3/A)(10" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6222A, CCW Pump P025 Suction from Critical Loop "A" Return
(Code/Category 3/A)(28" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6222B, CCW Pump P025 Suction from Critical Loop "A" Return
(Code/Category 3/A)(28" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6223, Containment Isolation - CCW Non-Critical Loop Supply
2/A)(10" Butterfly/Motor) Dwg 40127F
AT/RR(Notes: 3,5,6&10)
BMPO/CS(Note: 19)
BTC 15/CS
BTO 15/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV6224A, CCW Pump P025 Suction from Critical Loop "B" Return
(Code/Category 3/A)(28" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6224B, CCW Pump P025 Suction from Critical Loop "B" Return
(Code/Category 3/A)(28" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6226A, CCW Pump P025 Train "A" Discharge Valve
(Code/Category 3/A)(28" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6226B, CCW Pump P025 Train "A" Discharge Valve
(Code/Category 3/A)(28" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6227, CCW Critical Loop "A" Supply to CCW Pump P025 Motor
(Code/Category 3/A)(3" Gate/Motor) Dwg 40127A
AT/RR

2(3)HV6228A, CCW Pump P025 Train "B" Discharge Valve
(Code/Category 3/A)(28" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6228B, CCW Pump P025 Train "B" Discharge Valve
(Code/Category 3/A)(28" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6229, CCW Critical Loop "B" Supply to CCW Pump P025 Motor
(Code/Category 3/A)(3" Gate/Motor) Dwg 40127A
AT/RR

2(3)HV6236, Containment Isolation - CCW Non-Critical Loop Return
(Code/Category 2/A)(10" Butterfly/Motor) Dwg 40127F
AT/RR(Notes: 3,5,6&10)
BMPO/CS(Note: 19)
BTC 15/CS
BTO 15/CS
PIT/RR

2(3)HV6293A, Letdown Heat Exchanger E062 CCW Return to Critical Loop "A"
(Code/Category 3/A)(8" Butterfly/Air) Dwg 40127E
AT/RR
FSTC/OP

2(3)HV6293B, Letdown Heat Exchanger E062 CCW Supply Fm Critical Loop "A"
(Code/Category 3/A)(8" Butterfly/Air) Dwg 40127D
AT/RR
FSTC/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV6366, Component Cooling Water to Emergency Cooling Unit E-401
(Code/Category 2/A)(8" Gate/Motor) Dwg 40172B
AT/RR(Notes: 6&10)
BTC 12/OP
BTO 12/OP(Note: 3)
PIT/RR

2(3)HV6367, Component Cooling Water to Emergency Cooling Unit E-401
(Code/Category 2/A)(8" Gate/Motor) Dwg 40172B
AT/RR(Notes: 6&10)
BTC 12/OP
BTO 12/OP(Note: 3)
PIT/RR

2(3)HV6368, Component Cooling Water to Emergency Cooling Unit E-400
(Code/Category 2/A)(8" Gate/Motor) Dwg 40172B
AT/RR(Notes: 6&10)
BTC 12/OP
BTO 12/OP(Note: 3)
PIT/RR

2(3)HV6369, Component Cooling Water to Emergency Cooling Unit E-400
(Code/Category 2/A)(8" Gate/Motor) Dwg 40172B
AT/RR(Notes: 6&10)
BTC 12/OP
BTO 12/OP(Note: 3)
PIT/RR

2(3)HV6370, Component Cooling Water to Emergency Cooling Unit E-399
(Code/Category 2/A)(8" Gate/Motor) Dwg 40172B
AT/RR(Notes: 6&10)
BTC 12/OP
BTO 12/OP(Note: 3)
PIT/RR

2(3)HV6371, Component Cooling Water Ret. from Emerg Cooling Unit E-399
(Code/Category 2/A)(8" Gate/Motor) Dwg 40172B
AT/RR(Notes: 6&10)
BTC 12/OP
BTO 12/OP(Note: 3)
PIT/RR

2(3)HV6372, Component Cooling Water to Emergency Cooling Unit E-402
(Code/Category 2/A)(8" Gate/Motor) Dwg 40172B
AT/RR(Notes: 6&10)
BTC 12/OP
BTO 12/OP(Note: 3)
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV6373, Component Cooling Water to Emergency Cooling Unit E-402
(Code/Category 2/A)(8" Gate/Motor) Dwg 40172B
AT/RR(Notes: 6&10)
BTC 12/OP
BTO 12/OP(Note: 3)
PIT/RR

2(3)HV6500, Component Cooling Water from SDCS Heat Exchanger E003
(Code/Category 3/B)(18" Butterfly/Air) Dwg 40127E
BTO 8/CS(Notes: 3&5)
FSTO/CS
PIT/RR

2(3)HV6501, Component Cooling Water from SDCS Heat Exchanger E004
(Code/Category 3/B)(18" Butterfly/Air) Dwg 40127E
BTO 8/CS(Notes: 3&5)
FSTO/CS
PIT/RR

2(3)HV6522A, Letdown Heat Exchanger E062 CCW Return to Critical Loop "B"
(Code/Category 3/A)(8" Butterfly/Air) Dwg 40127E
AT/RR
FSTC/OP

2(3)HV6522B, Letdown Heat Exchanger E062 CCW Supply Fm Critical Loop "B"
(Code/Category 3/A)(8" Butterfly/Air) Dwg 40127C
AT/RR
FSTC/OP

2(3)HV6551, CCW Pump P025 Miniflow Block Valve to Critical Loop "A" Hdr
(Code/Category 3/A)(10" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6552, CCW Pump P025 Miniflow Block Valve to Critical Loop "B" Hdr
(Code/Category 3/A)(10" Butterfly/Motor) Dwg 40127A
AT/RR

2(3)HV6569, PPMU to CCW Loop "B" Makeup Discharge Valve
(Code/Category 2/A)(1 1/2" Gate/Solenoid) Dwg 40127J
AT/RR
BTC 5/OP
BTO 5/OP(Note: 3)
FSTC/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV6570, PPMU to CCW Loop "A" Makeup Discharge Valve
(Code/Category 2/A)(1 1/2" Gate/Solenoid) Dwg 40127J
AT/RR
BTC 5/OP
BTO 5/OP(Note: 3)
FSTC/OP
PIT/RR

2(3)PCV6358, CCW Surge Tank T003A Nitrogen Back-Pressure Regulator
(Code/Category 3/A)(1" Globe/Air) Dwg 40127B
AT/RR
BTC/CS(Note: 25)

2(3)PCV6361, CCW Surge Tank T004B Nitrogen Back-Pressure Regulator
(Code/Category 3/A)(1" Globe/Air) Dwg 40127B
AT/RR
BTC/CS(Note: 25)

2(3)TV9144, CCW From RCP P001 Seal Heat Exchanger (Code/Category 3/B)(1
1/2" Globe/Motor) Dwg 40130A
BMPO/CS(Notes: 6,19&32)
BTC 50/CS(Note: 7)
BTO 50/CS

2(3)TV9154, CCW From RCP P003 Seal Heat Exchanger (Code/Category 3/B)(1
1/2" Globe/Motor) Dwg 40130B
BMPO/CS(Notes: 6,19&32)
BTC 50/CS(Note: 7)
BTO 50/CS

2(3)TV9164, CCW From RCP P004 Seal Heat Exchanger (Code/Category 3/B)(1
1/2" Globe/Motor) Dwg 40130D
BMPO/CS(Notes: 6,19&32)
BTC 50/CS(Note: 7)
BTO 50/CS

2(3)TV9174, CCW From RCP P002 Seal Heat Exchanger (Code/Category 3/B)(1
1/2" Globe/Motor) Dwg 40130C
BMPO/CS(Notes: 6,19&32)
BTC 50/CS(Note: 7)
BTO 50/CS

S2(3)I203MU001 (8-001-D-801), CCW Supply to Control Room Emergency Chiller
E336 (Code/Category 3/A)(8" Ball/Manual) Dwg 40179A
AT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1203MU003 (8-003-D-801), CCW Return from Control Room Emergency
Chiller E336 (Code/Category 3/A)(8" Ball/Manual) Dwg 40179A
AT/RR

S2(3)1203MU007 (8-007-D-801), CCW Return from Control Room Emergency
Chiller E335 (Code/Category 3/A)(8" Ball/Manual) Dwg 40180A
AT/RR

S2(3)1203MU101 (28-101-D-725), CCW Pump 2(3)P024 Discharge Check Valve
(Code/Category 3/C)(28" Split Disc Check/Self Actuated) Dwg 40127A
CVPO/OP
CVTC/OP
CVTO/CS

S2(3)1203MU102 (28-102-D-725), CCW Pump 2(3)P026 Discharge Check Valve
(Code/Category 3/C)(28" Split Disc Check/Self Actuated) Dwg 40127A
CVPO/OP
CVTC/OP
CVTO/CS

S2(3)1203MU103 (28-103-D-725), CCW Pump 2(3)P025 Discharge Check Valve
(Code/Category 3/C)(28" Split Disc Check/Self Actuated) Dwg 40127A
CVPO/OP
CVTC/OP
CVTO/CS

S2(3)1203MU104 (1 1/2-104-D-387), CCW Pump P024 to Chemical Feeder W009
Isolation Valve (Code/Category 3/A)(1-1/2" Globe/Manual) Dwg 40127A
AT/RR

S2(3)1203MU105 (1 1/2-105-D-387), CCW Pump P026 to Chemical Feeder W009
Isolation Valve (Code/Category 3/A)(1-1/2" Globe/Manual) Dwg 40127A
AT/RR

S2(3)1203MU106 (1 1/2-106-D-387), CCW Pump P025 to Chemical Feeder W009
Isolation Valve (Code/Category 3/A)(1-1/2" Globe/Manual) Dwg 40127A
AT/RR

S2(3)1203MU108 (2-108-D-387), CCW Critical Loop "B" From Chem Feeder W009
Isolation Valve (Code/Category 3/A)(2" Globe/Manual) Dwg 40127B
AT/RR

S2(3)1203MU109 (2-109-D-387), CCW Critical Loop "A" From Chem Feeder W009
Isolation Valve (Code/Category 3/A)(2" Globe/Manual) Dwg 40127B
AT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1203MU124 (3-124-D-221), CCW Surge Tank 2MT-003 Drain
(Code/Category 3/B)(3" Gate/Manual) Dwg 40127B
BMO/OP

S2(3)1203MU125 (3-125-D-221), CCW Surge Tank 2MT-004 Drain
(Code/Category 3/B)(3" Gate/Manual) Dwg 40127B
BMO/OP

S2(3)1203MU180 (8-180-D-801), CCW Supply to Control Room Emergency Chiller
E335 (Code/Category 3/A)(8" Ball/Manual) Dwg 40180A
AT/RR

S2(3)1203MU181 (8-181-D-801), CCW Return from Control Room Emergency
Chiller E335 (Code/Category 3/A)(8" Ball/Manual) Dwg 40180A
AT/RR

S2(3)1203MU185 (8-185-D-801), CCW Supply to Control Room Emergency Chiller
E336 (Code/Category 3/A)(8" Ball/Manual) Dwg 40179A
AT/RR

S2(3)1203MU186 (8-186-D-801), CCW Return from Control Room Emergency
Chiller E336 (Code/Category 3/A)(8" Ball/Manual) Dwg 40179A
AT/RR

S2(3)1203MU231 (2-231-D-387), Isolation Valve - CCW Ret From HPSI P018 to
Loop "B" Header (Code/Category 3/A)(2" Globe/Manual) Dwg 40127E
AT/RR

S2(3)1203MU232 (2-232-D-387), Isolation Valve - CCW Ret From HPSI P018 to
Loop "A" Header (Code/Category 3/A)(2" Globe/Manual) Dwg 40127E
AT/RR

S2(3)1203MU243 (8-243-D-801), CCW Supply to Control Room Emergency Chiller
E335 (Code/Category 3/A)(8" Ball/Manual) Dwg 40180A
AT/RR

S2(3)1203MU258 (2-258-D-387), Isolation Valve - CCW Supply to HPSI P018
(Code/Category 3/A)(2" Globe/Manual) Dwg 40127D
AT/RR

S2(3)1203MU259 (2-259-D-387), Isolation Valve - CCW Supply to HPSI P018
(Code/Category 3/A)(2" Globe/Manual) Dwg 40127D
AT/RR

S2(3)1203MU268 (1-268-D-627), Nuclear Plant Service Water Supply to CCW
Loop A (Code/Category 3/AC)(3" Check/Self Actuated) Dwg 40127B
AT/RR
CVTC/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1203MU269 (1-269-D-627), Nuclear Plant Service Water Supply to CCW
Loop B (Code/Category 3/AC)(3" Check/Self Actuated) Dwg 40127B
AT/RR
CVTC/CS

S2(3)1203MU280 (1 1/2-280-D-554), Check Valve - CCW to RCP P001 Seals
(Code/Category 3/C)(1-1/2" Check/Self Actuated) Dwg 40130A
CVTC/CS(Notes: 7&32)
CVTO/OP

S2(3)1203MU281 (1 1/2-281-D-554), Check Valve - CCW to RCP P002 Seals
(Code/Category 3/C)(1-1/2" Check/Self Actuated) Dwg 40130B
CVTC/CS(Notes: 7&32)
CVTO/OP

S2(3)1203MU282 (1 1/2-282-D-554), Check Valve - CCW to RCP P003 Seals
(Code/Category 3/C)(1-1/2" Check/Self Actuated) Dwg 40130C
CVTC/CS(Notes: 7&32)
CVTO/OP

S2(3)1203MU283 (1 1/2-283-D-554), Check Valve - CCW to RCP P004 Seals
(Code/Category 3/C)(1-1/2" Check/Self Actuated) Dwg 40130D
CVTC/CS(Notes: 7&32)
CVTO/OP

S2(3)1203MU305 (3-305-D-681), CCW Emergency Makeup Check Valve
(Code/Category 3/AC)(3" Check/Self Actuated) Dwg 40127B
AT/RR
CVTC/OP
CVTO/OP

S2(3)1203MU307 (3-307-D-681), CCW Emergency Makeup Check Valve - Tank MT004
(Code/Category 3/AC)(3" Check/Self Actuated) Dwg 40127B
AT/RR
CVTC/OP
CVTO/OP

S2(3)1203MU736 (1 1/2-736-D-617), PPMU to CCW Train "A" Makeup Discharge
(Code/Category 3/C)(1 1/2" Check/Self Actuated) Dwg 40127J
CVTC/OP
CVTO/OP

S2(3)1203MU737 (1 1/2-737-D-617), PPMU to CCW Train "B" Makeup Discharge
(Code/Category 3/C)(1 1/2" Check/Self Actuated) Dwg 40127J
CVTC/OP
CVTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

CONDENSATE AND FEEDWATER

2(3)HV1105, Feedwater Bypass Valve for Steam Generator E089
(Code/Category NA/B)(6" Gate/Air) Dwg 40156B
BTC 10/CS(Note: 3)
FSTC/CS
PIT/RR

2(3)HV1106, Feedwater Bypass Valve for Steam Generator E088
(Code/Category NA/B)(6" Gate/Air) Dwg 40156B
BTC 10/CS(Note: 3)
FSTC/CS
PIT/RR

2(3)HV4047, Feedwater Block Valve - Steam Generator E088
(Code/Category NA/B)(16" Gate/Electro Hydraulic) Dwg 40156B
BTC 10/CS(Notes: 3&5)
FSTC/CS
PIT/RR

2(3)HV4048, Feedwater Isolation Valve - Steam Generator E088
(Code/Category 2/B)(16" Gate/Electro Hydraulic) Dwg 40156B
BTC 10/CS(Notes: 3&5)
FSTC/CS
PIT/RR

2(3)HV4051, Feedwater Block Valve - Steam Generator E089
(Code/Category NA/B)(16" Gate/Electro Hydraulic) Dwg 40156B
BTC 10/CS(Notes: 3&5)
FSTC/CS
PIT/RR

2(3)HV4052, Feedwater Isolation Valve - Steam Generator E089
(Code/Category 2/B)(16" Gate/Electro Hydraulic) Dwg 40156B
BTC 10/CS(Notes: 3&5)
FSTC/CS
PIT/RR

2(3)HV5715, Condensate Tank T-120 Isolation Valve
(Code/Category NA/B)(6" Butterfly/Manual) Dwg 40150D
BMC/OP

S2(3)1305MU036 (20-036-C-609), Main Feed Check at Steam Generator E089
(Code/Category 2/C)(20" Check/Self Actuated) Dwg 40141A
CVTC/RR(Notes: 1&18)

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1305MU124 (4-124-C-599), AFW Check Valve at Steam Generator E089
(Code/Category 2/C)(4" Check/Self Actuated) Dwg 40141A
CVTC/CS(Note: 5)
CVTO/CS

S2(3)1305MU129 (20-129-C-609), Main Feed Check at Steam Generator E088
(Code/Category 2/C)(20" Check/Self Actuated) Dwg 40141A
CVTC/RR(Notes: 1&18)

S2(3)1305MU448 (4-448-C-599), AFW Check Valve at Steam Generator E088
(Code/Category 2/C)(4" Check/Self Actuated) Dwg 40141A
CVTC/CS(Note: 5)
CVTO/CS

S2(3)1305MU476 (8-476-D-212), Header Supply to and from Condensate Storage
Tank T-121 (Code/Category 3/B)(8" Gate/Manual) Dwg 40150D
BMO/OP

S2(3)1414MU092 (8-092-W-212), Makeup Block Valve to Cond Storage Tanks
T-120 and T-121 (Code/Category NA/B)(8" Gate/Manual) Dwg 40150D
BMC/OP

CONTAINMENT HVAC (NORMAL)

2(3)HV9821, Containment Isolation Valve - Minipurge Supply
(Code/Category 2/A)(8" Butterfly/Air) Dwg 40171A
AT/OP(Notes: 3&10)
BTC 5/OP
FSTC/OP
PIT/RR

2(3)HV9823, Containment Isolation Valve - Minipurge Supply
(Code/Category 2/A)(8" Butterfly/Air) Dwg 40171A
AT/OP(Notes: 3&10)
BTC 5/OP
FSTC/OP
PIT/RR

2(3)HV9824, Containment Isolation Valve - Minipurge Exhaust
(Code/Category 2/A)(8" Butterfly/Air) Dwg 40171A
AT/OP(Notes: 3&10)
BTC 5/OP
FSTC/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9825, Containment Isolation Valve - Minipurge Exhaust
(Code/Category 2/A)(8" Butterfly/Air) Dwg 40171A
AT/OP(Notes: 3&10)
BTC 5/OP
FSTC/OP
PIT/RR

2(3)HV9948, Containment Purge Supply (Code/Category 2/A)(42" Butterfly/Air)
Dwg 40171A
AT/OP(Notes: 3&10)
BTC 12/CS
FSTC/CS
PIT/RR

2(3)HV9949, Containment Purge Supply
(Code/Category 2/A)(42" Butterfly/Motor) Dwg 40171A
AT/OP(Notes: 3,6&10)
BTC 12/CS
PIT/RR

2(3)HV9950, Containment Purge Exhaust
(Code/Category 2/A)(42" Butterfly/Motor) Dwg 40171A
AT/OP(Notes: 3,6&10)
BTC 12/CS
PIT/RR

2(3)HV9951, Containment Purge Exhaust
(Code/Category 2/A)(42" Butterfly/Air) Dwg 40171A
AT/OP(Notes: 3&10)
BTC 12/CS
FSTC/CS
PIT/RR

CONTAINMENT SPRAY

2(3)HV8150, Isolation Valve - SDCS HX E004 to LPSI Header
(Code/Category 2/B)(10" Globe/Motor) Dwg 40114B
BTC 90/CS(Note: 6)
BTO 90/CS
PIT/RR

2(3)HV8151, Isolation Valve - SDCS HX E003 to LPSI Header
(Code/Category 2/B)(10" Globe/Motor) Dwg 40114B
BTC 90/CS(Note: 6)
BTO 90/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9367, Containment Isolation Valve - Spray Header #1
(Code/Category 2/A)(8" Gate/Motor) Dwg 40114B
AT/RR(Notes: 3,6&10)
BTC 12/OP
BTO 12/OP
PIT/RR

2(3)HV9368, Containment Isolation Valve - Spray Header #2
(Code/Category 2/A)(8" Gate/Motor) Dwg 40114B
AT/RR(Notes: 3,6&10)
BTC 12/OP
BTO 12/OP
PIT/RR

S2(3)1206MU004 (8-004-C-406), Containment Isolation Stop Check Valve -
Spray Header #1 (Code/Category 2/AC)(8" Stop Check/Self Actuated) Dwg
40114B
AT/RR(Notes: 1,5,8,10&18)
CVPO/RR
CVTC/RR
CVTO/RR

S2(3)1206MU006 (8-006-C-406), Containment Isolation Stop Check Valve -
Spray Header #2 (Code/Category 2/AC)(8" Stop Check/Self Actuated) Dwg
40114B
AT/RR(Notes: 1,5,8,10&18)
CVPO/RR
CVTC/RR
CVTO/RR

S2(3)1206MU010 (2-010-C-329), Pump 2(3)P012 Miniflow Stop Check Valve
(Code/Category 2/C)(2" Stop Check/Self Actuated) Dwg 40114A
CVTC/CS
CVTO/OP

S2(3)1206MU011 (2-011-C-329), Pump 2(3)P013 Miniflow Stop Check Valve
(Code/Category 2/C)(2" Stop Check/Self Actuated) Dwg 40114A
CVTC/CS
CVTO/OP

S2(3)1206MU012 (8-012-C-406), Spray Pump 2(3)P012 Discharge Stop Check
Valve (Code/Category 2/C)(8" Stop Check/Self Actuated) Dwg 40114A
CVTC/CS(Notes: 5&16)
CVTO/CS

S2(3)1206MU014 (8-014-C-406), Spray Pump 2(3)P013 Discharge Stop Check
Valve (Code/Category 2/C)(8" Stop Check/Self Actuated) Dwg 40114A
CVTC/CS(Notes: 5&16)
CVTO/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1206MU029 (8-029-C-645), Spray Pump 2(3)P012 Discharge Check Valve to
SDCS HX E004 (Code/Category 2/C)(8" Check/Self Actuated) Dwg 40114A
CVTC/CS(Notes: 5&16)
CVTO/CS

S2(3)1206MU030 (8-030-C-645), Spray Pump 2(3)P013 Discharge Check Valve to
SDCS HX E003 (Code/Category 2/C)(8" Check/Self Actuated) Dwg 40114A
CVTC/CS(Notes: 5&16)
CVTO/CS

DIESEL AIR START

2(3)HV5931A, Diesel Generator 2(3)G002, 20 Cyl., Air Start Relay Valve
(Code/Category NA/B)(1-1/2" Globe/Air) Dwg 40110A
BTC/OP(Note: 17)
BTO/OP

2(3)HV5931B, Diesel Generator 2(3)G002, 16 Cyl., Air Start Relay Valve
(Code/Category NA/B)(1-1/2" Globe/Air) Dwg 40110B
BTC/OP(Note: 17)
BTO/OP

2(3)HV5931C, Diesel Generator 2(3)G002, 20 Cyl., Air Start Relay Valve
(Code/Category NA/B)(1-1/2" Globe/Air) Dwg 40110A
BTC/OP(Note: 17)
BTO/OP

2(3)HV5931D, Diesel Generator 2(3)G002, 16 Cyl., Air Start Relay Valve
(Code/Category NA/B)(1-1/2" Globe/Air) Dwg 40110B
BTC/OP(Note: 17)
BTO/OP

2(3)HV5931E, Diesel Generator 2(3)G003, 20 Cyl., Air Start Relay Valve
(Code/Category NA/B)(1-1/2" Globe/Air) Dwg 40110C
BTC/OP(Note: 17)
BTO/OP

2(3)HV5931F, Diesel Generator 2(3)G003, 16 Cyl., Air Start Relay Valve
(Code/Category NA/B)(1-1/2" Globe/Air) Dwg 40110D
BTC/OP(Note: 17)
BTO/OP

2(3)HV5931G, Diesel Generator 2(3)G003, 20 Cyl., Air Start Relay Valve
(Code/Category NA/B)(1-1/2" Globe/Air) Dwg 40110C
BTC/OP(Note: 17)
BTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV5931H, Diesel Generator 2(3)G003, 16 Cyl., Air Start Relay Valve
(Code/Category NA/B)(1-1/2" Globe/Air) Dwg 40110D
BTC/OP(Note: 17)
BTO/OP

2(3)HY5955A1, Air Start Sol. - Diesel Generator 2(3)G002, 20 Cyl., Right
Bank (Code/Category NA/B)(3/8" 3-Way/Solenoid) Dwg 40110A
BTC/OP(Note: 17)
BTO/OP

2(3)HY5955B1, Air Start Sol. - Diesel Generator 2(3)G002, 16 Cyl., Left
Bank (Code/Category NA/B)(3/8" 3-Way/Solenoid) Dwg 40110B
BTC/OP(Note: 17)
BTO/OP

2(3)HY5955C1, Air Start Sol. - Diesel Generator 2(3)G002, 20 Cyl., Left
Bank (Code/Category NA/B)(3/8" 3-Way/Solenoid) Dwg 40110A
BTC/OP(Note: 17)
BTO/OP

2(3)HY5955D1, Air Start Sol. - Diesel Generator 2(3)G002, 16 Cyl., Right
Bank (Code/Category NA/B)(3/8" 3-Way/Solenoid) Dwg 40110B
BTC/OP(Note: 17)
BTO/OP

2(3)HY5955E2, Air Start Sol. - Diesel Generator 2(3)G003, 20 Cyl., Right
Bank (Code/Category NA/B)(3/8" 3-Way/Solenoid) Dwg 40110C
BTC/OP(Note: 17)
BTO/OP

2(3)HY5955F2, Air Start Sol. - Diesel Generator 2(3)G003, 16 Cyl., Left
Bank (Code/Category NA/B)(3/8" 3-Way/Solenoid) Dwg 40110D
BTC/OP(Note: 17)
BTO/OP

2(3)HY5955G2, Air Start Sol. - Diesel Generator 2(3)G003, 20 Cyl., Left
Bank (Code/Category NA/B)(3/8" 3-Way/Solenoid) Dwg 40110C
BTC/OP(Note: 17)
BTO/OP

2(3)HY5955H2, Air Start Sol. - Diesel Generator 2(3)G003, 16 Cyl., Right
Bank (Code/Category NA/B)(3/8" 3-Way/Solenoid) Dwg 40110D
BTC/OP(Note: 17)
BTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

DIESEL FUEL OIL

S2(3)2421MU039 (2-039-D-627), Diesel Fuel Oil Transfer Pump 2(3)P096
Discharge Check Valve (Code/Category 3/C)(2" Check/Self Actuated) Dwg
40116A
CVTC/OP
CVTO/OP

S2(3)2421MU048 (2-048-D-627), Diesel Fuel Oil Transfer Pump 2(3)P093
Discharge Check Valve (Code/Category 3/C)(2" Check/Self Actuated) Dwg
40116A
CVTC/OP
CVTO/OP

S2(3)2421MU054 (2-054-D-627), Diesel Fuel Oil Transfer Pump 2(3)P095
Discharge Check Valve (Code/Category 3/C)(2" Check/Self Actuated) Dwg
40116A
CVTC/OP
CVTO/OP

S2(3)2421MU063 (2-063-D-627), Diesel Fuel Oil Transfer Pump 2(3)P094
Discharge Check Valve (Code/Category 3/C)(2" Check/Self Actuated) Dwg
40116A
CVTC/OP
CVTO/OP

DIESEL GENERATOR

S2(3)2420MU120 (*-120-P-*), Engine Sump Turbo Supply Check Valve
(Code/Category NA/C)(3/4" Check/Self Actuated) Dwg 40110B
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU121 (*-121-P-*), Engine Sump Turbo Supply Check Valve
(Code/Category NA/C)(3/4" Check/Self Actuated) Dwg 40110B
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU126 (*-126-D-*), Right Bank Air Supply Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40110B
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU127 (*-127-D-*), Air Supply 3-Way Valve
(Code/Category NA/B)(3/8" 3-Way/Air) Dwg 40110C
BTC 10/OP(Note: 17)
BTO 10/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)2420MU128 (*-128-D-*), Left Bank Air Supply Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40110C
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU130 (*-130-D-*), Fuel Priming Pump Supply Header Check Valve
(Code/Category NA/AC)(5/8" Check/Self Actuated) Dwg 40110B
AT/RR
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU132 (*-132-D-*), Engine Driven Pump Discharge Header Check Valve
(Code/Category NA/C)(5/8" Check/Self Actuated) Dwg 40110B
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU134 (*-134-D-*), Right Bank Air Supply Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40110C
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU135 (1-1/2-135-Z-*), Diesel Air Receiver T-338 Air Inlet Check
Valve (Code/Category NA/C)(1 1/2" Check/Self Actuated) Dwg 40110F
CVTC/OP

S2(3)2420MU136 (*-136-P-*), Engine Sump Turbo Supply Check Valve
(Code/Category NA/C)(3/4" Check/Self Actuated) Dwg 40110D
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU137 (*-137-D-*), Air Supply 3-Way Valve
(Code/Category NA/B)(3/8" 3-Way/Air) Dwg 40110B
BTC 10/OP(Note: 17)
BTO 10/OP

S2(3)2420MU138 (*-138-D-*), Left Bank Air Supply Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40110B
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU139 (*-139-D-*), Air Supply 3-Way Valve
(Code/Category NA/B)(3/8" 3-Way/Air) Dwg 40110D
BTC 10/OP(Note: 17)
BTO 10/OP

S2(3)2420MU140 (*-140-P-*), Engine Sump Turbo Supply Check Valve
(Code/Category NA/C)(3/4" Check/Self Actuated) Dwg 40110A
CVTC/OP(Note: 17)
CVTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)2420MU141 (*-141-P-*), Engine Sump Turbo Supply Check Valve
(Code/Category NA/C)(3/4" Check/Self Actuated) Dwg 40110A
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU145 (*-145-P-*), Engine Sump Turbo Supply Check Valve
(Code/Category NA/C)(3/4" Check/Self Actuated) Dwg 40110D
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU146 (1 1/2-146-Z-*), Diesel Air Receiver T-335 Air Inlet Check
Valve (Code/Category NA/C)(1 1/2" Check/Self Actuated) Dwg 40110E
CVTC/OP

S2(3)2420MU150 (*-150-D-*), Fuel Priming Pump Supply Header Check Valve
(Code/Category NA/C)(5/8" Check/Self Actuated) Dwg 40110A
AT/IR
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU152 (*-152-D-*), Engine Driven Pump Discharge Header Check Valve
(Code/Category NA/C)(5/8" Check/Self Actuated) Dwg 40110A
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU155 (*-155-D-*), Right Bank Air Supply Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40110D
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU157 (*-157-D-*), Air Supply 3-Way Valve
(Code/Category NA/B)(3/8" 3-Way/Air) Dwg 40110A
BTC 10/OP(Note: 17)
BTO 10/OP

S2(3)2420MU158 (*-158-D-*), Left Bank Air Supply Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40110A
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU159 (*-159-D-*), Right Bank Air Supply Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40110A
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU160 (1 1/2-160-Z-*), Diesel Air Receiver T-336 Air Inlet Check
Valve (Code/Category NA/C)(1 1/2" Check/Self Actuated) Dwg 40110E
CVTC/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)2420MU161 (*-161-D-*), Left Bank Air Supply Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40110D
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU162 (*-162-P-*), Engine Sump Turbo Supply Check Valve
(Code/Category NA/C)(3/4" Check/Self Actuated) Dwg 40110C
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU163 (*-163-P-*), Engine Sump Turbo Supply Check Valve
(Code/Category NA/C)(3/4" Check/Self Actuated) Dwg 40110C
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU167 (*-167-D-*), Fuel Priming Pump Supply Header Check Valve
(Code/Category NA/AC)(5/8" Check/Self Actuated) Dwg 40110D
AT/RR
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU168 (1 1/2-168-Z-*), Diesel Air Receiver T-337 Air Inlet Check
Valve (Code/Category 3/C)(1 1/2" Check/Self Actuated) Dwg 40110F
CVTC/OP

S2(3)2420MU170 (*-170-D-*), Engine Driven Pump Discharge Header Check Valve
(Code/Category NA/C)(5/8" Check/Self Actuated) Dwg 40110D
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU172 (*-172-D-*), Fuel Priming Pump Supply Header Check Valve
(Code/Category NA/AC)(5/8" Check/Self Actuated) Dwg 40110C
AT/RR
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU174 (*-174-D-*), Engine Driven Pump Discharge Header Check Valve
(Code/Category NA/C)(5/8" Check/Self Actuated) Dwg 40110C
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU289 (*-289-D-*), Downstream Check Valve, DC Auxiliary Turbo Pump
P495 (Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110B
CVTC/OP(Note: 17)
CVTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)2420MU290 (*-290-D-*), Downstream Check Valve, Y-Strainer MF1334
(Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110B
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU291 (*-291-D-*), Downstream Check Valve, AC Lub Oil Turbo Pump
P1015 (Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110B
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU292 (*-292-D-*), Downstream Check Valve, DC Auxiliary Turbo Pump
P494 (Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110A
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU293 (*-293-D-*), Downstream Check Valve, Y-Strainer MF1333
(Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110B
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU294 (*-294-D-*), Downstream Check Valve, AC Lube Oil Turbo Pump
P1014 (Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110A
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU295 (*-295-D-*), Downstream Check Valve, DC Auxiliary Turbo Pump
P497 (Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110D
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU296 (*-296-D-*), Downstream Check Valve, Y-Strainer MF1336
(Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110D
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU297 (*-297-D-*), Downstream Check Valve, AC Lube Oil Turbo Pump
P1017 (Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110D
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU298 (*-298-D-*), Downstream Check Valve, DC Auxiliary Turbo Pump
P496 (Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110C
CVTC/OP(Note: 17)
CVTO/OP

S2(3)2420MU299 (*-299-D-*), Downstream Check Valve, Y-Strainer MF1335
(Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110C
CVTC/OP(Note: 17)
CVTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)2420MU300 (*-300-D-*), Downstream Check Valve, AC Lube Oil Turbo Pump
P1016 (Code/Category NA/C)(1" Check/Self Actuated) Dwg 40110C
CVTC/OP(Note: 17)
CVTO/OP

ESFAS

2(3)HV0352A, Containment Pressure Sensing Line Isolation Valve
(Code/Category 2/B)(3/4" Globe/Solenoid) Dwg 40172A
BTC 5/OP
PIT/RR

2(3)HV0352B, Containment Pressure Sensing Line Isolation Valve
(Code/Category 2/B)(3/4" Globe/Solenoid) Dwg 40172A
BTC 5/OP
PIT/RR

2(3)HV0352C, Containment Pressure Sensing Line Isolation Valve
(Code/Category 2/B)(3/4" Globe/Solenoid) Dwg 40172A
BTC 5/OP
PIT/RR

2(3)HV0352D, Containment Pressure Sensing Line Isolation Valve
(Code/Category 2/B)(3/4" Globe/Solenoid) Dwg 40172A
BTC 5/OP
PIT/RR

FIRE PROTECTION

2(3)HV5686, Contmt Isolation Valve, Outside - Fire Prot. System Water
(Code/Category 2/A)(3" Gate/Motor) Dwg 40184B
AT/RR(Notes: 3,6&10)
BTC 33/CS
BTO 33/RR(Note: 31)
PIT/RR

SA2301MU061 (4-061-C-681), Unit 2 Containment Isolation Valve - Fire
Protection System Water (Code/Category 2/A)(4" Check/Self Actuated)
Dwg 40184B
AT/RR(Note: 10)
CVTC/RR
CVTO/RR(Note: 31)

SA2301MU095 (4-095-C-681), Unit 3 Containment Isol. - Fire Protection
(Inside Containment)(Code/Category 2/A)(4" Check/Self Actuated)
Dwg 40189BS03
AT/RR(Note: 10)
CVTC/RR
CVTO/RR(Note: 31)

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

FUEL STOR. POOL & REFUELING

2(3)LV0227C, RWST To Charging Pump Suction
(Code/Category 2/B)(3" Gate/Motor) Dwg 40124B
BMPO/CS(Note: 19)
BTO 11/CS(Notes: 5&6)
PIT/RR

S2(3)1204MU028 (1-028-D-611), Spent Fuel Makeup Pump P011 Mini Flow Check
Valve (Code/Category 3/C)(1" Check/Self Actuated) Dwg 40122B
CVTC/OP

S2(3)1219MU052 (6-052-C-675), RWST T006 to Charging Pump Suction Header
(Code/Category 2/C)(6" Check/Self Actuated) Dwg 40124B
CVTC/CS
CVTO/CS(Note: 5)

S2(3)1219MU100 (10-100-C-212), Refueling Pool Outlet Inside Containment
(Code/Category 2/A)(10" Gate/Manual) Dwg 40122A
AT/RR(Note: 10)
PIT/RR

S2(3)1219MU101 (10-101-C-212), Refueling Pool Outlet Outside Containment to
Pump 2(3)P014 (Code/Category 2/A)(10" Gate/Manual) Dwg 40122A
AT/RR(Note: 10)
PIT/RR

GAS RADWASTE

2(3)HV7258, Containment Isolation - Waste Gas to Surge Tank
(Code/Category 2/A)(3" Gate/Motor) Dwg 40131A
AT/RR(Notes: 3,6&10)
BTC 40/OP
PIT/RR

2(3)HV7259, Containment Isolation - Safety Injection Tank Vent Header
(Code/Category 2/A)(3" Gate/Air) Dwg 40131A
AT/RR(Notes: 3&10)
BTC 5/OP
FSTC/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

LIQUID RADWASTE

2(3)HV7512, RCDT Pump Discharge from Containment to Radwaste
(Code/Category 2/A)(3" Globe/Motor) Dwg 4013JA
AT/RR(Notes: 3,6&10)
BTC 40/OP
PIT/RR

2(3)HV7513, Containment Isolation - RCS Drain to Radwaste
(Code/Category 2/A)(3" Globe/Air) Dwg 4013IA
AT/RR(Notes: 3&10)
BTC 7/OP
FSTC/OP
PIT/RR

S2(3)1901MU321 (2-321-C-376), Isolation Valve - Coolant Polishing Demin to
Quench Tank (Code/Category 2/A)(2" Globe/Manual) Dwg 40111C
AT/RR(Note: 10)
PIT/RR

S2(3)1901MU573 (2-573-C-611), Check Valve - Coolant Polishing Demin to
Quench Tank (Code/Category 2/A)(2" Check/Self Actuated) Dwg 40111C
AT/RR(Notes: 10&30)

NITROGEN GAS

2(3)HV5434, Nitrogen to Safety Injection Tanks
(Code/Category 2/A)(2" Globe/Air) Dwg 40192C
AT/RR(Notes: 3&10)
BTC 4/OP
FSTC/OP
PIT/RR

2(3)HV5437, Nitrogen Supply to Containment
(Code/Category 2/A)(3/4" Globe/Air) Dwg 40192C
AT/RR(Notes: 3&10)
BTC 2/OP
FSTC/OP
PIT/RR

S2(3)2418MU002 (3/4-002-C-611), Nitrogen Supply to Containment
(Code/Category 2/AC)(3/4" Check/Self Actuated) Dwg 40192C
AT/RR(Note: 10)
CVTC/CS

S2(3)2418MU108 (2-108-C-627), Nitrogen Supply to Safety Injection Tanks
(Code/Category 2/AC)(2" Check/Self Actuated) Dwg 40192C
AT/RR(Note: 10)
CVTC/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)2418MU356 (3/8-356-P-913), Backup Nitrogen Cylinder MV-057 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU358 (3/8-358-P-913), Backup Nitrogen Cylinder MV-058 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU360 (3/8-360-P-913), Backup Nitrogen Cylinder MV-059 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU362 (3/8-362-P-913), Backup Nitrogen Cylinder MV-060 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU364 (3/8-364-P-913), Backup Nitrogen Cylinder MV-061 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU366 (3/8-366-P-913), Backup Nitrogen Cylinder MV-062 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU368 (3/8-368-P-913), Backup Nitrogen Cylinder MV-062 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU371 (3/8-371-P-913), Backup Nitrogen Cylinder MV-064 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU373 (3/8-373-P-913), Backup Nitrogen Cylinder MV-065 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU375 (3/8-375-P-913), Backup Nitrogen Cylinder MV-066 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU377 (3/8-377-P-913), Backup Nitrogen Cylinder MV-067 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU379 (3/8-379-P-913), Backup Nitrogen Cylinder MV-068 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)2418MU387 (3/8-387-P-913), Backup Nitrogen Cylinder MV-069 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU389 (3/8-389-P-913), Backup Nitrogen Cylinder MV-070 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU398 (1-398-D-627), Nitrogen Supply to Component Cooling Water
Surge Tank T004B (Code/Category NA/AC)(1" Check/Self Actuated) Dwg 40127B
AT/RR
CVTC/CS

S2(3)2418MU402 (1-402-D-627), Nitrogen Supply to Component Cooling Water
Surge Tank T003A (Code/Category NA/AC)(1" Check/Self Actuated) Dwg 40127B
AT/RR
CVTC/CS

S2(3)2418MU406 (3/8-406-P-913), Backup Nitrogen Cylinder MV-102 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU408 (3/8-408-P-913), Backup Nitrogen Cylinder MV-103 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU410 (3/8-410-P-913), Backup Nitrogen Cylinder MV-104 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU412 (3/8-412-P-913), Backup Nitrogen Cylinder MV-105 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU414 (3/8-414-P-913), Backup Nitrogen Cylinder MV-106 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

S2(3)2418MU416 (3/8-416-P-913), Backup Nitrogen Cylinder MV-107 Check Valve
(Code/Category NA/C)(3/8" Check/Self Actuated) Dwg 40127H
CVTO/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

NUCLEAR SAMPLING

2(3)HV0500, Post LOCA Hydrogen Monitor
(Code/Category 2/A)(1" Gate/Solenoid) Dwg 40172A
AT/RR(Note: 10)
BTC/OP
BTO/OP
FSTC/OP
PIT/RR

2(3)HV0501, Post LOCA Hydrogen Monitor
(Code/Category 2/A)(1" Gate/Solenoid) Dwg 40172A
AT/RR(Note: 10)
BTC/OP
BTO/OP
FSTC/OP
PIT/RR

2(3)HV0502, Post LOCA Hydrogen Monitor
(Code/Category 2/A)(1" Gate/Solenoid) Dwg 40172A
AT/RR(Note: 10)
BTC/OP
BTO/OP
FSTC/OP
PIT/RR

2(3)HV0503, Post LOCA Hydrogen Monitor
(Code/Category 2/A)(1" Gate/Solenoid) Dwg 40172A
AT/RR(Note: 10)
BTC/OP
BTO/OP
FSTC/OP
PIT/RR

2(3)HV0508, Containment Isolation - RCS Hot Leg
(Code/Category 2/A)(3/4" Globe/Motor) Dwg 40134A
AT/RR(Notes: 3,6&10)
BTC 33/OP
PIT/RR

2(3)HV0509, Containment Isolation - RCS Hot Leg
(Code/Category 2/A)(1" Globe/Air) Dwg 40134A
AT/RR(Notes: 3&10)
BTC 4/OP
FSTC/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV0510, Containment Isolation - Pressurizer Vapor Sample Line
(Code/Category 2/A)(3/4" Globe/Motor) Dwg 40134A
AT/RR(Notes: 3,6&10)
BTC 24/OP
PIT/RR

2(3)HV0511, Containment Isolation - Pressurizer Vapor Sample Line
(Code/Category 2/A)(3/4" Globe/Air) Dwg 40134A
AT/RR(Notes: 3&10)
BTC 5/OP
FSTC/OP
PIT/RR

2(3)HV0512, Containment Isolation - Pressurizer Surge Line Sample
(Code/Category 2/A)(3/4" Globe/Motor) Dwg 40134A
AT/RR(Notes: 3,6&10)
BTC 31/OP
PIT/RR

2(3)HV0513, Containment Isolation - Pressurizer Surge Line Sample
(Code/Category 2/A)(3/4" Globe/Air) Dwg 40134A
AT/RR(Notes: 3&10)
BTC 5/OP
FSTC/OP
PIT/RR

2(3)HV0514, Isolation Valve - Quench Tank to Waste Gas System
(Code/Category 2/A)(3/4" Globe/Motor) Dwg 40111C
AT/RR(Notes: 3,6&10)
BTC 31/OP
PIT/RR

2(3)HV0515, Isol. Valve - Quench Tank/RCDT to Waste Gas Sampling System
(Code/Category 2/A)(3/4" Globe/Air) Dwg 40111C
AT/RR(Notes: 3&10)
BTC 4/OP
FSTC/OP
PIT/RR

2(3)HV0516, Isolation Valve - RCDT to Waste Gas Sampling System
(Code/Category 2/A)(3/4" Globe/Motor) Dwg 40111C
AT/RR(Notes: 3,6&10)
BTC 25/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV0517, RCS Hot Leg #2 Sample Isolation Valve
(Code/Category 2/A)(3/4" Globe/Motor) Dwg 40134A
AT/RR(Notes: 3,6&10)
BTC 29/OP
PIT/RR

2(3)HV0588B, Safety Injection Pump Recirc Line Emergency Sample Valve
(Code/Category 2/A)(1" Globe/Solenoid) Dwg 40134D
AT/RR(Notes: 20)
BTC 4/OP
FSTC/OP

2(3)HV7800, Containment Airborne Rad Monitor Train "A" Isol (Pen 30B)
(Code/Category 2/A)(3/4" Globe/Solenoid) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 1/OP
FSTC/OP
PIT/RR

2(3)HV7801, Containment Airborne Rad Monitor Train "A" Isol (Pen 30B)
(Code/Category 2/A)(3/4" Globe/Solenoid) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 1/OP
FSTC/OP
PIT/RR

2(3)HV7802, Containment Airborne Rad Monitor Train "A" Isol (Pen 30A)
(Code/Category 2/A)(3/4" Globe/Solenoid) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 1/OP
FSTC/OP
PIT/RR

2(3)HV7803, Containment Airborne Rad Monitor Train "B" Isol (Pen 3A)
(Code/Category 2/A)(3/4" Globe/Solenoid) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 1/OP
FSTC/OP
PIT/RR

2(3)HV7805, Containment Isolation - Airborne Rad Monitor Train "B"
(Code/Category 2/A)(3/4" Globe/Solenoid) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 1/OP
FSTC/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV7806, Containment Isolation - Airborne Rad Monitor Train "B"
(Code/Category 2/A)(3/4" Globe/Solenoid) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 1/OP
FSTC/OP
PIT/RR

2(3)HV7810, Containment Airborne Rad Monitor Train "B" Isol (Pen 16C)
(Code/Category 2/A)(3/4" Globe/Solenoid) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 1/OP
FSTC/OP
PIT/RR

2(3)HV7811, Containment Airborne Rad Monitor Train "B" Isol (Pen 27C)
(Code/Category 2/A)(3/4" Globe/Solenoid) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 1/OP
FSTC/OP
PIT/RR

2(3)HV7816, Contmt Isolation - Airborne Rad Monitor Emergency Sample
(Code/Category 2/A)(3/4" Globe/Solenoid) Dwg 40170A
AT/RR(Notes: 3&10)
BTC 1/OP
FSTC/OP
PIT/RR

S2(3)1212MU008 (3/4-008-C-335), Isolation Valve - SI System to Liquid
Sample System Flush (Code/Category 2/A)(3/4" Globe/Manual) Dwg 40134D
AT/RR(Note: 27)
BMC/OP

S2(3)1212MU010 (1/2-010-C-335), Isolation Valve - SI System to Central
Liquid Sample System (Code/Category 2/A)(1/2" Globe/Manual) Dwg 40134D
AT/RR
BMC/OP

S2(3)1212MU261 (1-261-C-556), SI System Loop B to Central Liquid Sample
System Check Valve (Code/Category 2/AC)(1" Check/Self Actuated) Dwg 40114D
AT/RR(Note: 20)
CVTC/OP(Note: 20)

S2(3)1212MU262 (1-262-C-556), SI System Loop A to Central Liquid Sample
System Check Valve (Code/Category 2/AC)(1" Check/Self Actuated) Dwg 40114D
AT/RR(Note: 20)
CVTC/OP(Note: 20)

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1212MU580 (1-580-C-556), Nuclear Service Water to Liquid Sample System
Check Valve (Code/Category 2/AC)(1" Check/Self Actuated) Dwg 40134D
AT/RR(Note: 20)
CVTC/OP(Note: 20)

NUCLEAR SERVICE WATER

2(3)HV7911, Containment Isolation - Nuclear Service Water
(Code/Category 2/A)(3" Globe/Air) Dwg 40140B
AT/RR(Notes: 3&10)
BTC 7/OP
FSTC/OP
PIT/RR

S2(3)1415MU236 (3-236-C-675), Containment Isolation Check Valve - Nuclear
Service Water (Code/Category 2/AC)(3" Check/Self Actuated) Dwg 40140B
AT/RR(Note: 10)
CVTC/CS

REACTOR COOLANT

2(3)HV0296A, Reactor Head Vent (Code/Category 2/B)(1" Globe/Solenoid) Dwg
40111C
BTC 5/CS
BTO 5/CS
FSTC/CS
PIT/RR

2(3)HV0296B, Reactor Head Vent (Code/Category 2/B)(1" Globe/Solenoid) Dwg
40111C
BTC 5/CS
BTO 5/CS
FSTC/CS
PIT/RR

2(3)HV0297A, Pressurizer Vent Valve (Code/Category 2/B)(1" Globe/Solenoid)
Dwg 40111C
BTC 5/CS
BTO 5/CS
FSTC/CS
PIT/RR

2(3)HV0297B, Pressurizer Vent Valve (Code/Category 2/B)(1" Globe/Solenoid)
Dwg 40111C
BTC 5/CS
BTO 5/CS
FSTC/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV0298, Vent to Contmt from Reactor Head/Pressurizer
(Code/Category 2/B)(1" Globe/Solenoid) Dwg 40111C
BTC 5/CS
BTO 5/CS
FSTC/CS
PIT/RR

2(3)HV0299, Quench Tank Inlet from Reactor Head/Pressurizer Vent
(Code/Category 2/B)(1" Globe/Solenoid) Dwg 40111C
BTC 5/CS
BTO 5/CS
FSTC/CS
PIT/RR

2(3)HV9201, Regenerative Heat Exchanger E063 to Auxiliary Spray
(Code/Category 1/B)(2" Globe/Motor) Dwg 40123A
BTC 17/CS(Notes: 5&6)
BTO 17/CS
PIT/RR

2(3)HV9202, Regenerative Heat Exchanger E063 to RCS Loop 2A
(Code/Category 1/B)(2" Globe/Motor) Dwg 40123A
BTC 23/CS(Note: 6)
BTO 23/CS
PIT/RR

2(3)HV9203, Regenerative Heat Exchanger E063 to RCS Loop 1A
(Code/Category 1/B)(2" Globe/Motor) Dwg 40123A
BTC 20/CS(Note: 6)
BTO 20/CS

2(3)HV9204, RCS Loop 2B Letdown to Regenerative Heat Exchanger
(Code/Category 1/B)(2" Globe/Air) Dwg 40123A
BTC 4/CS(Note: 5)
FSTC/CS
PIT/RR

2(3)HV9217, Reactor Coolant System Bleed Off to Volume Control Tank
(Code/Category 2/A)(3/4" Globe/Motor) Dwg 40124A
AT/RR(Notes: 3,5,6&10)
BTC 40/CS
BTO 40/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9218, RCS Bleed Off to VCT Isolation Valve Inside Containment
(Code/Category 2/A)(1" Globe/Air) Dwg 40124A
AT/RR(Notes: 3,5&10)
BTC 5/CS
BTO 5/CS
FSTC/CS
PIT/RR

2(3)PSV0200, Pressurizer Safety Valve (Code/Category 1/C)(6" Safety/Self
Actuated) Dwg 40111B
RVT /RR(Note: 2)

2(3)PSV0201, Pressurizer Safety Valve (Code/Category 1/C)(6" Safety/Self
Actuated) Dwg 40111B
RVT /RR(Note: 2)

2(3)TV0221, Letdown Isolation Valve (Code/Category 1/B)(2" Globe/Air) Dwg
40123A
BTC 4/CS(Note: 5)
FSTC/CS
PIT/RR

S2(3)1201MU019 (2-019-A-554), Auxiliary Spray Check Valve
(Code/Category 1/C)(2" Check/Self Actuated) Dwg 40123A
CVTC/CS
CVTO/CS(Note: 5)

S2(3)1201MU020 (2-020-A-554), Charging Line Check Valve to RCS Loop 2A
(Code/Category 1/C)(2" Check/Self Actuated) Dwg 40123A
CVTC/CS
CVTO/CS

S2(3)1201MU021 (2-021-A-554), Charging Line Check Valve to RCS Loop 1A
(Code/Category 1/C)(2" Check/Self Actuated) Dwg 40123A
CVTC/CS
CVTO/CS

S2(3)1201MU129 (2-129-A-554), Auxiliary Spray to RCS from Charging Pumps
(Code/Category 1/AC)(2" Check/Self Actuated) Dwg 40123A
AT/RR(Note: 10)
CVTC/CS
CVTO/CS

S2(3)1201MU200 (14-200-C-645), Pump 2(3)P016 Suction Check Valve
(Code/Category 2/C)(14" Check/Self Actuated) Dwg 40112B
CVTC/CS
CVTO/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1201MU202 (14-202-C-645), Pump 2(3)P015 Suction Check Valve
(Code/Category 2/C)(14" Check/Self Actuated) Dwg 40112B
CVTC/CS
CVTO/CS

S2(3)1201MU976 (4-976-A-*), Check Valve - Pressurizer Spray Line from RCS
Loop "1A" (Code/Category 1/C)(4" Check/Self Actuated) Dwg 40111D
CVTC/CS

S2(3)1201MU977 (4-977-A-*), Check Valve - Pressurizer Spray Line from RCS
Loop "1B" (Code/Category 1/C)(4" Check/Self Actuated) Dwg 40111D
CVTC/CS

RESP. & SERVICE AIR SYSTEM

2(3)HV5368, Containment Isolation Valve - Instrument Air
(Code/Category 2/A)(1-1/2" Globe/Air) Dwg 40191G
AT/RR(Notes: 3&10)
BTC 5/CS
FSTC/CS
PIT/RR

S2(3)2417MU016 (1-1/2-016-C-617), Instrument Air Contmt Isol Check - Inside
Containment (Code/Category 2/AC)(1-1/2" Check/Self Actuated) Dwg 40191G
AT/RR(Note: 10)
CVTC/CS

S2(3)2423MU017 (2-017-C-627), Containment Isolation Valve - Service Air
(Code/Category 2/AC)(2" Check/Self Actuated) Dwg 40191E
AT/RR(Notes: 10&30)
CVTC/RR

S2(3)2423MU055 (2-055-C-387), Containment Isolation Valve - Service Air
(Code/Category 2/A)(2" Globe/Manual) Dwg 40191E
AT/RR(Note: 10)

SAFETY INJECTION

2(3)HV0396, Flow Control Valve - LPSI Pumps to Shutdown Cooling System
(Code/Category 2/B)(10" Globe/Motor) Dwg 40112B
BMPC/CS(Note: 19)
BTO 80/CS(Note: 6)
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV8152, Isolation Valve - SDCS Heat Exchanger E004 Inlet
(Code/Category 2/B)(12" Gate/Motor) Dwg 40112B
BMPO/CS(Note: 19)
BTC 100/CS(Note: 6)
BTO 100/CS
PIT/RR

2(3)HV8153, Isolation Valve - SDCS Heat Exchanger E003 Inlet
(Code/Category 2/B)(12" Gate/Motor) Dwg 40112B
BMPO/CS(Note: 19)
BTC 100/CS(Note: 6)
BTO 100/CS
PIT/RR

2(3)HV8160, Flow Control Valve - SDCS Heat Exchanger Bypass
(Code/Category 2/B)(10" Globe/Motor) Dwg 40112B
BMPC/CS(Note: 19)
BTC 40/CS(Note: 6)
PIT/RR

2(3)HV8161, Block Valve - SDCS Heat Exchanger Bypass to LPSI
(Code/Category 2/B)(14" Gate/Motor) Dwg 40112B
BMPO/CS(Note: 19)
BTC 105/CS(Note: 6)
PIT/RR

2(3)HV8162, LPSI Pump 2(3)P015 Miniflow Block Valve
(Code/Category 2/A)(3" Gate/Motor) Dwg 40112B
AT/RR(Note: 20)
BMPC/CS(Note: 19)
BTC 12/CS(Note: 6)
PIT/RR

2(3)HV8163, LPSI Pump 2(3)P016 Miniflow Block Valve
(Code/Category 2/A)(3" Gate/Motor) Dwg 40112B
AT/RR(Note: 20)
BMPC/CS(Note: 19)
BTC 12/CS(Note: 6)
PIT/RR

2(3)HV9300, East Refueling Water Tank Outlet Valve
(Code/Category 2/B)(24" Gate/Motor) Dwg 40112A
BTC 45/CS(Note: 6)
PIT/RR

2(3)HV9301, West Refueling Water Tank Outlet Valve
(Code/Category 2/B)(24" Gate/Motor) Dwg 40112A
BTC 45/CS(Note: 6)
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9302, Control Valve - Contmt Emergency Sump to Spray Pump 2(3)P013
(Code/Category 2/B)(24" Butterfly/Motor) Dwg 40112A
BTO 39.5/OP(Notes: 3&6)
BTC 39.5/OP
PIT/RR

2(3)HV9303, Control Valve - Contmt Emergency Sump to Spray Pump 2(3)P012
(Code/Category 2/B)(24" Butterfly/Motor) Dwg 40112A
BTO 39.5/OP(Notes: 3&6)
BTC 39.5/OP
PIT/RR

2(3)HV9304, Control Valve - Containment Emergency Sump Outlet
(Code/Category 2/B)(24" Butterfly/Motor) Dwg 40112A
BTO 39.5/OP(Notes: 3&6)
PIT/RR

2(3)HV9305, Control Valve - Containment Emergency Sump Outlet
(Code/Category 2/B)(24" Butterfly/Motor) Dwg 40112A
BTO 39.5/OP(Notes: 3&6)
PIT/RR

2(3)HV9306, Isolation Valve - SI Recirculation to RWST T005
(Code/Category 2/A)(3" Gate/Motor) Dwg 40114D
AT/RR>Note: 20
BTC 40/OP(Notes: 3&6)
PIT/RR

2(3)HV9307, Isolation Valve - SI Recirculation to RWST T005
(Code/Category 2/A)(3" Gate/Motor) Dwg 40114D
AT/RR(Note: 20)
BTC 40/OP(Notes: 3&6)
PIT/RR

2(3)HV9322, Control Valve - LPSI Header to RCS Loop 1A
(Code/Category 2/B)(8" Globe/Motor) Dwg 40112D
BTC 16/OP(Notes: 3&6)
BTO 16/OP
PIT/RR

2(3)HV9323, Control Valve - HPSI Header #2 to RCS Loop 1A
(Code/Category 2/B)(2" Globe/Motor) Dwg 40112C
BTC 15/OP(Notes: 3&6)
BTO 15/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9324, Control Valve - HPSI Header #1 to RCS Loop 1A
(Code/Category 2/B)(2" Globe/Motor) Dwg 40112C
BTC 15/OP(Notes: 3&6)
BTO 15/OP
PIT/RR

2(3)HV9325, Control Valve - LPSI Header to RCS Loop 1B
(Code/Category 2/B)(8" Globe/Motor) Dwg 40112D
BTC 16/OP(Notes: 3&6)
BTO 16/OP
PIT/RR

2(3)HV9326, Control Valve - HPSI Header #2 to RCS Loop 1B
(Code/Category 2/B)(2" Globe/Motor) Dwg 40112C
BTC 15/OP(Notes: 3&6)
BTO 15/OP
PIT/RR

2(3)HV9327, Control Valve - HPSI Header #1 to RCS Loop 1B
(Code/Category 2/B)(2" Globe/Motor) Dwg 40112C
BTC 15/OP(Notes: 3&6);
BTO 15/OP
PIT/RR

2(3)HV9328, Control Valve - LPSI Header to RCS Loop 2A
(Code/Category 2/B)(8" Globe/Motor) Dwg 40112D
BTC 16/OP(Notes: 3&6)
BTO 16/OP
PIT/RR

2(3)HV9329, Control Valve - HPSI Header #2 to RCS Loop 2A
(Code/Category 2/B)(2" Globe/Motor) Dwg 40112C
BTC 15/OP(Notes: 3&6)
BTO 15/OP
PIT/RR

2(3)HV9330, Control Valve - HPSI Header #1 to RCS Loop 2A
(Code/Category 2/B)(2" Globe/Motor) Dwg 40112C
BTC 15/OP(Notes: 3&6)
BTO 15/OP
PIT/RR

2(3)HV9331, Control Valve - LPSI Header to RCS Loop 2B
(Code/Category 2/B)(8" Globe/Motor) Dwg 40112D
BTC 16/OP(Notes: 3&6)
BTO 16/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9332, Control Valve - HPSI Header #2 to RCS Loop 2B
(Code/Category 2/B)(2" Globe/Motor) Dwg 40112C
BTC 15/OP(Notes: 3&6)
BTO 15/OP
PIT/RR

2(3)HV9333, Control Valve - HPSI Header #1 to RCS Loop 2B
(Code/Category 2/B)(2" Globe/Motor) Dwg 40112C
BTC 15/OP(Notes: 3&6)
BTO 15/OP
PIT/RR

2(3)HV9334, Containment Isolation - SI Tank Drain Header to RWST 2T005
(Code/Category 2/A)(2" Globe/Motor) Dwg 40114D
AT/RR(Notes: 3,6&10)
BTC 13/OP
PIT/RR

2(3)HV9336, Isolation Valve - SDCS to LPSI Pump Suction
(Code/Category 2/B)(16" Gate/Motor) Dwg 40112D
BMPO/CS(Note: 19)
BTC 80/OP(Note: 6)
BTO 80/OP
PIT/RR

2(3)HV9337, Isolation Valve - SDCS to LPSI Pump Suction
(Code/Category 1/A)(16" Gate/Motor) Dwg 40112D
AT/RR(Notes: 5,6&28)
BTC 103/CS
BTO 103/CS
PIT/RR

2(3)HV9339, Isolation Valve - SDCS from RCS Loop 2
(Code/Category 1/A)(16" Gate/Motor) Dwg 40112D
AT/RR(Notes: 5,6&28)
BTC 103/CS
BTO 103/CS
PIT/RR

2(3)HV9340, Safety Injection Tank T008 Outlet Valve to RCS Loop 1A
(Code/Category 1/B)(8" Gate/Motor) Dwg 40113A
BTC 35/CS
BTO 35/CS(Notes: 5&6)
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9341, Safety Injection Tank T008 Drain Isolation Valve
(Code/Category 1/A)(1" Globe/Air) Dwg 40113A
AT/RR(Note: 20)
BTC 10/CS(Note: 3)
FSTC/CS
PIT/RR

2(3)HV9345, Safety Injection Tank T008 Vent Valve
(Code/Category 2/A)(1" Globe/Solenoid) Dwg 40113A
AT/RR(Note: 26)
BTC 2/CS
BTO 2/CS(Note: 5)
FSTC/CS
PIT/RR

2(3)HV9347, Safety Injection Recirc Return to RWST T005 Isolation Valve
(Code/Category 2/A)(3" Gate/Motor) Dwg 40114D
AT/RR(Note: 20)
BTC 40/OP(Notes: 3&6)
PIT/RR

2(3)HV9348, Safety Injection Recirc Return to RWST T005 Isolation Valve
(Code/Category 2/A)(3" Gate/Motor) Dwg 40114D
AT/RR(Note: 20)
BTC 40/OP(Notes: 3&6)
PIT/RR

2(3)HV9350, Safety Injection Tank T009 Outlet Valve to RCS Loop 1B
(Code/Category 1/B)(8" Gate/Motor) Dwg 40113A
BTC 35/CS
BTO 35/CS(Notes: 5&6)
PIT/RR

2(3)HV9351, Safety Injection Tank T007 Drain Isolation Valve
(Code/Category 1/A)(1" Globe/Air) Dwg 40113A
AT/RR(Note: 20)
BTC 10/CS(Note: 3)
FSTC/CS
PIT/RR

2(3)HV9353, Isolation Valve Shutdown System Recirculation
(Code/Category 2/B)(6" Gate/Motor) Dwg 40112D
BTO 200/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9355, Safety Injection Tank T007 Vent Valve
(Code/Category 2/A)(1" Globe/Solenoid) Dwg 40113A
AT/RR(Notes: 26)
BTC 2/CS
BTO 2/CS(Note: 5)
FSTC/CS
PIT/RR

2(3)HV9359, Shutdown Cooling Warm-Up Valve
(Code/Category 2/B)(6" Gate/Motor) Dwg 40112D
BTO 200/CS
PIT/RR

2(3)HV9360, Safety Injection Tank T009 Outlet Valve to RCS Loop 2A
(Code/Category 1/B)(8" Gate/Motor) Dwg 40113B
BTC 32/CS
BTO 32/CS(Notes: 5&6)
PIT/RR

2(3)HV9361, Safety Injection Tank T009 Drain Isolation Valve
(Code/Category 1/A)(1" Globe/Air) Dwg 40113B
AT/RR(Note: 20)
BTC 10/CS(Note: 3)
FSTC/CS
PIT/RR

2(3)HV9365, Safety Injection Tank T009 Vent Valve
(Code/Category 2/A)(1" Globe/Solenoid) Dwg 40113B
AT/RR(Note: 26)
BTC 2/CS
BTO 2/CS(Note: 5)
FSTC/CS
PIT/RR

2(3)HV9370, Safety Injection Tank T010 Outlet Valve to RCS Loop 2B
(Code/Category 1/B)(8" Gate/Motor) Dwg 40113B
BTC 35/CS
BTO 35/CS(Notes: 5&6)
PIT/RR

2(3)HV9371, Safety Injection Tank T010 Drain Isolation Valve
(Code/Category 1/A)(1" Globe/Air) Dwg 40113B
AT/RR(Note: 20)
BTC 10/CS(Note: 3)
FSTC/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9375, Safety Injection Tank T009 Vent Valve
(Code/Category 2/A)(1" Globe/Solenoid) Dwg 40113B
AT/RR(Note: 26)
BTC 2/CS
BTO 2/CS(Note: 5)
FSTC/CS
PIT/RR

2(3)HV9377, SDCS Bypass to LPSI Suction Isolation Valve
(Code/Category 1/A)(8" Gate/Motor) Dwg 40112D
AT/RR(Notes: 5,6&28)
BTC 240/CS
BTO 240/CS
PIT/RR

2(3)HV9378, SDCS Bypass to LPSI Suction Isolation Valve
(Code/Category 1/A)(8" Gate/Motor) Dwg 40112D
AT/RR(Notes: 5,6&28)
BTC 240/CS
BTO 240/CS
PIT/RR

2(3)HV9379, SDCS Bypass to LPSI Suction Isolation Valve - Seal
(Code/Category 2/B)(8" Gate/Motor) Dwg 40112D
BMPO/CS(Note: 19)
BTC 14/OP(Note: 6)
BTO 14/OP
PIT/RR

2(3)HV9420, Control Valve - HPSI Header #1 to RCS Loop 2 Hot Leg
(Code/Category 2/A)(3" Globe/Motor) Dwg 40112C
AT/RR(Notes: 6&10)
BTO 11/CS
PIT/RR

2(3)HV9433, Reactor Coolant Loop 1B Hot Leg Injection Drain Valve
(Code/Category 1/A)(1" Globe/Air) Dwg 40112C
AT/RR(Note: 20)
BTC 10/OP(Note: 3)
FSTC/CS

2(3)HV9434, Control Valve - HPSI Header #2 to RCS Loop 1 Hot Leg
(Code/Category 2/A)(3" Globe/Motor) Dwg 40112C
AT/RR(Notes: 6&10)
BTO 11/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV9437, Reactor Coolant Loop 1A Hot Leg Injection Drain Valve
(Code/Category 1/A)(1" Globe/Air) Dwg 40112C
AT/RR(Note: 20)
BTC 10/OP(Note: 3)
FSTC/CS

2(3)PSV9349, Shutdown Cooling System Relief Valve From RCS Loop No. 2
(Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40112D
RVT /RR(Note: 15)

S2(3)1201MU015 (14-015-C-173), Shutdown Cooling Line to LPSI P015
(Code/Category 2/B)(14" Gate/Manual) Dwg 40112B
PIT/RR(Note: 14)

S2(3)1201MU018 (14-018-C-173), Shutdown Cooling Line to LPSI P016
(Code/Category 2/B)(14" Gate/Manual) Dwg 40112B
PIT/RR(Note: 14)

S2(3)1204MR433 (V-433), LPSI 016 Casing Vent
(Code/Category 2/B)(1/2" Globe/Manual) Dwg 40112B
BMO/OP(Note: 14)

S2(3)1204MU001 (24-001-C-724), RWST 2T005 to Spray Pump 2(3)P012 Suction
Header (Code/Category 2/C)(24" Split Disc Check/Self Actuated) Dwg 40112A
CVPO/OP(Notes: 1&18)
CVTC/RR
CVTO/RR

S2(3)1204MU002 (24-002-C-724), RWST 2T005 to Spray Pump 2(3)P013 Suction
Header (Code/Category 2/C)(24" Split Disc Check/Self Actuated) Dwg 40112A
CVPO/OP(Notes: 1&18)
CVTC/RR
CVTO/RR

S2(3)1204MU003 (24-003-C-724), Outlet Check Valve - Containment Emergency
Sump (Code/Category 2/C)(24" Split Disc Check/Self Actuated) Dwg 40112A
CVPO/RR(Notes: 1,5&18)
CVTO/RR

S2(3)1204MU004 (24-004-C-724), Outlet Check Valve - Containment Emergency
Sump (Code/Category 2/C)(24" Split Disc Check/Self Actuated) Dwg 40112A
CVPO/RR(Notes: 1,5&18)
CVTO/RR

S2(3)1204MU006 (10-006-C-675), HPSI Pumps 2(3)P017 and 2(3)P018 Suction
Check Valve (Code/Category 2/C)(10" Check/Self Actuated) Dwg 40112A
CVPO/OP
CVTO/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1204MU008 (10-008-C-675), HPSI Pumps 2(3)P018 and 2(3)P019 Suction
Check Valve (Code/Category 2/C)(10" Check/Self Actuated) Dwg 40112A
CVPO/OP
CVTO/RR

S2(3)1204MU012 (4-012-C-358), HPSI Pump 2(3)P017 Discharge Check Valve
(Code/Category 2/C)(4" Stop Check/Self Actuated) Dwg 40112A
CVTC/CS(Note: 5)
CVTO/CS

S2(3)1204MU015 (4-015-C-358), HPSI Pump 2(3)P019 Discharge Check Valve
(Code/Category 2/C)(4" Stop Check/Self Actuated) Dwg 40112A
CVTC/CS(Note: 5)
CVTO/CS

S2(3)1204MU016 (4-016-C-358), HPSI Pump 2(3)P018 Discharge Check Valve
(Code/Category 2/C)(4" Stop Check/Self Actuated) Dwg 40112A
CVTC/CS(Note: 5)
CVTO/CS

S2(3)1204MU017 (4-017-C-553), HPSI Pumps 2(3)P018 & 2(3)P019 to #2 High
Pressure Header (Code/Category 2/C)(4" Check/Self Actuated) Dwg 40112A
CVTC/CS
CVTO/CS(Note: 5)

S2(3)1204MU018 (3-018-A-551), HPSI Combined Header to RCS Loop 1A Check
Valve (Code/Category 1/AC)(3" Check/Self Actuated) Dwg 40112C
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU019 (3-019-A-551), HPSI Combined Header to RCS Loop 1B Check
Valve (Code/Category 1/AC)(3" Check/Self Actuated) Dwg 40112C
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU020 (3-020-A-551), HPSI Combined Header to RCS Loop 2A Check
Valve (Code/Category 1/AC)(3" Check/Self Actuated) Dwg 40112C
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU021 (3-021-A-551), HPSI Combined Header to RCS Loop 2B Check
Valve (Code/Category 1/AC)(3" Check/Self Actuated) Dwg 40112C
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1204MU022 (16-022-C-173), RWST T005 Isolation Valve to LPSI Pump P015
Suction (Code/Category 2/B)(16" Gate/Manual) Dwg 40112B
BMC/CS

S2(3)1204MU023 (16-023-C-173), RWST T005 Isolation Valve to LPSI Pump P015
Suction (Code/Category 2/B)(16" Gate/Manual) Dwg 40112B
BMC/CS

S2(3)1204MU024 (10-024-C-406), LPSI Pump 2(3)P015 Discharge Stop Check
Valve (Code/Category 2/C)(10" Stop Check/Self Actuated) Dwg 40112B
CVTC/CS(Note: 5)
CVTO/CS

S2(3)1204MU025 (10-025-C-406), LPSI Pump 2(3)P016 Discharge Stop Check
Valve (Code/Category 2/C)(10" Stop Check/Self Actuated) Dwg 40112B
CVTC/CS
CVTO/CS

S2(3)1204MU027 (12-027-A-551), Safety Injection Headers to RCS Loop 1A
(Code/Category 1/AC)(12" Check/Self Actuated) Dwg 40113A
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU029 (12-029-A-551), Safety Injection Headers to RCS Loop 1B
(Code/Category 1/AC)(12" Check/Self Actuated) Dwg 40113A
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU031 (12-031-A-551), Safety Injection Headers to RCS Loop 2A
(Code/Category 1/AC)(12" Check/Self Actuated) Dwg 40113B
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU033 (12-033-A-551), Safety Injection Headers to RCS Loop 2B
(Code/Category 1/AC)(12" Check/Self Actuated) Dwg 40113B
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU034 (2-034-C-329), HPSI 2(3)P017 Miniflow
(Code/Category 2/C)(2" Stop Check/Self Actuated) Dwg 40112A
CVTC/CS
CVTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1204MU035 (2-035-C-329), HPSI 2(3)P019 Miniflow
(Code/Category 2/C)(2" Stop Check/Self Actuated) Dwg 40112A
CVTC/CS
CVTO/OP

S2(3)1204MU036 (2-036-C-329), HPSI 2(3)P018 Train "A" Miniflow
(Code/Category 2/C)(2" Stop Check/Self Actuated) Dwg 40112A
CVTC/CS
CVTO/OP

S2(3)1204MU037 (2-037-C-329), LPSI Pump 2(3)P015 Miniflow Stop Check Valve
(Code/Category 2/C)(2" Stop Check/Self Actuated) Dwg 40112B
CVTC/CS
CVTO/OP

S2(3)1204MU040 (12-040-A-551), Safety Injection Tank T008 Outlet Check
Valve (Code/Category 1/AC)(12" Check/Self Actuated) Dwg 40113A
AT/RR(Notes: 1,5,18&28)
CVPO/CS
CVTC/CS
CVTO/RR

S2(3)1204MU041 (12-041-A-551), Safety Injection Tank T007 Outlet Check
Valve (Code/Category 1/AC)(12" Check/Self Actuated) Dwg 40113A
AT/RR(Notes: 1,5,18&28)
CVPO/CS
CVTC/CS
CVTO/RR

S2(3)1204MU042 (12-042-A-551), Safety Injection Tank T009 Outlet Check
Valve (Code/Category 1/AC)(12" Check/Self Actuated) Dwg 40113B
AT/RR(Notes: 1,5,18&28)
CVPO/CS
CVTC/CS
CVTO/RR

S2(3)1204MU043 (12-043-A-551), Safety Injection Tank T010 Outlet Check
Valve (Code/Category 1/AC)(12" Check/Self Actuated) Dwg 40113B
AT/RR(Notes: 1,5,18&28)
CVPO/CS
CVTC/CS
CVTO/RR

S2(3)1204MU063 (2-063-C-329), LPSI Pump 2(3)P016 Miniflow Stop Check Valve
(Code/Category 2/C)(2" Stop Check/Self Actuated) Dwg 40112B
CVTC/CS
CVTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1204MU072 (8-072-A-552), LPSI Check Valve to RCS Loop 1A
(Code/Category 1/AC)(8" Check/Self Actuated) Dwg 40112D
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU073 (8-073-A-552), LPSI Check Valve to RCS Loop 1B
(Code/Category 1/AC)(8" Check/Self Actuated) Dwg 40112D
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU074 (8-074-A-552), LPSI Check Valve to RCS Loop 2A
(Code/Category 1/AC)(8" Check/Self Actuated) Dwg 40112D
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU075 (8-075-A-552), LPSI Check Valve to RCS Loop 2B
(Code/Category 1/AC)(8" Check/Self Actuated) Dwg 40112D
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU077 (16-077-C-645), LPSI Pump 2(3)P016 Suction Header Check
Valve (Code/Category 2/C)(16" Check/Self Actuated) Dwg 40112A
CVPO/OP
CVTC/CS(Note: 16)
CVTO/RR

S2(3)1204MU084 (16-084-C-645), LPSI Pump 2(3)P015 Suction Check Valve
(Code/Category 2/C)(16" Check/Self Actuated) Dwg 40112A
CVPO/OP
CVTC/CS(Note: 16)
CVTO/RR

S2(3)1204MU087 (16-087-C-675), Spray Pump 2(3)P013 Suction Check Valve
(Code/Category 2/C)(16" Check/Self Actuated) Dwg 40114A
CVTO/CS(Note: 5)

S2(3)1204MU088 (16-088-C-675), Spray Pump 2(3)P012 Suction Check Valve
(Code/Category 2/C)(16" Check/Self Actuated) Dwg 40114A
CVTO/CS(Note: 5)

S2(3)1204MU099 (2-099-C-334), Containment Isolation, SI Tank to Drain
Header to RWST 2T005 (Code/Category 2/A)(2" Globe/Manual) Dwg 40114D
AT/RR(Note: 10)
BMC/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1204MU104 (2-104-C-329), HPSI 2(3)P018 Train "B" Miniflow
(Code/Category 2/C)(2" Stop Check/Self Actuated) Dwg 40112A
CVTC/CS
CVTO/OP

S2(3)1204MU132 (1/2-132-D-279), LPSI 015 Casing Vent
(Code/Category 2/B)(1/2" Gate/Manual) Dwg 40112B
BMO/OP(Note: 14)

S2(3)1204MU152 (3-152-A-551), To #2 HPSI Header
(Code/Category 1/AC)(3" Check/Self Actuated) Dwg 40111A
AT/RR(Note: 28)
CVTC/CS
CVTO/CS

S2(3)1204MU154 (2-154-C-036), CVCS to RCS Loop 2 Hot Leg Injection
(Code/Category 2/B)(2" Gate/Manual) Dwg 40112C
BMO/OP

S2(3)1204MU155 (3-155-C-551), HPSI Header #1 to RCS Loop 2 Hot Leg
(Code/Category 2/C)(3" Check/Self Actuated) Dwg 40112C
CVTO/CS(Note: 5)

S2(3)1204MU156 (3-156-A-551), HPSI Header #1 to RCS Loop 2 Hot Leg Inlet
Check Valve (Code/Category 1/AC)(3" Check/Self Actuated) Dwg 40112D
AT/RR(Notes: 5&28)
CVTC/CS
CVTO/CS

S2(3)1204MU157 (3-157-A-550), HPSI Header #2 to RCS Loop 1 Hot Leg
(Code/Category 1/AC)(3" Check/Self Actuated) Dwg 40112C
AT/RR(Notes: 5,10&29)
CVTC/CS
CVTO/CS

S2(3)1204MU158 (3-158-A-550), HPSI Header #1 to RCS Loop 2 Hot Leg
(Code/Category 1/AC)(3" Check/Self Actuated) Dwg 40112C
AT/RR(Notes: 5,10&29)
CVTC/CS
CVTO/CS

S2(3)1204MU199 (16-199-C-645), LPSI Pump 2(3)P016 Suction Header Check
Valve (Code/Category 2/C)(16" Check/Self Actuated) Dwg 40112A
CVPO/OP
CVTC/CS(Note: 16)
CVTO/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1204MU201 (16-201-C-645), LPSI Pump 2(3)P015 Suction Header Check Valve (Code/Category 2/C)(16" Check/Self Actuated) Dwg 40112A
CVPO/OP
CVTC/CS(Note: 16)
CVTO/RR

SALT WATER COOLING

2(3)HV6200, Salt Water Cooling System Pump 2(3)P112 Discharge Valve (Code/Category 3/B)(30" Butterfly/Air) Dwg 40126A
BTO 18/OP(Note: 3)
FSTO/OP
PIT/RR

2(3)HV6201, Salt Water Cooling System Pump 2(3)P113 Discharge Valve (Code/Category 3/B)(30" Butterfly/Air) Dwg 40126A
BTO 18/OP(Note: 3)
FSTO/OP
PIT/RR

2(3)HV6202, Salt Water Cooling System Pump 2(3)P307 Discharge Valve (Code/Category 3/B)(30" Butterfly/Air) Dwg 40126B
BTO 18/OP(Note: 3)
FSTO/OP
PIT/RR

2(3)HV6203, Salt Water Cooling System Pump 2(3)P114 Discharge Valve (Code/Category 3/B)(30" Butterfly/Air) Dwg 40126B
BTO 18/OP(Note: 3)
FSTO/OP
PIT/RR

2(3)HV6376, Service Water to SWC Pump P112A Control Valve (Code/Category 3/B)(2" Globe/Solenoid) Dwg 40126A
BTO 5/OP
FSTO/OP
PIT/RR

2(3)HV6377, Service Water to SWC Pump P113B Control Valve (Code/Category 3/B)(2" Globe/Solenoid) Dwg 40126A
BTO 5/OP
FSTO/OP
PIT/RR

2(3)HV6378, Service Water to SWC Pump P307A Control Valve (Code/Category 3/B)(2" Globe/Solenoid) Dwg 40126B
BTO 5/OP
FSTO/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV6379, Service Water to SWC Pump P114B Control Valve
(Code/Category 3/B)(2" Globe/Solenoid) Dwg 40126B
BTO 5/OP
FSTO/OP
PIT/RR

2(3)HV6494, SWCS from CCW Heat Exchanger E002B to Overflow at Seawall
(Code/Category 3/B)(30" Butterfly/Motor) Dwg 40127C
BMO/OP(Notes: 6)
PIT/RR

2(3)HV6495, Salt Water from CCW Heat Exchanger E002B
(Code/Category 3/B)(30" Butterfly/Motor) Dwg 40127C
BTO 75/OP(Note: 6)
PIT/RR

2(3)HV6496, SWCS from CCW Heat Exchanger E001A to Overflow at Seawall
(Code/Category 3/B)(30" Butterfly/Motor) Dwg 40127C
BMO/OP(Note: 6)
PIT/RR

2(3)HV6497, Salt Water from CCW Heat Exchanger E001A
(Code/Category 3/B)(30" Butterfly/Motor) Dwg 40127C
BTO 75/OP(Note: 6)
PIT/RR

S2(3)1413MU009 (30-009-D-722), SWCS Pump 2(3)P112 Discharge Check Valve
(Code/Category 3/C)(30" Split Disc Check/Self Actuated) Dwg 40126A
CVTC/OP
CVTO/OP

S2(3)1413MU010 (30-010-D-722), SWCS Pump 2(3)P113 Discharge Check Valve
(Code/Category 3/C)(30" Split Disc Check/Self Actuated) Dwg 40126A
CVTC/OP
CVTO/OP

S2(3)1413MU011 (30-011-D-722), SWCS Pump 2(3)P307 Discharge Check Valve
(Code/Category 3/C)(30" Split Disc Check/Self Actuated) Dwg 40126B
CVTC/OP
CVTO/OP

S2(3)1413MU012 (30-012-D-722), SWCS Pump 2(3)P114 Discharge Check Valve
(Code/Category 3/C)(30" Split Disc Check/Self Actuated) Dwg 40126B
CVTC/OP
CVTO/OP

S2(3)1413MU013 (1-013-D-691), SWCS Pump 2(3)P112 Recirculation to Cyclone
Separator (Code/Category 3/C)(1" Check/Self Actuated) Dwg 40126A
CVTO/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1413MU016 (1-016-D-691), SWCS Pump 2(3)P113 Recirculation to Cyclone Separator (Code/Category 3/C)(1" Check/Self Actuated) Dwg 40126A
CVTO/OP

S2(3)1413MU021 (1-021-D-691), SWCS Pump 2(3)P307 Recirculation to Cyclone Separator (Code/Category 3/C)(1" Check/Self Actuated) Dwg 40126B
CVTO/OP

S2(3)1413MU024 (1-024-D-691), SWCS Pump 2(3)P114 Recirculation to Cyclone Separator (Code/Category 3/C)(1" Check/Self Actuated) Dwg 40126B
CVTO/OP

S2(3)1413MU047 (1-047-D-691), Check Valve Service Water Supply to Salt Water Pump 2(3)P112 (Code/Category 3/C)(1" Check/Self Actuated) Dwg 40126A
CVTC/OP

S2(3)1413MU048 (1-048-D-691), Check Valve Service Water Supply to Salt Water Pump 2(3)P113 (Code/Category 3/C)(1" Check/Self Actuated) Dwg 40126A
CVTC/OP

S2(3)1413MU049 (1-049-D-691), Check Valve Service Water Supply to Salt Water Pump 2(3)P307 (Code/Category 3/C)(1" Check/Self Actuated) Dwg 40126B
CVTC/OP

S2(3)1413MU050 (1-050-D-691), Check Valve Service Water Supply to Salt Water Pump 2(3)P114 (Code/Category 3/C)(1" Check/Self Actuated) Dwg 40126B
CVTC/OP

STEAM

2(3)HV4053, Blowdown Isolation Valve - Steam Generator E089
(Code/Category 2/B)(6" Globe/Air) Dwg 40141A
BTC 9/OP(Note: 3)
FSTC/OP
PIT/RR

2(3)HV4054, Blowdown Isolation Valve - Steam Generator E088
(Code/Category 2/B)(6" Globe/Air) Dwg 40141A
BTC 9/OP(Note: 3)
FSTC/OP
PIT/RR

2(3)HV4057, Sample Isolation Valve - Steam Generator E089
(Code/Category 2/B)(1" Globe/Air) Dwg 40141A
BTC 5/OP(Note: 3)
FSTC/OP
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV4058, Sample Isolation Valve - Steam Generator E088
(Code/Category 2/B)(1" Globe/Air) Dwg 40141A
BTC 5/OP(Note: 3)
FSTC/OP
PIT/RR

2(3)HV8200, Steam from Steam Generator E089 to AFW Pump 2(3)P140
(Code/Category 2/B)(4" Globe/Air) Dwg 40141C
BMPC/CS(Note: 19)
BTC 27/OP
BTO 20/OP(Note: 3)
FSTO/OP
PIT/RR

2(3)HV8201, Steam from Steam Generator E088 to AFW Pump 2(3)P140
(Code/Category 2/B)(4" Globe/Air) Dwg 40141D
BMPC/CS(Note: 19)
BTC 27/OP
BTO 20/OP(Note: 3)
FSTO/OP
PIT/RR

2(3)HV8202, Steam Generator E089 Main Steam Isolation Valve Bypass
(Code/Category 2/B)(4" Globe/Air) Dwg 40141E
BTC 40/OP(Note: 3)
FSTC/OP
PIT/RR

2(3)HV8203, Steam Generator E088 Main Steam Isolation Valve Bypass
(Code/Category 2/B)(4" Globe/Air) Dwg 40141D
BTC 40/OP(Note: 3)
FSTC/OP
PIT/RR

2(3)HV8204, Steam Generator E089 Main Steam Isolation Valve
(Code/Category 2/B)(30" Gate/Hydraulic) Dwg 40141C
BTC 8/CS(Notes: 3&9)
FSTC/CS
PIT/RR

2(3)HV8205, Steam Generator E088 Main Steam Isolation Valve
(Code/Category 2/B)(30" Gate/Hydraulic) Dwg 40141D
BTC 8/CS(Notes: 3&9)
FSTC/CS
PIT/RR

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)HV8419, Main Steam Dump to Atmosphere (Code/Category 2/B)(8" Angle/Air)
Dwg 40141D
BMPD/CS(Note: 19)
BTC 15/CS(Notes: 3&11)
BTO 60/CS
BTPO/OP
FSTC/CS
PIT/RR

2(3)HV8421, Main Steam Dump to Atmosphere (Code/Category 2/B)(8" Angle/Air)
Dwg 40141C
BMPD/CS(Note: 19)
BTC 15/CS(Notes: 3&11)
BTO 60/CS
BTPO/OP
FSTC/CS
PIT/RR

2(3)HY8419B, Main Steam Dump to Atmosphere Solenoid Valve
(Code/Category 2/A)(3/4" 3-Way/Solenoid) Dwg 40141D
AT/RR

2(3)HY8419C, Main Steam Dump to Atmosphere Solenoid Valve
(Code/Category 2/A)(3/4" 3-Way/Solenoid) Dwg 40141D
AT/RR

2(3)HY8419D, Main Steam Dump to Atmosphere Solenoid Valve
(Code/Category NA/A)(3/4" 3-Way/Solenoid) Dwg 40141D
AT/RR

2(3)HY8421B, Main Steam Dump to Atmosphere Solenoid Valve
(Code/Category 2/A)(3/4" 3-Way/Solenoid) Dwg 40141C
AT/RR

2(3)HY8421C, Main Steam Dump to Atmosphere Solenoid Valve
(Code/Category 2/A)(3/4" 3-Way/Solenoid) Dwg 40141C
AT/RR

2(3)HY8421D, Main Steam Dump to Atmosphere Solenoid Valve
(Code/Category 2/A)(3/4" 3-Way/Solenoid) Dwg 40141C
AT/RR

2(3)PCV8463, Nitrogen Supply to Main Steam Dump Valve HV8419
(Code/Category NA/B)(1/4" Globe/Air) Dwg 40141D
BTO/CS(Note: 21)

2(3)PCV8465, Nitrogen Supply to Main Steam Dump Valve HV8421
(Code/Category NA/B)(1/4" Globe/Air) Dwg 40141C
BTO/CS(Note: 21)

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)PSV8401, Main Steam Relief Valve (Code/Category NA/C)(6" Safety/Self Actuated) Dwg 40141D
RVT /RR(Note: 2)

2(3)PSV8402, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141D
RVT /RR(Note: 2)

2(3)PSV8403, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141D
RVT /RR(Note: 2)

2(3)PSV8404, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141D
RVT /RR(Note: 2)

2(3)PSV8405, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141D
RVT /RR(Note: 2)

2(3)PSV8406, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141D
RVT /RR(Note: 2)

2(3)PSV8407, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141D
RVT /RR(Note: 2)

2(3)PSV8408, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141D
RVT /RR(Note: 2)

2(3)PSV8409, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141D
RVT /RR(Note: 2)

2(3)PSV8410, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141C
RVT /RR(Note: 2)

2(3)PSV8411, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141C
RVT /RR(Note: 2)

2(3)PSV8412, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141C
RVT /RR(Note: 2)

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

2(3)PSV8413, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141C
RVT /RR(Note: 2)

2(3)PSV8414, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141C
RVT /RR(Note: 2)

2(3)PSV8415, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141C
RVT /RR(Note: 2)

2(3)PSV8416, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141C
RVT /RR(Note: 2)

2(3)PSV8417, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141C
RVT /RR(Note: 2)

2(3)PSV8418, Main Steam Relief Valve (Code/Category 2/C)(6" Safety/Self Actuated) Dwg 40141C
RVT /RR(Note: 2)

S2(3)1301MU003 (4-003-D-620), Steam Supply - S/G E088 to AFP Turbine K007
Check Valve (Code/Category 3/C)(4" Check/Self Actuated) Dwg 40141C
CVPO/OP(Notes: 1,13&18)
CVTC/RR
CVTO/CS

S2(3)1301MU005 (4-005-D-620), Steam Supply - S/G E089 to AFP Turbine K007
Check Valve (Code/Category 3/C)(4" Check/Self Actuated) Dwg 40141C
CVPO/OP(Notes: 1,13&18)
CVTC/RR
CVTO/CS

S2(3)1301MU021 (3/4-021-P-145), Nitrogen Supply Isolation Valve to HV8421
(Code/Category NA/B)(3/4" Globe/Manual) Dwg 40141C
BMC/CS

S2(3)1301MU027 (3/4-027-P-636), Instrument Air Supply Check Valve for
2(3)HV8419 (Code/Category NA/AC)(3/4" Check/Self Actuated) Dwg 40141D
AT/RR
CVTC/OP

S2(3)1301MU034 (3/4-034-P-636), Instrument Air Supply Check Valve for
2(3)HV8421 (Code/Category NA/AC)(3/4" Check/Self Actuated) Dwg 40141C
AT/RR
CVTC/OP

LIST OF VALVES WITHIN THE INSERVICE TESTING PROGRAM
(Continued)

S2(3)1301MU1264 (3/8-1264-P-*), Valve HV8419 Equalizing Valve
(Code/Category NA/B)(3/8" Ball/Manual) Dwg 40141D
BMO/CS

S2(3)1301MU1265 (3/8-1265-P-*), Valve HV8421 Equalizing Valve
(Code/Category NA/B)(3/8" Ball/Manual) Dwg 40141C
BMO/CS

S2(3)1301MU1328 (3/4-1328-P-145), Nitrogen Supply Isolation Gate Valve to
HV8419 (Code/Category NA/B)(3/4" Gate/Manual) Dwg 40141D
BMC/CS

SUMPS AND DRAINS

2(3)HV5803, Containment Sump to Radwaste Sump
(Code/Category 2/A)(3" Gate/Motor) Dwg 40117A
AT/RR(Notes: 3,5,6&10)
BTC 40/OP
PIT/RR

2(3)HV5804, Containment Sump to Radwaste Sump Isolation Valve
(Code/Category 2/A)(3" Gate/Air) Dwg 40117A
AT/RR(Notes: 3,5&10)
BTC 5/OP
FSTC/OP
PIT/RR

S2(3)2426MU056 (4-056-P-675), Check Valve for CCW Pump Room and Room Drains
to CCW Sump (Code/Category NA/C)(4" Check/Self Actuated) Dwg 40118B
CVTC/RR(Notes: 20&26)
CVTO/RR(Note: 20)

S2(3)2426MU057 (4-057-P-675), Check Valve for CCW Pump Room and Room Drains
to CCW Sump (Code/Category NA/C)(4" Check/Self Actuated) Dwg 40118B
CVTC/RR(Notes: 20&26)
CVTO/RR(Note: 20)

S2(3)2426MU058 (4-058-P-675), Check Valve for CCW Pump Room and Room Drains
to CCW Sump (Code/Category NA/C)(4" Check/Self Actuated) Dwg 40118B
CVTC/RR(Notes: 20&26)
CVTO/RR(Note: 20)

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL

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ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

1.0 AUXILIARY FEEDWATER

S2(3)1305MU088, Drain Valve from Condensate Storage Tank T121 to T120 Sump

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals.

This valve is closed at all times except when cross tie between T121 and T120 enclosure is required. Valve provides access to the assured water inventory in T120 as part of the design basis of the condensate storage and transfer system and is deemed necessary for safe operation of the plant. NRC Branch Technical Position (BTP) Reactor System Branch (RSB) 5-1, states that this must be a seismic Category I source of supply and available with either loss of offsite or onsite power. Access to the condensate in T120 is based on gravity feeding through MU476, gravity feed valve from T120 Demineralizer Header to T121, as documented in Emergency Operating Instructions (EOI) S023-12-9. Access to that portion of the assured contents of T120 that would spill into the T120 enclosure, should T120 rupture following a DBE is assured by gravity feeding through MU088.

Technical Specification 3.7.1.3, Condensate Storage Tanks, invokes an action statement of four hours if either condensate tank is inoperable. The MU088 exercise test involves installing a plug on tank T-121 outlet rendering the tank inoperable. Both tanks T-120 and T-121 provide the water for Auxiliary Feedwater Pump suction. Isolating these tanks from each other renders the makeup water supply and therefore the AFW system inoperable for the duration of the test. Hence, the exercise test for this valve is deemed to be not practical during plant operation.

S2(3)1305MU121, AFP P140 Supply to S/G E089,
S2(3)1305MU126, AFW Pump P141 Discharge Check Valve,
S2(3)1305MU532, AFW Pump P504 Discharge Check Valve and
S2(3)1305MU547, AFW Pump P140 Discharge Check Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test the valves at cold shutdown. This avoids injecting cold water into hot feedwater piping and consequent thermal stresses.

These check valves prevent backflow of feedwater from Steam Generators to the discharge of Auxiliary Feedwater Pumps. They also prevent bypassing the flow from a running Auxiliary Feedwater Pump backwards through an idle Auxiliary Feedwater Pump.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

Exercising these valves while the plant is at power requires injection of Auxiliary Feedwater into the Steam Generators. This flow places unnecessary and deleterious thermal stresses on the feedwater piping and could result in premature failure of this piping. The connection between the Auxiliary Feedwater Pump discharge piping and the main feed piping usually has a steady-state temperature of $\geq 350^{\circ}\text{F}$, however, the Auxiliary Feedwater Pumps inject condensate directly from the condensate storage tanks. Consequently, during the test of these valves at power, the piping experiences a rapid cooldown to approximately 70°F . Over the life of the plant, if the testing were conducted quarterly, the resulting fatigue from thermal cycling would exceed the original design assumptions from such a source. Accordingly, testing at this damaging frequency is considered impractical.

S2(3)1305MU468, Aux Feedwater Pump P140 Suction Valve from Condensate Tank T121,

S2(3)1305MU469, Aux Feedwater Pump P141 Suction Valve from Condensate Tank T121,

S2(3)1305MU538, Aux Feedwater Pump P504 Suction Valve from Condensate Tank T121

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test the valves at cold shutdown intervals

The valves are normally maintained in the locked open position and are required to be in the open position to assure a water source to the Auxiliary Feedwater (AFW) pumps. The AFW pumps supply water to the steam generator for safe shutdown and mitigation of events which generate Emergency Feed Actuation Signal (EFAS) and Main Steam Isolation Signal (MSIS). Valves are required to be closed in the event of a High Energy Line Break (HELB) in the AFW pump discharge piping to limit loss of inventory from condensate tank T121.

Closing the suction isolation valve will cause the associated AFW pump to be inoperable. This is contrary to the requirements of Tech Spec 3.7.1.2.1. Stroking the AFW pump suction isolation valve closed every three months will result in the affected pump being declared inoperable each time the valve is stroked closed. This exacerbates the unavailability of the AFW pumps during plant operation.

2.0 BORIC ACID MAKEUP (BAMU)

2(3)HV9235, BAMU Tank T072 to Gravity Feed to Charging Pump Suction,

2(3)HV9240, BAMU Tank T071 to Charging Pump Suction Header Control Valve, and,

2(3)HV9247, BAMU Pump to Charging Pump Suction Control Valve.

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test the valves at cold shutdown. This avoids uncontrolled boration and consequent reactor shutdown.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

These valve are normally closed to block concentrated boric acid to the charging pump suction. When open, the contents of the boric acid system is directed to the Regenerative Heat Exchanger via the charging pumps and directly into the Reactor Coolant System.

Opening these valves during plant operation would result in injecting concentrated boric acid into the reactor coolant system, causing plant shutdown.

S2(3)1218MU033, BAMU Pump 2(3)P175 Discharge Check Valve, and,
S2(3)1218MU035, BAMU Pump 2(3)P174 Discharge Check Valve

Test Requirement: OM-10, Para. 4.3.2.1, Exercise check valves open quarterly.

Alternate Testing: Test the valves at cold shutdown. This avoids uncontrolled boration and consequent reactor shutdown.

These valves close to prevent backflow through an idle Boric Acid Transfer Pumps thus preventing bypass of the discharge of the running pump and open to allow flow from the associated BAMU pump to the Charging pump suction.

The only flow path through these valves that will allow test flow is into the Volume Control Tank (VCT) or to the suction of the Charging Pumps (See P&ID 40125B). The only source of water to open these valves is from the BAMU Pumps and is concentrated boric acid. As a result, exercising of these valves during power operation would result in uncontrolled boration of the reactor coolant system and the effect would be reactor plant shutdown.

3.0 CHEMICAL AND VOLUME CONTROL

2(3)HV9200, Charging Pumps to Regenerative Heat Exchanger E063

Test Requirement: OM-10, Para. 4.2.1.1, Active Category A and B valves shall be tested nominally every 3 months.

Alternate Testing: Test the valve at cold shutdown. This shifts the testing to a period during which it is allowed by the Technical Specifications and avoids Reactor Coolant System pressure and boration control problems or complications.

This valve is the Containment Isolation for the Charging Pump Discharge into the Containment, where it goes to the Regenerative Heat Exchanger. It must open to allow normal charging flow and close if there is a need to isolate this line from the regenerative hear exchanger. It is in series with a check valve inside the containment (MU122) that also closes to isolate backflow from the Regenerative Heat Exchanger.

Exercising while the plant is at power would isolate normal charging to the Reactor Coolant System. This would result in a non-compliance with Technical Specification 3.1.2.2, which requires two flow paths for boration during power operation.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

2(3)HV9205, Regenerative Heat Exchanger to Letdown Heat Exchanger, and,
2(3)TV9267, Letdown Containment Isolation Valve

Test Requirement: OM-10, Para. 4.2.1.1, Active Category A and B valves shall be tested nominally every 3 months.

Alternate Testing: Test these valves at cold shutdown.

These valves block letdown flow from the Regenerative Heat Exchanger to the Letdown Heat Exchanger. Exercising these valves during power operation would result in interruption of flow and allow the associated heat exchanger temperatures to equalize for a short period. Later, upon restoration of flow as the valves are opened, the hot reactor coolant flow through the Regenerative Heat Exchanger would result in return to the former "equilibrium" temperatures. This would result in damaging thermal stress transients on the regenerative heat exchanger and reactor coolant system charging nozzles. Exercising these valves at cold shutdown shifts the testing to a period during which temperatures are much closer to ambient on both sides of the heat exchanger. As a result, the thermal transients from momentary interruption of flow are almost completely avoided.

2(3)LV0227B, VCT Outlet Valve, and,
S2(3)1208MU015, VCT to Charging Pump Suction Check Valve

Test Requirement: OM-10, Para. 4.2.1.1, Active Category A and B valves shall be tested nominally every 3 months.

Alternate Testing: Test these valves at cold shutdown.

LV0227B regulates the Volume Control Tank (VCT) Level by throttling the outlet to the Charging Pumps. Check valve MU015 prevents backflow into the VCT from the Charging pump suction piping.

Exercising these valves closed requires shifting charging pump suction and injecting highly concentrated boric acid into the Reactor Coolant System, causing plant shutdown. Exercising these valves at cold shutdown avoids the uncontrolled and unwanted boration during the period that these valves and the associated VCT are out of service for their closed stroke test.

S2(3)1208MU045, Chemical Addition Tank T001 to Charging Pump Suction Header

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Open stroke test at cold shutdown intervals

This valve provides the pressure boundary between safety related and non-safety related piping. Valve is normally closed and required to remain closed during accident mitigation when pressure boundary integrity is required to be maintained.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

This test requires a backpressure from the charging pump suction header that can only be achieved when the charging pumps are secured for a period of time, thus requiring Modes 5 and 6. Additionally, an exercise test would result in unnecessary/undesirable dilution of the Reactor Coolant System if performed during power operation.

S2(3)1208MU066, Charging Pumps Combined Discharge Valve to HPSI Header

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Open stroke test at cold shutdown intervals

This valve is normally closed and is isolated by one normally closed valve upstream, 1208MU065 and two normally closed valves downstream, 1204MU154 and 1208MU005. This valve prevents backflow from the HPSI header to the charging pump discharge header. Valve is located in the auxiliary charging path used for mitigating a high energy line break (HELB) of the charging line inside containment and re-establishing charging flow.

When valve is stroked open using the auxiliary charging path, cold borated water will be injected into the reactor coolant system via the HPSI header because the regenerative heat exchanger is bypassed. This results in extreme thermal shock, and consequent damage to the associated system connection/nozzles.

**S2(3)1208MU082, Gravity Feed - BAMU Tanks to Charging Pump P190 Suction, and,
S2(3)1208MU083, BAMU Pumps to Charging Pumps Suction Header**

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test the valves at cold shutdown. This avoids uncontrolled boration and consequent reactor shutdown.

These valves block backflow from the charging pump suction to the boric acid system. When open, the contents of the boric acid system is directed to the charging pump suction and via to the Regenerative Heat Exchanger directly into the Reactor Coolant System. Both valves are normally closed. They open to provide flow from the BAMU tanks through the gravity feed valves during safety injection upon failure of BAMU pumps or if the BAMU pumps are operating during safety injection, MU082 remains closed to prevent flow diversion back to the BAMU tanks.

Testing these valves in the open direction would result in injecting concentrated boric acid into the reactor coolant system, causing plant shutdown.

S2(3)1208MU084, Charging Pump Discharge to Regenerative Heat Exchanger

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test the valve during cold shutdown.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

Manual isolation valve upstream of HV9200 (*Charging Pumps to Regenerative Heat Exchanger E063*). HV9200 and this valve are locked open during normal operation. This valve is unlocked and throttled during shutdown operation from outside the Control Room. See Abnormal Operating Instruction (AOI) Nos. S023-13-2 and S023-13-21.

This valve cannot be stroked closed during normal operation as it would isolate Chemical and Volume Control System and charging pumps to Reactor Coolant System. This would result in a non-compliance with Technical Specification 3.1.2.2, which requires two flow paths for boration during power operation.

S2(3)1208MU094, Check valve - Coolant Polishing Demineralizer to Charging Pump Suction Header

Test Requirement: OM-10, Para. 4.2.1.1, Active Category A and B valves shall be tested nominally every 3 months.

Alternate Testing: Test this valve at cold shutdown intervals. This will avoid unplanned dilutions and potential power excursions.

This valve provides the pressure boundary between Safety Related and Non-Safety Related piping. Valve is normally closed and required to remain closed during accident mitigation when pressure boundary integrity is required to be maintained. Additionally, this valve will cause an unplanned dilution of the Reactor Coolant System if a exercise test is performed during power operation.

S2(3)1208MU122, Charging Pumps Check Valve to Regenerative Heat Exchanger E063

Test Requirement: OM-10, Paragraph 4.3.2, exercise this valve every three months.

Alternate Testing: This valve will be verified closed during refueling outages while performing Appendix "J" testing. The check valve open (CVTO) test is quarterly during routine inservice testing of the charging pumps.

This containment isolation valve opens to allow normal charging flow to the reactor coolant system. It is located inside containment and is in constant use. Closing this valve during power operation (or any time reactor charging flow is required) results in cessation of flow through the regenerative heat exchanger and results in an extreme thermal transient. Additionally, the system arrangement provides no source of backflow or pressure to provide for a CVTC other than the containment penetration leak rate testing connections. Accordingly, to complete the close stroke test (CVTC), the reactor refueling interval seat leakage test is used as the verification of valve closure. This is consistent with the requirements of OM-10, Section 4.3.2.2.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1208MU130, Containment Isolation - Charging Pump Discharge to Aux Spray
Regenerative Heat Exchanger Bypass

Test Requirement: OM-10, Para. 4.2.1.1, Active Category A and B valves shall be tested nominally every 3 months.

Alternate Testing: Stroke test this valve open and closed at cold shutdown intervals. During cold shutdown the extreme temperature difference between the normal spray flow and the charging pump discharge is avoided.

This valve provides the containment isolation (outside containment) for the charging pump discharge to the pressurizer auxiliary spray.

Exercising this valve during power operation results in admission of cold charging pump discharge to the pressurizer spray and an unnecessary thermal transient and stress on the pressurizer spray nozzle.

4.0 COMPONENT COOLING WATER

2(3)HV6211, Containment Isolation Valve - CCW Non-Critical Loop,
2(3)HV6212, CCW from Heat Exchanger E001A to Non-Critical Loop,
2(3)HV6213, Component Cooling Discharge to Non-Critical Loop,
2(3)HV6216, Containment Isolation - CCW Non-Critical Loop Return,
2(3)HV6218, Component Cooling Water Pump Suction From Non-Critical Loop,
2(3)HV6219, Component Cooling Water Pump Suction From Non-Critical Loop,
2(3)HV6223, Containment Isolation - CCW Non-Critical Loop Supply,
2(3)HV6236, Containment Isolation - CCW Non-Critical Loop Return,
2(3)HV6500, Component Cooling Water from Shutdown Cooling System Heat Exchanger E003, and,
2(3)HV6501, Component Cooling Water from Shutdown Cooling System Heat Exchanger E004

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke these valves at cold shutdown intervals to avoid damage to plant equipment which can result from interruption of CCW flow.

HV6211 and HV6216 are the CCW non-critical loop supply and return containment isolation valves (outside). HV6223 and HV6236 are the CCW non-critical loop supply and return containment isolation valves (inside). They provide isolation of the containment CCW header. They are closed upon receipt of a containment isolation actuation signal [CIAS].

HV6212 and HV6213 isolate the non-critical loop supply from the discharge of CCW heat exchanger 1A and 2B.

HV6218 and HV6219 isolate the non-critical loop return flow from CCW critical loops respectively "A" and "B" return piping.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

HV6500 and HV6501 isolate the shutdown cooling heat exchanger outlets from the CCW pump sections.

Exercising HV6211 and HV6216 during operation would secure or direct cooling water flow from RCP seals, which could result in seal damage and plant shutdown. Similarly, exercising HV6212 and HV6213 would isolate the non-critical loop supply from the discharge of CCW heat exchanger 1A and 2B and secure CCW flow to the RCP seals with the same result.

Exercising HV6218 and HV6219 would isolate the non-critical loop return flow from CCW critical loops return piping and have the same effect.

Exercising HV6500 and HV6501 would initiate flow in the shutdown cooling heat exchanger and therefore bypass flow intended for the normal CCW heat loads momentarily.

2(3)PCV6358, CCW Surge Tank T-003 Nitrogen Backpressure Regulator, and,
2(3)PCV6361, CCW Surge Tank T-004 Nitrogen Backpressure Regulator

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test the valve at refueling intervals

These valves maintain CCW surge tank maximum pressure at 41 psig and valve closes when tank pressure drops below 41 psig. They remain closed and leak tight to prevent loss of nitrogen inventory and/or consequent loss of adequate CCW pump suction pressure.

In order to stroke these valves closed, the Backup Nitrogen System must be isolated. This renders the associated CCW train and equipment that this CCW train supports inoperable. Clearing a CCW train for the test is time consuming and labor intensive and in the event of a plant emergency, the system cannot be quickly realigned for operation.

During plant refueling, however, each CCW train is taken out of service for maintenance and these valves can be tested at that time.

2(3)TV9144, CCW from RCP P001 Seal Heat Exchanger
2(3)TV9154, CCW from RCP P003 Seal Heat Exchanger
2(3)TV9164, CCW from RCP P004 Seal Heat Exchanger
2(3)TV9174, CCW from RCP P002 Seal Heat Exchanger

Test Requirement: OM-10, Para. 4.2.1.1, exercise open and closed nominally every three months.

Alternate Testing: Remote manually test valves at cold shutdown intervals and manually stroke valves when plant conditions allow containment entry at cold shutdowns of a long enough duration.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

In order to stroke open the valve remotely from the Control Room, valves will first have to be closed and then stroked open interrupting flow to the reactor coolant pump (RCP) seal. The closure would result in seal damage. Accordingly, these valves can only be exercised when the RCP's are secured (at cold shutdown).

Containment entry is required to manually open stroke these valves.

S2(3)1203MU101, CCW Pump P024 Discharge Check Valve
S2(3)1203MU102, CCW Pump P026 Discharge Check Valve
S2(3)1203MU103, CCW Pump P025 Discharge Check Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test partially open quarterly and full open at cold shutdown intervals.

These check valves are in the discharge of each CCW pump and prevent backflow through an idle pump when the associated parallel pump is operating.

Stroke at cold shutdown intervals when plant conditions allow adjustment of CCW flow without the complexity represented by the Mode 1 configuration. To achieve full flow to stroke these check valves open (restoration of normal CCW flow is equally complicated) requires a tedious and complicated adjustment of the flow balance between numerous CCW loads. This usually results in high temperature alarms in the control room and results in a thermal cycle on the components serviced by CCW.

S2(3)1203MU268, Nuclear Plant Service Water Supply to CCW Loop A,
S2(3)1203MU269, Nuclear Plant Service Water Supply to CCW Loop B,

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke at cold shutdown intervals when plant conditions allow CCW loops to be inoperable without rendering several Technical Specification required components inoperable.

These check valves provide water makeup to the CCW surge tanks. To achieve a close stroke of these check valves, the upstream volume of the associated piping must be isolated and depressurized. This renders the associated CCW surge tank and therefore the associated CCW loop to be inoperable. The result is entry into multiple Technical Specification LCO Action Statements if done during plant operation.

S2(3)1203MU280, Check Valve CCW to RCP P001 Seals
S2(3)1203MU281, Check Valve CCW to RCP P002 Seals
S2(3)1203MU282, Check Valve CCW to RCP P003 Seals
S2(3)1203MU283, Check Valve CCW to RCP P004 Seals

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke at cold shutdown intervals when plant conditions allow Containment entry for valve testing and RCP's are secured.

These valves close to prevent backflow in the non-critical loop supply line providing cooling water to RCP Seal Heat Exchangers. MU280 through MU283 were originally put in the system to provide a barrier between the Reactor Coolant System and CCW in the event the RCP seal heat exchanger catastrophically failed.

In order to exercise these check valves both open and closed, interrupting flow to the reactor coolant pump (RCP) seal. The closure would result in seal damage. Accordingly, these valves can only be exercised when the RCP's are secured (at cold shutdown). Additionally, testing these valves requires a containment entry.

5.0 CONDENSATE AND FEEDWATER

2(3)HV1105, Feedwater Bypass Valve for Steam Generator E089, and,
2(3)HV1106, Feedwater Bypass Valve for Steam Generator E088

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valves serve to isolate the bypass line around the main feedwater regulation valves.

These valves cannot be full stroke exercised during power operation as this would disturb steam generator level control, which could result in plant shutdown.

2(3)HV4047, Feedwater Block Valve - Steam Generator E088,
2(3)HV4048, Feedwater Isolation Valve - Steam Generator E088,
2(3)HV4051, Feedwater Block Valve - Steam Generator E089, and,
2(3)HV4052, Feedwater Isolation Valve - Steam Generator E089

These valve block feed flow in the main feed lines entering containment. They are all outside the containment. Valves 2(3)HV4048 and 2(3)HV4052 are containment Isolation valves.

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

Full stroke exercising this valve during power operation would result in loss of feedwater flow to the steam generator, which could result in a plant shutdown.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1305MU036, Main Feed Check at Steam Generator E089
S2(3)1305MU129, Main Feed Check at Steam Generator E088

Test Requirement: OM-10, Paragraph 4.3.2, exercise these valves every three months.

Alternate Testing: At cold shutdown intervals, perform a full stroke test (open) of each valve using system flow.

At each refueling outage, test the valves by partial disassembly, inspection and manual stroking on a rotating basis (one valve per refueling).

During partial disassembly the valve internals shall be visually inspected for worn or corroded parts, and the valve disk will be manually exercised. If it is found that the full stroke capability of the disassembled valve is in question, the other valve will be similarly disassembled and inspected and manually full stroked during the same outage.

Following reassembly the valve is to be tested by partial stroking using system flow.

The use of non-intrusive diagnostic techniques are being pursued to demonstrate that these valves close when subjected to reverse flow conditions.

These check valves are in the main feedwater supply to the steam generators. During a loss of feedwater accident, these check valves will close isolating the main feedwater piping from auxiliary feedwater flow.

OM-10, Section 4.3.2.2, Exercising Requirements, Paragraph (e) stipulates if exercising is not practicable during plant operations or cold shutdowns, it may be limited to full stroke during refueling outages.

Section 4.3.2.4(c), Valve Obturator Movement, further states, "As an alternative to the testing in (a) or (b) above, disassembly every refueling outage to verify operability of check valves may be used."

G.L. 89-04, Position 2, allows for development of staggered schedules for testing of like components by establishing an inspection plan for groups of valves.

S2(3)1305MU124, AFW Check Valve at Steam Generator E089, and,
S2(3)1305MU448, AFW Check Valve at Steam Generator E088

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

These valves prevent backflow out of the steam generators in the event of an auxiliary feed line rupture. This provides protection from pipe whip and jet impingement and loss of the steam generator in the loss of auxiliary feed line accident.

Exercising this valve while the plant is at power would result in placing unnecessary thermal stresses on the feedwater piping, which could result in premature failure of this piping.

6.0 CONTAINMENT HVAC (NORMAL)

- 2(3)HV9948, Containment Purge Supply,
- 2(3)HV9949, Containment Purge Supply,
- 2(3)HV9950, Containment Purge Exhaust, and,
- 2(3)HV9951, Containment Purge Exhaust

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

Containment isolation for the main ventilation piping into and out of containment.

These valves are passive except in Modes 5 and 6, at which time they are tested. In addition, exercising these valves during plant power operation would result in non-compliance with the Technical Specifications.

7.0 CONTAINMENT SPRAY

- 2(3)HV8150, Isolation Valve - Shutdown Cooling System Heat Exchanger E004 to LPSI Header, and,
- 2(3)HV8151, Isolation Valve - Shutdown Cooling System Heat Exchanger E003 to LPSI Header

Provides isolation for the Shutdown Cooling System heat exchanger outlet to the LPSI header and into the Reactor Coolant System. It is opened for Shutdown Cooling System operation and must remain closed during power operation.

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

Applying power or opening these valves while the plant is at power would result in non-compliance with the Technical Specifications. Opening these valves could defeat both trains of LPSI.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1206MU004, Containment Isolation Stop Check Valve - Spray Header #1 (Code & Category: 2/AC)
S2(3)1206MU006, Containment Isolation Stop Check Valve - Spray Header #2 (Code & Category: 2/AC)

Test Requirement: OM-10, Paragraph 4.3.2, exercise these valves every three months.

Alternate Testing: At each refueling outage, (1) test the valves by partial disassembly, inspection and manual stroking on a rotating basis (one valve per refueling), and, (2) perform a partial stroke test (open) of each valve using system flow.

During partial disassembly the valve internals shall be visually inspected for worn or corroded parts, and the valve disks will be manually exercised. If it is found that the full stroke capability of the disassembled valve is in question, the other valve will be similarly disassembled and inspected and manually full stroked during the same outage.

Following reassembly and prior to return to service, the valve will be tested by partial stroking using system flow.

FULL FLOW TESTING

These valves open to allow a flow of water from the containment spray pump discharge into the containment spray ring headers. They are inside the containment building in the line leading from the Containment penetration to the riser supplying the ring headers and spray nozzles. As a consequence full-stroke exercising these valves through this flow path using the containment spray pumps would result in a containment spray-down and consequent potential equipment damage as well as create additional liquid radwaste to be removed from the Containment Building sump.

PARTIAL FLOW TESTING

The riser inside the containment building is drained each refueling and refilled prior to returning the plant to service. When the riser is being filled with water, the water can be put in the system upstream of each stop check valve. Therefore, this flow through the Spray Header Containment Isolation Stop Check Valves during the filling of the riser would result in a partial stroke of these valves. Other methods to achieve a partial open stroke are also available.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

CONCLUSION

NRC Generic Letter 89-04, Attachment 1, Position 2, identifies partial disassembly and inspection as an acceptable alternative for stroking a valve when it is impractical to use flow. In this case, there is no way to stroke these valves with the existing system design using flow. The Code required full-stroke testing using flow could only be performed after considerable modification of the system design, such as installation of an instrumented test loop. The high costs of the necessary design changes involved would not be justified by the improvement of the valve testing. Further, the additional valves, piping, supports and penetrations could result in reduced plant reliability.

TEST SCHEDULE

Disassembly and inspection of both of these valves each refueling outage requires additional draining of the associated system piping over and above draining the riser as previously discussed. This generates a significant amount of radioactive liquid waste. In addition, considerable radiation exposure can be received by personnel performing the partial disassembly, hand stroking and inspection. As a consequence, there is a clear advantage in reducing the number of these tests required in each refueling.

GL 89-04 allows development of staggered testing of like components by establishing an inspection plan for similar groups of valves. This is stated in position 2 of the Generic Letter.

S2(3)1206MU010 (2-010-C-329), Pump 2(3)P012 Miniflow Stop Check Valve,
S2(3)1206MU011 (2-011-C-329), Pump 2(3)P013 Miniflow Stop Check Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These stop-check valves direct miniflow recirculation from the Containment Spray pumps back to the Refueling Water Storage Tanks.

Providing flow or pressure to verify completion of the closed stroke requires placing the miniflow line out of service for the HPSI, LPSI and Containment Spray Systems. This renders those systems inoperable and is therefore only practical in modes during which these systems are not required to be operable.

S2(3)1206MU012, Spray Pump 2(3)P012 Discharge Stop Check Valve,
S2(3)1206MU014, Spray Pump 2(3)P013 Discharge Stop Check Valve,
S2(3)1206MU029, Spray Pump 2(3)P012 Discharge Check Valve to Shutdown Cooling System Heat Exchanger E004,
S2(3)1206MU030, Spray Pump 2(3)P013 Discharge Check Valve to Shutdown Cooling System Heat Exchanger E003

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test these valves at cold shutdown intervals.

Provide check valves to prevent back-flow through idle spray pumps and associated loss of flow and pressure from the outlet of the operating spray pump.

Full stroke exercising of these check valves while the plant is at power would require disabling both trains of LPSI.

8.0 DIESEL GENERATORS

STARTING AIR

2(3)HY5955A1, D Gen G002 20 Cyl Right Bank Start
2(3)HY5955B1, D Gen G002 16 Cyl Left Bank Start
2(3)HY5955C1, D Gen G002 20 Cyl Left Bank Start
2(3)HY5955D1, D Gen G002 16 Cyl Right Bank Start
2(3)HY5955E2, D Gen G003 20 Cyl Right Bank Start
2(3)HY5955F2, D Gen G003 16 Cyl Left Bank Start
2(3)HY5955G2, D Gen G003 20 Cyl Left Bank Start
2(3)HY5955H2, D Gen G003 16 Cyl Right Bank Start

2(3)HV5931A, D Gen G002 20 Cyl-Right Bank Start
2(3)HV5931B, D Gen G002 16 Cyl-Left Bank Start
2(3)HV5931C, D Gen G002 20 Cyl-Left Bank Start
2(3)HV5931D, D Gen G002 16 Cyl-Right Bank Start
2(3)HV5931E, D Gen G003 20 Cyl-Right Bank Start
2(3)HV5931F, D Gen G003 16 Cyl-Left Bank Start
2(3)HV5931G, D Gen G003 20 Cyl-Left Bank Start
2(3)HV5931H, D Gen G003 16 Cyl Right Bank Start

S2(3)2420MU126, Right Bank Air Start Check Valve
S2(3)2420MU128, Left Bank Air Start Check Valve
S2(3)2420MU134, Right Bank Air Start Check Valve
S2(3)2420MU138, Left Bank Air Start Check Valve
S2(3)2420MU155, Right Bank Air Start Check Valve
S2(3)2420MU158, Left Bank Air Start Check Valve
S2(3)2420MU159, Right Bank Air Start Check Valve
S2(3)2420MU161, Left Bank Air Start Check Valve
S2(3)2420MU127, Air Supply 3 Way Valve
S2(3)2420MU137, Air Supply 3 Way Valve
S2(3)2420MU139, Air Supply 3 Way Valve
S2(3)2420MU157, Air Supply 3 Way Valve

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

FUEL OIL

S2(3)2420MU130, Fuel Priming Pp. Supply Header Check Valve
S2(3)2420MU132, Engine Driven Pp. Discharge Header Check Valve
S2(3)2420MU150, Fuel Priming Pp. Supply Header Check Valve
S2(3)2420MU152, Engine Driven Pp. Discharge Header Check Valve
S2(3)2420MU170, Engine Driven Pp. Discharge Header Check Valve
S2(3)2420MU174, Engine Driven Pp. Discharge Header Check Valve

LUBE OIL

S2(3)2420MU120, Engine Sump Turbo Supply Check Valve
S2(3)2420MU121, Engine Sump Turbo Supply Check Valve
S2(3)2420MU136, Engine Sump Turbo Supply Check Valve
S2(3)2420MU140, Engine Sump Turbo Supply Check Valve
S2(3)2420MU141, Engine Sump Turbo Supply Check Valve
S2(3)2420MU145, Engine Sump Turbo Supply Check Valve
S2(3)2420MU162, Engine Sump Turbo Supply Check Valve
S2(3)2420MU163, Engine Sump Turbo Supply Check Valve
S2(3)2420MU289, D.C. Aux Turbo Pp Disch. Check
S2(3)2420MU292, D.C. Aux Turbo Pp Disch. Check
S2(3)2420MU295, D.C. Aux Turbo Pp Disch. Check
S2(3)2420MU298, D.C. Aux Turbo Pp Disch. Check

FUEL OIL

S2(3)2420MU167, Fuel Priming Pp. Supply Header Check Valve
S2(3)2420MU172, Fuel Priming Pp. Supply Header Check Valve

LUBE OIL

S2(3)2420MU290, A.C. L.O. Circ. Pp Disch. Check
S2(3)2420MU291, A.C. L.O. Turbo. Pp Disch. Check
S2(3)2420MU293, A.C. L.O. Circ. Pp Disch. Check
S2(3)2420MU294, A.C. L.O. Turbo. Pp Disch. Check
S2(3)2420MU296, A.C. L.O. Circ. Pp Disch. Check
S2(3)2420MU297, A.C. L.O. Turbo. Pp Disch. Check
S2(3)2420MU299, A.C. L.O. Circ. Pp Disch. Check
S2(3)2420MU300, A.C. L.O. Turbo. Pp Disch. Check

Test Requirement: Exercise quarterly in accordance with OM-10, paragraph 4.3.2.

Alternate Testing: Verify proper operation of the Diesel Generators during regularly scheduled "loaded run" surveillance. Record engine run data per OM-16 and vendor recommendations.

The valves are non-code skid mounted valves in the Lube Oil, Fuel Oil, Starting Air or other diesel generator systems.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

The Lube Oil system lubricates and cools essential moving parts within the diesel engine during startup, operation, and shutdown. It circulates warm oil through the engine in the standby mode to keep it warm and ready for rapid starting and loading.

The Fuel Oil system supplies fuel to the engine cylinders at high pressure in the quantity required by engine demand. It is designed such that a single failure of any active component cannot affect the ability to store and deliver fuel.

The Starting Air system provides the initial motive force to roll the diesel engines to a sufficient starting speed. A single active failure in the starting Air system will not prevent a diesel start.

Each of the components identified in the attached tables is demonstrated operable by virtue of the fact that the associated engine starts in the requisite time, carries the required load, and exhibits operating parameters (temperatures, pressures, etc.) that fall within the vendors recommended values.

Monthly surveillance runs of the diesel generators load the engine to ~4840KW. The anticipated Mode 1-4 accident loading is 4700KW (Mode 5/6 loading is ~80% of this value). Engine parameters are recorded and transmitted to Technical Division for review and trending.

In a memorandum dated February 16, 1993, Greg Desin, System Design Engineer - Diesels, Transmitted the meeting minutes of the OM-16 code committee. These minutes reflect the industry's ongoing efforts to exclude to the diesel generators' skid mounted valves from ASME Section XI testing.

Draft NUREG 1482, Guidelines for Inservice Testing at Nuclear Power Plants, Section 3.4, states, "... the staff has determined that the testing of the major component is an acceptable means for verifying the operational readiness of the skid-mounted and component subassemblies."

The OM-16 committee met on May 28, 1992, to discuss testing of the diesel skid mounted pumps and valves. They summarize by stating, "... we don't feel Section XI testing would enhance the reliability of the diesels. It is felt that if such tests are imposed the results would be misleading and necessary unnecessary tear downs which introduces the chance for human error. This conclusion is also supported by NPRDS data."

The committee position is that the normal diesel surveillance runs coupled with the data recorded and trended during these runs is sufficient to ascertain the performance of critical engine and skid mounted components.

Technical Division personnel reviewed this methodology with NRC Inspectors during the April 1992 check valve audit (Inspection Report Nos. 50-361/92-15 and 50-362/92-15). The NRC Inspectors found this practice acceptable at that time. They noted this practice as a point of information in the inspection report.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

References:

1. Memorandum, Greg Desin to Steve Gosselin and Paul Croy, February 16, 1993, IST Testing of Skid Mounted Valves, Emergency Diesel Generators.
2. NRC Inspection Report Nos. 50-361/92-15 and 50-362/92-15, NRC to HBR, July 14, 1992.
3. Technical Specification Bases 3/4.8 for diesel accident loading and S023-33.23, Diesel Generator Monthly Test for loaded run parameters.

9.0 FIRE PROTECTION

2(3)HV5686, Containment Isolation Valve, Outside - Fire Prot. System Water, SA2301MU061 (4-061-C-681), Unit 2 Containment Isolation Valve - Fire Protection System Water, SA2301MU095 (4-095-C-681), Unit 3 Containment Isol. - Fire Protection (Inside Containment)

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test these valves closed at cold shutdown intervals and open at reactor refueling intervals. The analysis in the S023-IST-2301 document explains that the open function is tested in accordance with the Technical Specifications under the Fire Suppression testing, Technical Specification 4.7.8.1.

Containment isolation and stop valve for "dry pipe" fire suppression system.

Exercising this valve during plant power operation will activate the Fire Protection System in the respective Containment building.

10.0 FUEL STORAGE POOL AND REFUELING

2(3)LV0227C, RWST To Charging Pump Suction, and, S2(3)1219MU052, RWST TO06 to Charging Pump Suction Header

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test these valves at cold shutdown intervals

These valves provide flow of boric acid from the RWST into the suction of the charging pumps.

Opening these valves would result in injecting highly concentrated boric acid into the reactor coolant system, causing plant shutdown.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

11.0 NITROGEN GAS

S2(3)2418MU002, Nitrogen Supply to Containment, and,
S2(3)2418MU108, Nitrogen Supply to Safety Injection Tanks

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals.

Containment isolation inside containment for nitrogen supply to various components.

Testing requires containment entry. These valves are tested under the Appendix J procedures.

S2(3)2418MU356, Backup Nitrogen Cylinder MV-057 Check Valve Testing,
S2(3)2418MU358, Backup Nitrogen Cylinder MV-058 Check Valve,
S2(3)2418MU360, Backup Nitrogen Cylinder MV-059 Check Valve,
S2(3)2418MU362, Backup Nitrogen Cylinder MV-060 Check Valve,
S2(3)2418MU364, Backup Nitrogen Cylinder MV-061 Check Valve,
S2(3)2418MU366, Backup Nitrogen Cylinder MV-062 Check Valve,
S2(3)2418MU368, Backup Nitrogen Cylinder MV-062 Check Valve,

S2(3)2418MU371, Backup Nitrogen Cylinder MV-064 Check Valve,
S2(3)2418MU373, Backup Nitrogen Cylinder MV-065 Check Valve,
S2(3)2418MU375, Backup Nitrogen Cylinder MV-066 Check Valve,
S2(3)2418MU377, Backup Nitrogen Cylinder MV-067 Check Valve,
S2(3)2418MU379, Backup Nitrogen Cylinder MV-068 Check Valve,
S2(3)2418MU387, Backup Nitrogen Cylinder MV-069 Check Valve,
S2(3)2418MU389, Backup Nitrogen Cylinder MV-070 Check Valve,
S2(3)2418MU406, Backup Nitrogen Cylinder MV-102 Check Valve,
S2(3)2418MU408, Backup Nitrogen Cylinder MV-103 Check Valve,
S2(3)2418MU410, Backup Nitrogen Cylinder MV-104 Check Valve,
S2(3)2418MU412, Backup Nitrogen Cylinder MV-105 Check Valve,
S2(3)2418MU414, Backup Nitrogen Cylinder MV-106 Check Valve, and
S2(3)2418MU416, Backup Nitrogen Cylinder MV-107 Check Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test at cold shutdown intervals in conjunction with the testing of the associated ADV.

These valves open to admit backup nitrogen to the CCW surge tanks from the individual nitrogen storage bottles. They close to prevent depressurization in the event a bottle is removed for replacement.

This valve requires placing the associated Component Cooling Water Loop OOS. This can only be done in a mode in which the Technical Specifications permit one CCW Loop to be inoperable.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)2418MU398, Nitrogen Supply to Component Cooling Water Surge Tank T004B,
and,
S2(3)2418MU402, Nitrogen Supply to Component Cooling Water

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke at cold shutdown intervals when plant conditions allow CCW loops to be inoperable without rendering several Technical Specification required components inoperable.

These check valves provide nitrogen makeup to the CCW surge tanks. To achieve a close stroke of these check valves, the upstream volume of the associated piping must be isolated and depressurized. This renders the associated CCW surge tank and therefore the associated CCW loop to be inoperable. The result is entry into multiple Technical Specification LCO Action Statements if done during plant operation.

12.0 NUCLEAR SERVICE WATER

S2(3)1415MU236, Containment Isolation Check Valve - Nuclear Service Water

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test these valves at cold shutdown intervals.

This valve provides containment isolation for the penetration conveying Nuclear Service Water into the containment for use during maintenance, system fill, refueling, etc..

The close stroke verification requires containment access. This is only practical during plant shutdown.

13.0 REACTOR COOLANT

2(3)HVO296A, Reactor Head Vent,
2(3)HVO296B, Reactor Head Vent,
2(3)HVO297A, Pressurizer Vent Valve,
2(3)HVO297B, Pressurizer Vent Valve,
2(3)HVO298, Vent to Containment from Reactor Head/Pressurizer, and,
2(3)HVO299, Quench Tank Inlet from Reactor Head/Pressurizer Vent

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke these valves open and closed at cold shutdown intervals.

Venting of various components in the Reactor Coolant System.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

These valves are part of the Reactor Coolant System Boundary Isolation. Opening these valves while the Reactor Coolant System is pressurized would release Reactor Coolant to the vent system. Further, power is normally removed from the solenoids.

2(3)HV9201, Regenerative Heat Exchanger E063 to Auxiliary Spray,
S2(3)1201MU019, Auxiliary Spray Check Valve, and,
S2(3)1201MU129, Auxiliary Spray to Reactor Coolant System from Charging Pumps

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke the valves at cold shutdown intervals.

These valves provide flow to the auxiliary spray into the pressurizer, either through the regenerative heat exchanger, or bypassing the regenerative heat exchanger.

Exercising would result in unnecessary severe thermal transients and stress on the pressurizer spray nozzle.

2(3)HV9202, Regenerative Heat Exchanger E063 to Reactor Coolant System Loop 2A,
and,
2(3)HV9203, Regenerative Heat Exchanger E063 to Reactor Coolant System Loop 1A

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke the valves open and closed at cold shutdown intervals.

These valves block the charging line from the Regenerative Heat Exchanger to the Reactor Coolant System when they close. They are located in the line between these two components.

These valves must remain open during power operation in order to ensure consistency with assumptions made regarding system flow to the Reactor Coolant System cold legs in the accident analysis and to comply with the intent of LCO 3.5.2.

2(3)HV9204, Reactor Coolant System Loop 2B Letdown to Regenerative Heat Exchanger, and,
2(3)TV0221, Letdown Isolation Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke the valves closed at cold shutdown intervals.

These valves are in the letdown line from the Reactor Coolant System to the Regenerative Heat Exchanger and close to block flow through these lines.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

Exercising these valves during power operation would result in unnecessary thermal stress transients on the regenerative heat exchanger and reactor coolant system charging nozzles.

2(3)HV9217, Reactor Coolant System Bleed Off to Volume Control Tank, and,
2(3)HV9218, Reactor Coolant System Bleed Off to VCT Isolation Valve Inside Containment

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke the valves closed at cold shutdown intervals.

These valves are the containment isolation valves for the reactor coolant pump seal leakoff line to the Volume Control Tank (VCT).

Exercising these valves could result in Reactor Coolant Pump seal failure and subsequent reactor shutdown.

S2(3)1201MU020, Charging Line Check Valve to Reactor Coolant System Loop 2A

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test valve at cold shutdown frequency

This valve prevents backflow from the Reactor Coolant System to the Regenerative Heat Exchanger when it closes upon reversal of pressure/flow in the charging line to the Reactor Coolant System. The valve is located in the line between these two components.

This valve cannot be tested without closing HV9203 (discussed elsewhere in this Attachment).

S2(3)1201MU021, Charging Line Check Valve to Reactor Coolant System Loop 1A

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test valve at cold shutdown frequency

This valve prevents backflow from the Reactor Coolant System to the Regenerative Heat Exchanger when it closes upon reversal of pressure/flow in the charging line to the Reactor Coolant System. The valve is located in the line between these two components.

This valve cannot be tested without closing HV9202 (discussed elsewhere in this table).

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1201MU200, Pump 2(3)P016 Suction Check Valve, and,
S2(3)1201MU202, Pump 2(3)P015 Suction Check Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These check valves provide flow into the suction of the respective LPSI pumps and prevent backflow from the pump into the lines from the RWST, etc.

This valve can only be exercised when plant is on shutdown cooling.

S2(3)1201MU976, Check Valve Pressurizer Spray Line from Reactor Coolant Loop 1A
S2(3)1201MU977, Check Valve Pressurizer Spray Line from Reactor Coolant Loop 1B

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test valve at cold shutdown frequency

Valves open to allow pressurizer spray flow. Valves are held partially open during normal operation by flow. To minimize thermal shock of the nozzles, the pressurizer spray control valves PV0100A & B provide about 2 gpm of continuous flow to maintain the pressurizer spray nozzles at approximately Reactor Coolant System cold leg temperature. Valves MU976 and MU977 must close to prevent flow diversion back to the Reactor Coolant System from the Chemical & Volume Control System should PV0100A fail to close. AOI (Abnormal Operating Instruction) S023-13-2 directs charging pump discharge to the Chemical and Volume Control System auxiliary pressurizer spray line instead of the normal pressurizer spray path through PV0100A and PV0100B. If these valves were to stick open, it would bypass this auxiliary spray flow to the Reactor Coolant System and disable the spray function in the pressurizer.

During normal plant operation, Reactor Coolant System pressure is maintained via pressurizer spray with flow through these valves. To close stroke MU976 and MU977 would require closing the upstream pressurizer spray control valve and isolating the pressurizer spray line. This would place the plant in an unsafe condition due to loss of spray flow and consequent pressurizer level and pressure control. Also the close stroke test can only be performed at cold shutdown intervals because the valves are inside the Containment and require a Containment entry to the perform test. Nuclear service water is used to stroke these valves closed.

14.0 RESP. & SERVICE AIR SYSTEM

2(3)HV5388, Containment Isolation Valve - Instrument Air

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

This valve provides isolation for the penetration that conveys instrument air into the containment building.

Exercising this valve during plant power operation isolates instrument air to the Containment and could result in a plant shutdown.

S2(3)2417MU016, Instrument Air Containment Isolation Check - Inside Containment

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

This valve provides isolation for the penetration that conveys instrument air into the containment building.

There is no way to place a back pressure on this valve without losing control of the Safety Injection Tank Drain Valves, hence this can only be tested when SIT Tanks are not required (i.e. Modes 5 and 6).

S2(3)2417MU017, Service Air Containment Isolation Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at reactor refueling intervals

This valve provides isolation for the penetration that conveys service air into the containment building.

This valve is a containment isolation valve and is not used during power operation. Stroking this valve during operation would require opening the containment penetration and performance of operations within the containment.

15.0 SAFETY INJECTION

- 2(3)HV0396, Flow Control Valve - LPSI Pumps to Shutdown Cooling System,
- 2(3)HV8152, Isolation Valve - Shutdown Cooling System Heat Exchanger E004 Inlet,
- 2(3)HV8153, Isolation Valve - Shutdown Cooling System Heat Exchanger E003 Inlet,
- 2(3)HV9420, Control Valve - HPSI Header #1 to Reactor Coolant System Loop 2 Hot Leg, and,
- 2(3)HV9434, Control Valve - HPSI Header #2 to Reactor Coolant System Loop 1 Hot Leg

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

These valves are employed in directing Shutdown Cooling System flow into the Reactor Coolant System and controlling that flow.

Full stroke testing of this during power operation would result in non-compliance with Technical Specification 3/4.5.2, which requires this valve to be closed with power to the valve operator removed.

2(3)HV8160, Flow Control Valve - Shutdown Cooling System Heat Exchanger Bypass,
2(3)HV8161, Block Valve - Shutdown Cooling System Heat Exchanger Bypass to LPSI,
2(3)HV8162, LPSI Pump 2(3)PO15 Miniflow Block Valve, and,
2(3)HV8163, LPSI Pump 2(3)PO16 Miniflow Block Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valves are used in establishing the Shutdown Cooling System flow path when the plant is shutdown.

Full stroke exercising of this valve during power operation would result in non-compliance with Technical Specification 3/4.5.2, which requires this valve to be open with power removed.

2(3)HV9300, Refueling water tank T005 outlet valve
2(3)HV9301, Refueling water tank T006 outlet valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test these valves at cold shutdown intervals.

These valves are normally open and are then closed during post LOCA recirculation. HV9300 and HV9301 are considered an active components in the FSAR. They isolate the Refueling Water Storage Tank (RWST) from HPSI, LPSI and Containment Spray Pumps and Containment Sump.

Closing HV9300 or HV9301 during normal plant operation will isolate the pump suction and therefore cause the associated train(s) of Safety Injection, Containment Spray, HPSI & LPSI, to become inoperable. This is contrary to the requirements of Technical Specification 3/4.5.2. and puts the Plant in a 72 hour action statement.

2(3)HV9336, Isolation Valve - SDCS to LPSI Pump Suction,
2(3)HV9379, SDCS Bypass to LPSI Suction Isolation Valve - Seal

Test Requirement: Manually stroke in addition to exercising with the power operator in accordance with OM-10, Para. 4.2.1.1, test nominally every three months.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

Alternate Testing: Manually exercise at cold shutdown intervals.

The manual stroke test is a non-Code required test. These valves are used in establishing the Shutdown Cooling System flow path when the plant is shutdown. The manual stroke test specified for these valves is only required to be a partial stroke to the extent necessary to demonstrate the operation of the valve manually, including the ability to engage the clutch.

2(3)HV9337, Isolation Valve - Shutdown Cooling System to LPSI Pump Suction, and,
2(3)HV9339, Isolation Valve - Shutdown Cooling System from Reactor Coolant System Loop 2
2(3)HV9377, Shutdown Cooling System Bypass to LPSI Suction Isolation Valve, and,
2(3)HV9378, Shutdown Cooling System Bypass to LPSI Suction Isolation Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valves are used in establishing the Shutdown Cooling System flow path when the plant is shutdown.

These valves are required by Technical Specification 3/4.5.2 to be interlocked to prevent opening whenever reactor coolant system pressure exceeds 376 psia.

2(3)HV9340, Safety Injection Tank T008 Outlet Valve to Reactor Coolant System Loop 1A,
2(3)HV9350, Safety Injection Tank T009 Outlet Valve to Reactor Coolant System Loop 1B,
2(3)HV9360, Safety Injection Tank T009 Outlet Valve to Reactor Coolant System Loop 2A, and,
2(3)HV9370, Safety Injection Tank T010 Outlet Valve to Reactor Coolant System Loop 2B

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valves block the discharge path of the Safety Injection Tanks into the Reactor Coolant System when closed.

Restoring power to this valve or opening this valve while the plant is at power would result in non-compliance with the Technical Specifications.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

2(3)HV9341, Safety Injection Tank T008 Fill and Drain Line Isolation Valve
2(3)HV9351, Safety Injection Tank T007 Fill and Drain Line Isolation Valve
2(3)HV9361, Safety Injection Tank T009 Fill and Drain Line Isolation Valve
2(3)HV9371, Safety Injection Tank T010 Fill and Drain Line Isolation Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Close stroke test these valves at cold shutdown intervals.

These valves are normally closed during plant operations and are opened to fill the Safety Injection tanks. These valves are closed upon receipt of a SIAS. They are Reactor Coolant System boundary valves.

During plant operations, the lines downstream of these valves are depressurized and the valves are closed. In order to close stroke each valve, it must be opened and then stroked closed. Opening these valves causes the associated Safety Injection Tank to depressurize, contrary to the requirements of Tech Spec. 3/4.5.1. This results in a 1 hour action statement.

2(3)HV9345, Safety Injection Tank T008 Vent Valve,
2(3)HV9355, Safety Injection Tank T007 Vent Valve,
2(3)HV9365, Safety Injection Tank T009 Vent Valve, and,
2(3)HV9375, Safety Injection Tank T009 Vent Valve

These valves provide a means of depressurizing the Safety Injection Tanks.

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

During power operation, Technical Specifications require power to be locked out for this valve. This prevents inadvertent depressurization of the Safety Injection Tanks.

2(3)HV9353, Shutdown Cooling warm-up valve
2(3)HV9359, Shutdown Cooling warm-up valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test these valves at cold shutdown frequency when shutdown cooling is placed in service.

These valves are normally closed during plant operation and are used to regulate the amount of water that bypasses the core to limit cooldown. These valves are credited as active components in the FSAR but are not required to open in order to bring the plant to a safe shutdown according to the Failure Modes and Effects Analysis (FMEA) in the FSAR.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

These valves are closed during plant operation and are placed in service when shutdown cooling is required. To stroke these valves open during normal plant operation, would required entry into a one hour action statement under the Technical Specifications. This is because both trains of LPSI are put out of service for this stroke. Opening these valves will cause Safety Injection flow diversion from Reactor Coolant System Loop 2A back to LPSI pump suction.

2(3)HV9433, Reactor Coolant Loop 1A Hot Leg Injection Drain
2(3)HV9437, Reactor Coolant Loop 2 Hot Leg Injection Drain

Test Requirement: OM-10, Para. 4.2.1.6, Fail Safe Valves, and, OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Stroke the valve closed at quarterly intervals and conduct a fail safe test at cold shutdown intervals.

These valves are used to release the pressure between the Reactor Coolant System check valve MU156 and the penetration check valve MU158 during normal operation. HV9433 and HV9437 receive a SIAS closed signal and failure to close could result in unacceptable flow diversion during both Safety Injection and recirculation. Leakage through these valves during normal operation would result in level change in the Reactor Coolant Drain Tank (RCDT).

Valve is in Containment and requires personnel entry into Containment during normal plant operations to perform fail safe test. This renders the test impractical on a quarterly basis.

S2(3)1204MU001, RWST 2(3)T005 to Spray Pump 2(3)P012 Suction Header
S2(3)1204MU002, RWST 2(3)T005 to Spray Pump 2(3)P013 Suction Header

Test Requirement: OM-10, Paragraph 4.3.2, exercise these valves open and closed every three months.

Alternate Testing: Quarterly, perform a partial stroke test (open) of each valve using system flow. At each refueling outage, test the valve by partial disassembly, inspection and manual stroking on a rotating basis (one valve per refueling).

During partial disassembly, the valve internals will be visually inspected for worn or corroded parts, and the valve disk will be manually exercised. If it is found that the full stroke capability of the disassembled valve is in question, the other valve will be similarly disassembled and inspected and manually full stroked during the same outage. Following reassembly, the valve will be tested by partial stroking using system flow.

These valves prevent back-flow from the High Pressure Safety Injection Suction Header, Low Pressure Safety Injection Suction Header and Spray Pump Suction header to the Refueling Water Storage Tanks (RWST's).

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

INTRODUCTION

The source of flow to these valves is borated water from the RWST's. Pumps that produce flow through these valves are the High pressure Safety Injection (HPSI), Low Pressure Safety Injection (LPSI) and Containment Spray pumps. They discharge into the Reactor Coolant System (Reactor Coolant System) or containment building spray headers.

These safety injection system check valves prevent post accident recirculation flow from escaping the normal flow path into the RWST. Plant conditions can be grouped into three test situations with respect to these valves; (1) Reactor Coolant System Pressurized and at normal operating temperature, (2) Reactor Coolant System depressurized and cooled down, and, (3) Reactor Coolant System open during refueling. These conditions are discussed below:

(1) REACTOR COOLANT SYSTEM PRESSURIZED AND AT NORMAL OPERATING TEMPERATURE

These valves cannot be full-stroked using flow during power operation, for the following reasons:

- a. The HPSI (shutoff head 1500 psi) and LPSI (shutoff head 200 psi) pumps are unable to overcome Reactor Coolant System pressure (nominal operating pressure = 2000 psi). There is no full flow recirculation to the RWST from either pump.

As a result, only pump recirculation through the miniflow line is produced using these pumps while the Reactor Coolant System is pressurized. Although this is sufficient for a partial stroke test, flow for a full-stroke test is not available.

- b. A quarterly test at power, using the only available flow path, would either inject borated water into the Reactor Coolant System or spray down the containment building, or both. If injection were possible during operation, the test would not be performed because the result would be an immediate, uncontrolled and complete reactor shutdown (as a result of the borated water) and/or flooding and resultant degradation of the components and systems located in the containment building (as a result of the containment building spray down).
- c. The containment spray pumps cannot be utilized to full-stroke these valves using flow, as the only full flow path during plant operation is through the containment spray header and nozzles.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

(2) Reactor Coolant System DEPRESSURIZED AND COOLED DOWN

These valves cannot be full-stroked using flow during cold shutdown for the following reasons:

- a. TESTING WITH ALL PUMPS IN A LOGr: Sufficient flow to full-stroke the RWST outlet check valves is not achievable in this condition. Return flow from the HPSI and LPSI pump discharge lines is very limited, consisting of mini-flow recirculation lines and Reactor Coolant System vent lines.
- b. TESTING WITH THE CONTAINMENT SPRAY PUMP: The containment Spray (CS) pumps have a 6" recirculation line to the RWST's, but these pumps by themselves cannot develop full-stroke flow for the RWST outlet check valves.
- c. TESTING WITH THE LPSI PUMPS: Stroking the RWST outlet check valves with flow from the LPSI pumps is prohibited by the Technical Specifications in Cold Shutdown because the LPSI pumps must be aligned to take suction from the Reactor Coolant System to provide shutdown cooling during this mode of operation. The LPSI pumps cannot, therefore, take a suction through the RWST outlet check valves.
- d. TESTING WITH THE HPSI PUMPS:

The equivalent of the combined Containment Spray, LPSI, and HPSI flow rate cannot be developed with the HPSI pump alone. The HPSI pumps cannot be used to exercise these valves during cold shutdown because of the risk of exceeding cooldown rate limits. The borated water in the RWST is normally at an ambient temperature of $\approx 65^{\circ}\text{F}$ and the cooled down Reactor Coolant System is nominally at $\approx 135^{\circ}\text{F}$.

e. CONCLUSION:

The Code required testing of the RWST outlet check valves while the plant is in Cold Shutdown could only be performed after significant redesign of the system, such as the addition of an instrumented full flow test line.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

(3) Reactor Coolant System OPEN DURING REFUELING

a. FLOW PATH:

The RWST outlet check valves are in the 24" supply line to the suction headers of the HPSI, LPSI and Containment Spray Pumps. To full-stroke the RWST outlet check valves using flow during refueling with the Reactor Vessel head removed, would require that the system achieve a test flow of approximately 6500 gpm (full accident flow). There is one check valve for each of the two trains of pumps. Full flow from the RWST through the check valves of interest is only achieved with all of the pumps in one train running at the same time (one HPSI pump, one LPSI pump and one Spray pump).

A large flow could be achieved in the refueling mode during refueling cavity fill. The HPSI, LPSI and containment Spray pumps could take a suction from the RWST and discharge to the Reactor Coolant System. With the Reactor Pressure Vessel head removed, flow would first fill and then overflow the Reactor Pressure Vessel into the Refueling Cavity.

b. COOLDOWN LIMITS:

The only discharge path that exists for this flow is into the core through the safety injection headers to the cold legs and/or the 6" recirculation line from the Containment Spray pump discharge to the RWST (this 6" line alone has insufficient capacity for the full-stroke of the RWST outlet check valves using flow). The borated water in the RWST is normally at an ambient temperature of = 65°F and the Cooled down Reactor Coolant System is nominally at = 136°F.

Injection of the borated RWST water could result in a cool-down rate in violation of the Technical Specifications (See Figure 3.4-5, Reactor Coolant System Maximum Allowable Cool-Down Rates) for the reactor vessel.

CONCLUSION

From the above discussion, it can be seen that no allowable flow path exists in any plant mode for a full-stroke of the RWST outlet check valves using flow. Testing of these valves could only be accomplished after significant redesign of the system, such as installation of a fully instrumented full flow test loop. NRC Generic Letter 89-04, Attachment 1, Position 2, identifies partial disassembly and inspection as an acceptable alternative for stroking a valve when it is impractical to use flow. In this case, there is no way to stroke these valves with the existing system design using flow.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

TEST SCHEDULE

Disassemble and inspect both of these valves each refueling outage requires the associated piping to be drained. This generates a significant amount of liquid radioactive waste. In addition, considerable radiation exposure can be received by personnel performing the partial disassembly, hand stroking and inspection. As a consequence, there is a clear advantage in reducing the number of partial disassembly and hand stroking tests required in each refueling.

This is an approved code exception in accordance with NRC Generic Letter 89-04 (GL 89-04), Attachment 1, Position 2, Alternative to full flow testing of check valves. This section specifies that for valves that cannot be full flow tested, the NRC staff position is that valve disassembly and inspection can be used as a positive means of determining that a valve's disk will full-stroke exercise open or of verifying closure capability. If possible, partial valve stroking quarterly or during cold shutdowns, or after re-assembly must be performed.

OM-10, Paragraph 4.3.2 allows that a valve may be disassembled as an alternative to full flow testing.

GL 89-04, Position 2, allows development of staggered testing of like components by establishing an inspection plan for similar groups of valves.

S2(3)1204MU003, Outlet Check Valve - Containment Emergency Sump
S2(3)1204MU004, Outlet Check Valve - Containment Emergency Sump

Test Requirement: OM-10, Paragraph 4.3.2, exercise these valves every three months.

Alternate Testing: The valves will be partially disassembled, inspected and manually full stroked at each refueling outage on a rotating basis (one valve per refueling). During partial disassembly, the valve internals will be visually inspected for worn or corroded parts, and the valve disk will be manually exercised. If it is found that the full stroke capability of the disassembled valve is in question, the other valve will be similarly disassembled and inspected and manually full stroked during the same outage.

A method of partial flow testing will be developed and used following the partial disassembly and prior to returning the valve(s) to service.

These valves open to provide recirculation flow from the containment sump to the suction piping of the HPSI, LPSI and Containment Spray pumps.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

Test Methodology

NORMAL PLANT OPERATION

The only source of water to the inlet of the containment sump outlet check valves is the containment building sump. During normal plant operation this sump is required to be kept dry and the isolation valves shut. This system lineup precludes either full-stroke or partial stroke of these check valves using flow in this mode.

COLD SHUTDOWN AND REFUELING MODES

In cold shutdown or reactor refueling modes, part stroke exercising of these valves is possible with flow from the containment sump, however, the sump is not maintained at a cleanliness level consistent with the internals of the Safety Injection or Reactor Coolant system piping. The cleanup of the containment sump to a cleanliness level consistent with the internals of the Safety Injection or Reactor Coolant system would be labor intensive.

If part stroke exercising were conducted by filling the sump with water and flow testing these valves, this would potentially contaminate the safety injection systems, the refueling water storage tank, and/or the reactor coolant system with low quality water. This contamination of the systems would cause accelerated corrosion and degradation. Extensive flushing and cleanup following such testing would therefore be required.

CONCLUSION

The Code required testing could only be performed after significant system modifications involving considerable costs. These system modifications would involve additional containment penetrations and long runs of large diameter piping with associated supports and isolation valves. NRC Generic Letter 89-04, Attachment 1, Position 2, identifies partial disassembly and inspection as an acceptable alternative for stroking a valve when it is impractical to use flow. In this case, there is no practical way to full-stroke these check valves using flow with the existing system design.

TEST SCHEDULE

Disassembly and inspection of these valves each refueling outage requires the associated system piping to be drained. This generates a significant amount of liquid radioactive waste. This generates a significant amount of liquid radioactive waste. In addition, considerable radiation exposure can be received by personnel performing the partial disassembly, hand stroking and inspection. As a consequence, there is a clear advantage in reducing the number of these tests required in each refueling.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

This Alternate Testing is an approved code exception in accordance with NRC Generic Letter 89-04 (GL 89-04), Attachment 1, Position 2, Alternative to full flow testing of check valves. This section specifies that for valves that cannot be full flow tested, the NRC staff position is that valve disassembly and inspection can be used as a positive means of determining that a valve's disk will full-stroke exercise open or of verifying closure capability. If possible, partial valve stroking quarterly or during cold shutdowns, or after re-assembly must be performed.

OM-10, Paragraph 4.3.2 allows that a valve may be disassembled as an alternative to full flow testing.

GL 89-04, Position 2, allows development of staggered testing of like components by establishing an inspection plan for similar groups of valves.

S2(3)1204MU006, HPSI Pumps 2(3)P017 and 2(3)P018 Suction Check Valve
S2(3)1204MU008, HPSI Pumps 2(3)P018 and 2(3)P019 Suction Check Valve

Test Requirement: OM-10, Paragraph 4.3.2, exercise these valves every three months.

Alternate Testing: These valves will be full stroke exercised at each refueling, while using the high pressure safety injection pumps to fill the refueling pool canal, and part stroke exercised quarterly during routine inservice testing of the HPSI pumps.

These valves open to allow a flow of water into the suction piping of the high pressure safety injection pumps.

This check valve cannot be full stroke exercised during power operations because the high pressure safety injection pumps cannot overcome reactor coolant system pressure. During cold shutdown full stroke exercising this valve could result in a low temperature over-pressurization of the reactor coolant system.

OM-10 Section 4.3.2.2, Exercising Requirement, paragraph (e) stipulates if exercising is not practicable during plant operation or cold shutdowns, it may be limited to full stroke during refueling outages.

S2(3)1204MU012, HPSI Pump 2(3)P017 Discharge Check Valve,
S2(3)1204MU015, HPSI Pump 2(3)P019 Discharge Check Valve,
S2(3)1204MU016, HPSI Pump 2(3)P018 Discharge Check Valve, and,
S2(3)1204MU017, HPSI Pumps 2(3)P018 & 2(3)P019 to #2 High Pressure Header,

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valves are in the flow path of the HPSI and direct flow from the pumps and along the path to the Reactor Coolant System.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

This valve cannot be exercised while the plant is at power because the HPSI pump cannot overcome Reactor Coolant System Pressure. To exercise disc to fully open position requires 200 GPM, which is not available.

S2(3)1204MU018, HPSI Combined Header to Reactor Coolant System Loop 1A Check Valve,
S2(3)1204MU019, HPSI Combined Header to Reactor Coolant System Loop 1B Check Valve,
S2(3)1204MU020, HPSI Combined Header to Reactor Coolant System Loop 2A Check Valve, and,
S2(3)1204MU021, HPSI Combined Header to Reactor Coolant System Loop 2B Check Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valves direct flow into the Reactor Coolant System from the HPSI pumps.

Exercising this valve while the plant is at power would result in non-compliance with Technical Specification 3/4.5.2. In any event, during power operation there is no full flow path available to stroke test this valve. LPSI or HPSI pumps cannot overcome the Reactor Coolant System pressure.

S2(3)1204MU022, Refueling Water Storage Tank T005 isolation valve to LPSI pump P015 suction
S2(3)1204MU023, Refueling Water Storage Tank T006 isolation valve to LPSI pump P016 suction

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test these valves at cold shutdown intervals

These are the manual isolation valves for P015 and P016. They are used to isolate RWST from the Shutdown Cooling System to prevent complete draining of the RWST. These valves are credited as the boundary valves for Appendix R. They are closed to restore LPSI pump suction during loss of shutdown cooling. See AOI (Abnormal Operating Instruction) S023-13-15.

MU022 and MU023 are locked open during normal operation. Closing them during plant operation will cause the associated train of LPSI to be inoperable and fail to meet the requirements of Technical Specification 3/4.5.2 which requires two independent Emergency Core Cooling System (ECCS) subsystems to be operable and restore the inoperable subsystem to operable status within 72 hours.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1204MU024, LPSI Pump 2(3)P015 Discharge Stop Check Valve, and,
S2(3)1204MU025, LPSI Pump 2(3)P016 Discharge Stop Check Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valves are on the discharge of the LPSI pumps and prevent backflow through an idle LPSI pump in the event the other pump is operating.

While the plant is at power, LPSI pumps cannot overcome Reactor Coolant System pressure. Additionally, aligning the system discharge to the RWST would defeat both trains of LPSI.

S2(3)1204MU027, Safety Injection Headers to Reactor Coolant System Loop 1A, and,
S2(3)1204MU029, Safety Injection Headers to Reactor Coolant System Loop 1B,
S2(3)1204MU031, Safety Injection Headers to Reactor Coolant System Loop 2A, and,

S2(3)1204MU033, Safety Injection Headers to Reactor Coolant System Loop 2B

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valves direct flow into the Reactor Coolant System from the LPSI and HPSI pumps.

During power operation there is no full flow path available to stroke test this valve. LPSI or HPSI pumps cannot overcome the Reactor Coolant System pressure. Requires 2000 GPM for full Stroke.

S2(3)1204MU034 (2-034-C-329), HPSI 2(3)P017 Miniflow
S2(3)1204MU035 (2-035-C-329), HPSI 2(3)P019 Miniflow,
S2(3)1204MU036 (2-036-C-329), HPSI 2(3)P018 Train "A" Miniflow,
S2(3)1204MU037 (2-037-C-329), LPSI Pump 2(3)P015 Miniflow Stop Check Valve,
S2(3)1204MU063 (2-063-C-329), LPSI Pump 2(3)P016 Miniflow Stop Check Valve,
S2(3)1204MU104 (2-104-C-329), HPSI 2(3)P018 Train "B" Miniflow

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These stop-check valves direct miniflow recirculation from the HPSI, LPSI pumps back to the Refueling Water Storage Tanks.

Providing flow or pressure to verify completion of the closed stroke requires placing the miniflow line out of service for the HPSI, LPSI and Containment Spray Systems. This renders those systems inoperable and is therefore only practical in modes during which these systems are not required to be operable.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1204MU040, Safety Injection Tank T008 Outlet Check Valve
S2(3)1204MU041, Safety Injection Tank T007 Outlet Check Valve
S2(3)1204MU042, Safety Injection Tank T009 Outlet Check Valve
S2(3)1204MU043, Safety Injection Tank T010 Outlet Check Valve

Test Requirement: OM-10, Paragraph 4.3.2, exercise these valves every three months.

Alternate Testing: Partial stroke test these check valves on a cold shutdown interval.

At refueling intervals, test these valves by partial disassembly and hand stroking. The valve internals shall be visually inspected for worn or corroded parts, and the valve disks shall be manually exercised.

It shall be verified that the valve is capable of full-stroking and that the internals of the valve are structurally sound. This testing shall be conducted at each refueling outage on a rotating basis. One valve of this group will be tested each successive refueling outage, until the entire group has been tested. If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of the valve internals, the remaining valves in this group shall also be disassembled, inspected, and manually full-stroke exercised during the same outage.

A partial flow test shall be performed on the disassembled valve before it is returned to service.

The use of non-intrusive diagnostic techniques are being pursued to demonstrate that these valves swing fully open during partial flow testing.

These valves open to allow a flow of water from the Safety Injection Tanks into the Safety Injection Header of each Primary loop.

Opening this valve during power operation is not possible against normal Reactor Coolant System operating pressure. A partial stroke test is the only test possible during Cold shutdown due to system configuration.

OM-10 Section 4.3.2.2(d) stipulates, "If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part stroke during cold shutdowns, and full-stroke during refueling outages."

Section 4.3.2.4(c), Valve Obturator Movement, further states, "As an alternative to the testing in (a) or (b) above, disassembly every refueling outage to verify operability of check valves may be used."

GL 89-04 allows development of staggered testing of like components by establishing an inspection plan for similar groups of valves. This is stated in position 2 of GL 89-04.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1204MU072, LPSI Check Valve to Reactor Coolant System Loop 1A,
S2(3)1204MU073, LPSI Check Valve to Reactor Coolant System Loop 1B,
S2(3)1204MU074, LPSI Check Valve to Reactor Coolant System Loop 2A, and,
S2(3)1204MU075, LPSI Check Valve to Reactor Coolant System Loop 2B

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These check valves direct LPSI flow into the Reactor Coolant System whenever the Reactor Coolant System pressure drops below LPSI pump discharge pressure. There is no flow path to exercise this valve during power operation. LPSI pumps cannot overcome Reactor Coolant System Pressure while the plant is at power.

S2(3)1204MU077, LPSI Pump 2(3)P016 Suction Header Check Valve
S2(3)1204MU084, LPSI Pump 2(3)P015 Suction Check Valve
S2(3)1204MU199, LPSI Pump 2(3)P016 Suction Header Check Valve
S2(3)1204MU201, LPSI Pump 2(3)P015 Suction Header Check Valve

Test Requirement: OM-10, Paragraph 4.3.2, exercise these valves every three months.

Alternate Testing: Quarterly, part-stroke exercise these valves.

A flow path exists during the filling of the refueling canal with the LPSI pumps in plant Mode 6 (refueling). The suction of the LPSI pumps can be aligned to the RWST and the discharge to the LPSI header or shutdown cooling header. Flow could then be directed through the LPSI Suction Header Check Valves at full flow (LPSI Pump Design Flow is 4150 gpm at 400 psid) for a short period of time sufficient to full-stroke these valves with flow. Therefore, the valves will be full stroke exercised using flow at reactor refueling intervals.

These valves open to allow a flow of water from the refueling water storage tank (RWST) into the suction piping of the Low Pressure Safety Injection (LPSI) pumps.

The Cold Shutdown interval for the Check Valve Stroke Test Closed is required due the impracticability of erecting scaffolding and handling the heavy radiography apparatus in the vicinity of the Safety Injection equipment.

DURING POWER OPERATION

Full-stroke exercising of the LPSI pump suction check valves with flow requires the passage of the maximum required accident flow rate through the valves. The LPSI suction checks are in the suction lines of the associated LPSI pumps and deliver borated water to these pumps from the RWST's. The pumps in turn discharge to the Reactor Coolant System, Shutdown Cooling heat exchanger and the mini-flow recirculation lines (returning the flow to the RWST's).

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

These valves cannot be full-stroke exercised using flow during power operation, for the following reasons:

- a. The mini-flow recirculation lines cannot provide enough flow through the LPSI pump suction check valves, as the maximum flow achievable through this path is less than required accident flow. Although this is sufficient for a partial stroke test, flow for a full-stroke is not available.
- b. During power operation, the Shutdown Cooling System is isolated and cannot be used as a flow path because it must remain isolated due to interlocks controlled by Technical Specification 3.4.5.2.d.
- c. Injecting water into the Reactor Coolant System during power operation is not possible. The Low Pressure Safety Injection (LPSI) pumps (shutoff head = 200 psi) are unable to overcome Reactor Coolant System pressure (nominal operating pressure = 2000 psi) and therefore there can be no flow into the Reactor Coolant System in this plant mode. If a test at power could be conducted, it would result in injection of borated water into the Reactor Coolant System. The result would be an immediate, uncontrolled and complete reactor shutdown (as a result of the borated water).

COLD SHUTDOWN

The Technical Specifications require that the LPSI pumps remain aligned to provide shutdown cooling at all times while the plant is in Cold Shutdown. The LPSI suction check valves are, accordingly, bypassed and cannot be full-stroke tested using flow. Compliance with the Code requirement to perform quarterly testing could only be accomplished after a major modification of the system design. The improvement of the testing in cold shutdown would not justify the high costs involved.

OM-10 Section 4.3.2.2(d) stipulates, "If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part stroke during cold shutdowns, and full-stroke during refueling outages."

We meet this requirement by performing a partial stroke quarterly during operation and a full stroke during refueling outages.

NOTE: There is not a clear fit in the code for this condition. Section 4.3.2.2(d) allows for a partial stroke during cold shut down, but not a quarterly stroke during operation. By doing the stroke quarterly we exceed the requirement of the code.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1204MU087, Spray Pump 2(3)P013 Suction Check Valve, and,
S2(3)1204MU088, Spray Pump 2(3)P012 Suction Check Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valves are in the flow path of the Containment Spray Pumps.

No flow path exists to exercise this valve to the open position during plant operation without removing both trains of Containment Spray and LPSI from service.

S2(3)1204MU099, Containment Isolation, Safety Injection Tank to Drain Header to RWST 2T005

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Partial stroke test this valve at a cold shutdown intervals.

This valve provides containment isolation in the drain line from the Safety Injection Tank's back to the RWST.

Opening this valve at power for test requires entry into a Technical Specification Action Statement due to breach of containment integrity.

S2(3)1204MU152, To #2 HPSI Header

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

This valve directs the flow from #2 HPSI header into the Reactor Coolant System hot leg.

Valve cannot be stroked at power because the HPSI pumps cannot overcome Reactor Coolant System Pressure. Additionally, opening the HPSI Header Isolation valve during power operation would result in non-compliance with Technical Specification 3/4.5.2.

S2(3)1204MU155, HPSI Header #1 to Reactor Coolant System Loop 2 Hot Leg,
S2(3)1204MU156, HPSI Header #1 to Reactor Coolant System Loop 2 Hot Leg Inlet Check Valve,
S2(3)1204MU157, HPSI Header #2 to Reactor Coolant System Loop 1 Hot Leg, and,
S2(3)1204MU158, HPSI Header #1 to Reactor Coolant System Loop 2 Hot Leg

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

These valves direct flow from the discharge of the HPSI headers into the Reactor Coolant System Hot legs.

Full or partial stroke exercising of this valve while the plant is at power would result in non-compliance with Technical Specification 3/4.5.2. In addition, while the plant is at power, HPSI pumps cannot overcome Reactor Coolant System pressure.

16.0 STEAM

2(3)HV8200, Steam from Steam Generator E089 to AFW Pump 2(3)P140,
2(3)HV8201, Steam from Steam Generator E088 to AFW Pump 2(3)P140

Test Requirement: Exercise quarterly in accordance with OM-10.

Alternate Testing: Manual stroke (partial) at cold shutdown in addition to normal testing.

These valves isolate the main steam leads coming out of the containment from the steam generators and going to the steam driven AFP's.

The manual stroke is a non-Code required test and a cold shutdown interval has been judged as adequate to show that the valves can be manually actuated if necessary in accordance with the EOI's.

2(3)HV8204, Steam Generator E089 Main Steam Isolation Valve
2(3)HV8205, Steam Generator E088 Main Steam Isolation Valve

Test Requirement: OM-10, Paragraph 4.2.1: Full stroke exercise close at cold shutdown. Part stroke close quarterly when full stroke testing is impractical.

Alternate Testing: Perform a full stroke close test at cold shutdown.

These valves isolate the main steam leads coming out of the containment from the steam generators and going into the steam plant.

Close on Main Steam Isolation Signal (MSIS).

Full stroke exercising at full plant power would cause a loss of 50% of our heat removal from the primary coolant system, a reactor trip on asymmetric power in the core and actuation of the steam and pressurizer (primary) reliefs.

The MSIVs must be open during power operation. Closure of one or both of the MSIVs during power operation will result in a reactor trip. A partial stroke test could result in an inadvertent closure of an MSIV and a reactor trip.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

SCE performed a Probabilistic Risk Assessment (PRE 1-91-22) of the partial stroke test of the MSIVs and determined that the risk to the health and safety of the public is reduced by approximately an order of magnitude by eliminating the quarterly partial stroke test of the MSIVs during power operation. The calculated offsite dose impact from inadvertent closure of an MSIV during the partial stroke testing is estimated to be 0.5 man-rem per year. The calculated offsite dose from failure of an MSIV to close during an accident due to eliminating the partial stroke testing is estimated to be 0.045 to 0.075 man-rem per year. As a result, the part stroke test during power operation is not performed.

2(3)HV8419, Main Steam Dump to Atmosphere, and,
2(3)HV8421, Main Steam Dump to Atmosphere

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals

These valve open to relieve main steam pressure in the main steam leads coming out of the containment at a pressure below that of the main steam relief valves. They therefore prevent the necessity for actuating the main steam relief valves. Full stroke exercising of this valve during power operation could result in a reactor plant transient due to energy released via the steam dump.

NORMAL SYSTEM LINEUP

The ADV's are rarely opened during power operation and are only used during plant heat up and cool downs when the condenser is not available. Therefore, the valves are normally in their MSIS actuated position, and there is generally no need to perform a full closed stroke test of the ADV's.

QUARTERLY FULL STROKE

Fully opening an ADV without isolation of the steam flow path at power risks plant upset and trip as this allows a large steam release, approximately 5% of 3410 MW thermal, and a resultant pressure transient when the ADV is tripped closed. The pressure transient could result in Reactor Coolant System temperature excursions that could cause an Engineered Safety Feature (ESF) initiation with the associated reactor trip.

There is a maintenance block valve upstream of the ADV. This valve could be closed to block steam flow to allow the ADV to be fully opened for test without releasing steam. However, an isolated ADV is unavailable to perform its function with the block valve closed necessitating entry into the action requirements of Technical Specification 3.7.1.6 and aggravating the unavailability of the ADV's from a plant reliability point of view.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

PARTIAL STROKE TESTING WITH PRESSURE APPLIED

A partial stroke of the ADV can be performed, while the ADV is experiencing full system pressure, by opening the valve to approximately 25%. The ADV's are designed with integral pilot valves that assist in opening the ADV when it is under pressure. The pilot valve equalizes pressure across the ADV (partially) during the open stroke.

Partial stroke exercising with main steam pressure applied followed by closing the ADV in a similar manner as would a MSIS actuation, demonstrates the ADV and its pilot valve's ability to open and close under actual operating conditions.

CONCLUSION

This proposed alternative testing method would be analogous to actual design conditions for ADV operation and can be performed with minimal impact to plant operations. The pilot valve stroke length is the first 5% of the stem travel. This fully exercises the pilot valve and piston ring, and partially exercises the main plug.

The pilot valve serves no function when the ADV is not under system pressure. The depressurized stroke test is an artificiality that does not demonstrate the ability of the ADV to function under design conditions.

2(3)PCV8463, ADV HV8419 Nitrogen Accumulator Pressure Control Valve
2(3)PCV8465, ADV HV8421 Nitrogen Accumulator Pressure Control Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test at cold shutdown intervals in conjunction with the testing of the associated ADV.

These valves open to maintain pressure in their respective ADV actuator nitrogen supply header upon loss of instrument air. These valves are normally closed since the downstream air pressure is maintained above 100 psig and the regulator valve is set at 80 psig. Nitrogen backup is required for small break LOCA when manual operation of the ADV is not possible. These valves are designed to fail open.

These valves are pressure control valves and are therefore excluded from inservice testing requirements under OM-10, Section 1.2. The backup nitrogen gas supply to the ADV will not be available while pressure control valves are stroked open. This necessitates an entry into the action requirements of Technical Specification 3.7.1.6. These valves are open stroked during IST of the respective ADV's at cold shutdown intervals. Therefore the practical test frequency is cold shutdown in conjunction with the ADV IST.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1301MU1264, HV8419 Equalizing Ball Valve
S2(3)1301MU1265, HV8421 Equalizing Ball Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test this valve at cold shutdown intervals.

These valves are normally closed and are opened to equalize the pneumatic pressure on across the valve actuator to permit manual operation of the atmospheric dump valve. If these valves remain closed, actuator pressure would not be equalized, and manual operation would be difficult. This could delay manual operation of the ADV's. Local manual operation of the ADV is use when the ADV cannot be operated from the control room during a steam generator tube rupture; main steam line break outside containment; feed water line break; fire and control room evacuation.

These valves are not Code valves. In spite of the fact that they are exempted from IST (since this they are provided for operating convenience, see OM-10 Section 1.2 (a)(1)), they have been included in the IST program to assure functionality. MU1264 and MU1265 are open and closed stroked during IST of the associated ADV at cold shutdown intervals. In order to stroke the valve closed, the associated ADV must be declared inoperable because normal control air must be isolated. Therefore the practical test frequency is cold shutdown in conjunction with the ADV IST. The response to Question 53 in Reference 2.5.2 is followed for guidance in these cases.

S2(3)1301MU021, HV8421, Nitrogen Supply Isolation Valve
S2(3)1301MU1328, HV8419, Nitrogen Supply Isolation Valve

Test Requirement: OM-10, Para. 4.2.1.1, test nominally every three months.

Alternate Testing: Test these valves at cold shutdown intervals.

These valves are maintained in the open position to provide a source of nitrogen to the ADV in case there is a loss of instrument air. MU1328 and MU021 are required to be closed to isolate nitrogen supply to the ADV actuators during manual operation of the ADV's. Manual operation of the ADV is required if the ADV cannot be operated from the control room during a Steam Generator Tube Rupture, Main Steam Line Break outside containment, Feed Water Line Break, fire and control room evacuation. These valves are also closed to crosstie nitrogen accumulators if one ADV is inoperable or only one ADV is to be used. No credit is taken for this during an accident. These valves are opened and closed during IST of ADV at cold shutdown intervals when the ADV's are stroked open manually.

The ADV is Inoperable when the backup nitrogen source is isolated. MU1328 and MU021 are not Code valves and are also exempted from IST since they are for operating convenience. See OM-10 Section 1.2 (a)(1). These valves are opened and closed during IST of the associated ADV's at cold shutdown intervals. Therefore the practical test frequency is cold shutdown in conjunction with the ADV IST.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

S2(3)1301MU003, Steam Supply - S/G E088 to AFP Turbine K007 Check Valve
S2(3)1301MU005, Steam Supply - S/G E089 to AFP Turbine K007 Check Valve

Test Requirement: OM-10, Paragraph 4.3.2, exercise the valves every three months.

Alternate Testing: Quarterly, perform a partial stroke test (open) of each valve using system flow. At each refueling outage, test the valves by partial disassembly, inspection and manual stroking on a rotating basis (one valve per refueling).

During partial disassembly the valve internals will be visually inspected for worn or corroded parts, and the valve disks shall be manually exercised. If it is found that the full stroke capability of the disassembled valve is in question, the other valve will be similarly disassembled and inspected and manually full-stroke exercised during the same outage. Following reassembly and prior to return to service, the valve will be tested by partial stroking using system flow.

NOTE: The use of non-intrusive diagnostic techniques are being pursued to demonstrate that these valves close when subjected to reverse flow conditions.

These valves are in the main steam supply to the turbine-driven auxiliary feedwater pump. In the event of a main steam line break, these valves close to isolate the opposite steam generator.

DURING PLANT OPERATION

During normal plant operation, main steam pressure tends to open these valves. No pressure source exists to reverse this pressure in the steam line where these valves are located and allow detection of valve closure or valve leakage. Consequently, with the present system design, verifying the closure of the AFP Steam Supply check valves by leak testing or with reverse flow, while the plant is operating, is not practical. Although a temporary external pressure source could be connected to the down-stream piping and apply reverse pressure to these check valves, the required valve lineup would cause the associated auxiliary feedwater pump to be inoperable during the test.

DURING COLD SHUTDOWN OR REFUELING MODES

Regardless of plant mode, there is no positive means of verifying that the valve disc travels to the closed position. System connections, such as vents and drains (and appropriate line isolation valves) are not present in the system to allow verification that a pressure differential exists across the AFP Steam Supply check valves when they are in the closed position.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

CONCLUSION

OM-10 and NRC Generic Letter 89-04, Attachment 1, Position 2, identifies partial disassembly and inspection as an acceptable alternative for stroking a valve when it is impractical to use flow. In this case, there is no way to test these check valves closed with the existing system design using reverse flow or pressure. Testing of these valves could only be accomplished after significant redesign of the system, such as installation of additional isolation valves and appropriate vents and drains in the high pressure steam piping. The high costs of the necessary design changes involved would not be justified by the improvement of the valve testing. Further, the addition of valves, supports and necessary piping modifications could result in reduced plant reliability.

TEST SCHEDULE

Disassembly and inspection of both of these valves each refueling outage requires the associated system piping to be opened up. This is a significant effort requiring substantial manpower and refueling outage time. As a consequence, there is a clear advantage in reducing the number of these tests required in each refueling.

GL 89-04 allows development of staggered testing of like components by establishing an inspection plan for similar groups of valves. This is stated in position 2 of the Generic Letter.

NOTE: Indication from initial non-intrusive testing are that the valve strokes to the full open position during the partial flow testing. If this can be reliably demonstrated, testing for this valve will be switched to quarterly testing (full stroke exercising) and the current disassembly methods will be discontinued.

17.0 SUMPS AND DRAINS

S2(3)2426MU056 (4-056-P-675), Check Valve for CCW Pump Room and Room Drains to CCW Sump,
S2(3)2426MU057 (4-057-P-675), Check Valve for CCW Pump Room and Room Drains to CCW Sump,
S2(3)2426MU058 (4-058-P-675), Check Valve for CCW Pump Room and Room Drains to CCW Sump

Test Requirement: OM-10, Para. 4.2.1.1, exercise nominally every three months.

Alternate Testing: Exercise these valves at reactor refueling shutdown intervals or justify removal from the IST program.

These valves direct flow from the CCW pump areas to the radioactive CCW sump. They prevent backflow to the pump areas from the sump.

ALTERNATE TESTING JUSTIFICATION AND BASIS FOR OTHER THAN QUARTERLY TEST INTERVAL
(Continued)

See Attachment 2, note 26. Full or partial stroke exercising of these valves using flow is not possible given the current system configuration. There is no source of flow to either make these valves go open (forward flow), or to close (backflow/pressure). There are no connections to the piping associated with these valves to facilitate temporary pumps for the testing. Access to these valves is not physically practical at this time. Following a design change these valves will be accessible for disassembly and hand exercising to demonstrate operability.

See NCR 91090047, Revision 01, and S023-IST-2426. These valves have been added to DCP 6988 for modification to facilitate IST testing. The Engineering Design Organization prepared a cross flooding calculation to provide justification for removal of a number of sump and drain check valves from IST program. The subject valves were part of that calculation. For the subject valves, the calculation showed that removal from the IST program is possible with a minor modification. Thus, the valves have been added to DCP 6988, but for modification to facilitate removal from IST program rather than to facilitate IST testing.

In either case, testing or removal from the IST program can not be done until cycle 8. This is within our GL 89-04 commitments to the NRC in regard to those items requiring modification in cycle 8 outage.

STROKE TIME ACCEPTANCE CRITERIA FOR VALVES REQUIRED TO STROKE AT OTHER THAN
 THEIR SAFETY ANALYSIS LIMITS

See Note 3 in Attachment 2 to this procedure. For valves referencing note 3 in Attachment 2, the maximum stroke times are protected values. These upper limits may not be increased without a revision to the Final Safety Analysis and/or the Technical Specifications. This is discussed in Reference 2.3.4. Stroke times in Attachment 2 without note 3 are not protected and may be changed with the approval of the Cognizant Supervisor (these maximum stroke times are assigned pursuant to References 2.1.9 and 2.1.3). To comply with Reference 2.1.9, many valves have IST Program stroke time limits shorter than the required times of the accident analysis. Valves with protected stroke times are:

Valve		Safety Analysis Stroke Limit
2(3)HV0508	BTC	40
2(3)HV0509	BTC	40
2(3)HV0510	BTC	40
2(3)HV0511	BTC	40
2(3)HV0512	BTC	40
2(3)HV0513	BTC	40
2(3)HV0514	BTC	40
2(3)HV0515	BTC	40
2(3)HV0516	BTC	40
2(3)HV0517	BTC	40
2(3)HV1105	BTC	10
2(3)HV1106	BTC	10
2(3)HV4047	BTC	10
2(3)HV4048	BTC	10
2(3)HV4051	BTC	10
2(3)HV4052	BTC	10
2(3)HV4053	BTC	20
2(3)HV4054	BTC	20
2(3)HV4057	BTC	20
2(3)HV4058	BTC	20
2(3)HV4705	BTC	40
	BTO	41.5

STROKE TIME ACCEPTANCE CRITERIA FOR VALVES REQUIRED TO STROKE AT OTHER THAN
 THEIR SAFETY ANALYSIS LIMITS
 (Continued)

Valve		Safety Analysis Stroke Limit
2(3)HV4712	BTC	40
	BTO	41.5
2(3)HV4713	BTC	40
	BTO	41.5
2(3)HV4714	BTC	40
	BTO	41.5
2(3)HV4715	BTC	33.5
	BTO	35
2(3)HV4716	BTO	20
2(3)HV4730	BTC	33.5
	BTO	35
2(3)HV4731	BTC	40
	BTO	41.5
2(3)HV4762	BTC	40
2(3)HV4763	BTC	40
2(3)HV5388	BTC	40
2(3)HV5434	BTC	40
2(3)HV5437	BTC	40
2(3)HV5686	BTC	40
2(3)HV5803	BTC	40
2(3)HV5804	BTC	40
2(3)HV6200	BTO	20
2(3)HV6201	BTO	20
2(3)HV6202	BTO	20
2(3)HV6203	BTO	20
2(3)HV6211	BTC	40
2(3)HV6212	BTC	19.7 sec. ⁽¹⁾
2(3)HV6213	BTC	19.7 sec. ⁽¹⁾
2(3)HV6216	BTC	19.7 sec. ⁽¹⁾
2(3)HV6218	BTC	40
2(3)HV6219	BTC	19.7 sec. ⁽¹⁾

STROKE TIME ACCEPTANCE CRITERIA FOR VALVES REQUIRED TO STROKE AT OTHER THAN
THEIR SAFETY ANALYSIS LIMITS
(Continued)

<u>Valve</u>		<u>Safety Analysis Stroke Limit</u>
2(3)HV6223	BTC	40
2(3)HV6236	BTC	40
2(3)HV6366	BTO	12
2(3)HV6367	BTO	12
2(3)HV6368	BTO	12
2(3)HV6369	BTO	12
2(3)HV6370	BTO	12
2(3)HV6371	BTO	12
2(3)HV6372	BTO	12
2(3)HV6373	BTO	12
2(3)HV6500	BTO	12
2(3)HV6501	BTO	12
2(3)HV6569	BTO	5
2(3)HV6570	BTO	5
2(3)HV7258	BTC	40
2(3)HV7259	BTC	40
2(3)HV7512	BTC	40
2(3)HV7513	BTC	40
2(3)HV7800	BTC	1
2(3)HV7801	BTC	1
2(3)HV7802	BTC	1
2(3)HV7803	BTC	1
2(3)HV7805	BTC	1
2(3)HV7806	BTC	1
2(3)HV7810	BTC	1
2(3)HV7811	BTC	1
2(3)HV7816	BTC	1

STROKE TIME ACCEPTANCE CRITERIA FOR VALVES REQUIRED TO STROKE AT OTHER THAN
THEIR SAFETY ANALYSIS LIMITS
(Continued)

<u>Valve</u>		<u>Safety Analysis Stroke Limit</u>
2(3)HV7911	BTC	40
2(3)HV8200	BTO	20
2(3)HV8201	BTO	20
2(3)HV8202	BTC	40
2(3)HV8203	BTC	40
2(3)HV8204	BTC	8
2(3)HV8205	BTC	8
2(3)HV8419	BTC	20
2(3)HV8421	BTC	20
2(3)HV9205	BTC	40
2(3)HV9217	BTC	40
2(3)HV9218	BTC	40
2(3)HV9302	BTO	39.5
2(3)HV9303	BTO	39.5
2(3)HV9304	BTO	39.5
2(3)HV9305	BTO	39.5
2(3)HV9306	BTC	40
2(3)HV9307	BTC	40
2(3)HV9322	BTO	30
2(3)HV9323	BTO	20
2(3)HV9324	BTO	20
2(3)HV9325	BTO	30
2(3)HV9326	BTO	20
2(3)HV9327	BTO	20
2(3)HV9328	BTO	30
2(3)HV9329	BTO	20
2(3)HV9330	BTO	20
2(3)HV9331	BTO	30
2(3)HV9332	BTO	20

STROKE TIME ACCEPTANCE CRITERIA FOR VALVES REQUIRED TO STROKE AT OTHER THAN
THEIR SAFETY ANALYSIS LIMITS
(Continued)

Valve		Safety Analysis Stroke Limit
2(3)HV9333	BTO	20
2(3)HV9334	BTC	40
2(3)HV9341	BTC	10
2(3)HV9347	BTC	40
2(3)HV9348	BTC	40
2(3)HV9351	BTC	10
2(3)HV9361	BTC	10
2(3)HV9367	BTO	12
2(3)HV9368	BTO	12
2(3)HV9371	BTC	10
2(3)HV9433	BTC	10
2(3)HV9437	BTC	10
2(3)HV9821	BTC	5
2(3)HV9823	BTC	5
2(3)HV9824	BTC	5
2(3)HV9825	BTC	5
2(3)HV9900	BTC	40
2(3)HV9920	BTC	40
2(3)HV9921	BTC	40
2(3)HV9948	BTC	12
2(3)HV9949	BTC	12
2(3)HV9950	BTC	12
2(3)HV9951	BTC	12
2(3)HV9971	BTC	40
2(3)TV9267	BTC	40

The differing stroke times between those identified above and those in Attachment 2 reflect the methodology used to establish stroke times for the power operated valves. The "Safety Analysis" limits on stroke times appear in this attachment. The IST Program Operability limits developed in accordance with NRC Generic Letter 89-04 appear in Attachment 2.

NOTES: ⁽¹⁾See NCR G-0852.