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Your ref: Project Number 740
Our ref: DCP/NRC2023

October 19, 2007

Subject: AP1000 COL Standard Technical Report Submittal of APP-GW-GLN-138 (TR 138), Rev. 0

In support of Combined License application pre-application activities, Westinghouse is submitting AP1000 Standard Combined License Technical Report Number 138. This technical report is submitted to supplement the Inservice Testing Information provided in Revision 16 of the AP1000 Design Control Document. Technical Report 138 is provided to support COL application content and standardization. The DCD changes identified in Technical Report 138 were developed during the preparation and review of the NuStart Bellefonte COL application FSAR. The changes noted in Technical Report 138 do not require changes to the design of the AP1000.

This report is submitted as part of the NuStart Bellefonte COL Project (NRC Project Number 740). The information included in this report is generic and is expected to apply to all COL applications referencing the AP1000 Design Certification.

Pursuant to 10 CFR 50.30(b), APP-GW-GLN-138, Revision 0 "Inservice Testing and Inservice Inspection Requirements," Technical Report Number 138, is submitted as Enclosure 1 under the attached Oath of Affirmation.

It is expected that when the NRC review of Technical Report Number 138 is complete, Inservice Testing Information in DCD Section 3.9 will be considered updated for all COL applicants referencing the AP1000 Design Certification.

Questions or requests for additional information related to content and preparation of this report should be directed to Westinghouse. Please send copies of such questions or requests to the prospective applicants for combined licenses referencing the AP1000 Design Certification. A representative for each applicant is included on the cc: list of this letter.

Westinghouse requests the NRC to provide a schedule for review of the technical report within two weeks of its submittal.

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NRO

Very truly yours,

A. Sterdis, Manager
Licensing and Customer Interface
Regulatory Affairs and Standardization

/Attachment

1. "Oath of Affirmation," dated October 19, 2007

/Enclosure

1. APP-GW-GLN-138, Revision 0, "Inservice Testing and Inservice Inspection Requirements," Technical Report Number 138

cc:	D. Jaffe	-	U.S. NRC	1E	1A
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	E. Schmiech	-	Westinghouse	1E	1A
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	P. Greco	-	Westinghouse	1E	1A

ATTACHMENT 1

"Oath of Affirmation"

ATTACHMENT 1

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of:	)
NuStart Bellefonte COL Project	)
NRC Project Number 740	)

APPLICATION FOR REVIEW OF
"AP1000 GENERAL COMBINED LICENSE INFORMATION"
FOR COL APPLICATION PRE-APPLICATION REVIEW

W. E. Cummins, being duly sworn, states that he is Vice President, Regulatory Affairs & Standardization, for Westinghouse Electric Company; that he is authorized on the part of said company to sign and file with the Nuclear Regulatory Commission this document; that all statements made and matters set forth therein are true and correct to the best of his knowledge, information and belief.

W. E. Cummins
Vice President
Regulatory Affairs & Standardization

Subscribed and sworn to
before me this day
of October 2007.

Notary

ENCLOSURE 1

APP-GW-GLN-138

"Inservice Testing and Inservice Inspection Requirements"

Technical Report 138

AP1000 DOCUMENT COVER SHEET

TDC: _____ Permanent File: _____ APY: _____

RFS#: _____ RFS ITEM #: _____

AP1000 DOCUMENT NO.	REVISION NO.		ASSIGNED TO
APP-GW-GLN-138	0	Page 1 of ~~46~~ 44	W-A. Sterdis

ALTERNATE DOCUMENT NUMBER: TR-138 WORK BREAKDOWN #:

ORIGINATING ORGANIZATION: NPP

TITLE: **Inservice Testing and Inservice Inspection Requirements**

ATTACHMENTS:	DCP #/REV. INCORPORATED IN THIS DOCUMENT REVISION:
Attachment A	APP-GW-GEE-310/ Rev. 0
CALCULATION/ANALYSIS REFERENCE:	

ELECTRONIC FILENAME	ELECTRONIC FILE FORMAT	ELECTRONIC FILE DESCRIPTION
APP-GW-GLN-138.DOC	MSWord	

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LEGAL REVIEW T. J. WHITE	SIGNATURE/DATE T. J. White 10-11-07
PATENT REVIEW D. KEROTH	SIGNATURE/DATE 10/11/07

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VERIFIER S. L. ADAMS	SIGNATURE/DATE 10/10/07	VERIFICATION METHOD Page by Page
AP1000 RESPONSIBLE MANAGER A. Sterdis	SIGNATURE*	APPROVAL DATE 10 Oct 07

* Approval of the responsible manager signifies that document is complete, all required reviews are complete, electronic file is attached and document is released for use.

APP-GW-GLN-138
Revision 0

October 2007

AP1000 Standard Combined License Technical Report

Title: Inservice Testing and Inservice Inspection Requirements

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Document Number: APP-GW-GLN-138 **Revision Number:** 0

Title: Inservice Testing and Inservice Inspection Requirements.

Brief Description of the change (what is being changed and why):
This document identifies changes to the AP1000 Design Control Document (DCD) related to inservice testing and inservice inspection. These changes provide additional information, clarify items and conform certain words and phrases to the ASME OM Code. These DCD changes are to the description of the inservice testing and inservice inspection and do not describe changes to piping, valves or other components.

I. APPLICABILITY DETERMINATION

This evaluation is prepared to document that the change described above is a departure from Tier 2 information of the AP1000 Design Control Document (DCD) that may be included in plant specific FSARs without prior NRC approval.

A.	Does the proposed change include a change to:		
	1. Tier 1 of the AP1000 Design Control Document APP-GW-GL-700	☒ NO ☐ YES	(If YES prepare a report for NRC review of the changes)
	2. Tier 2* of the AP1000 Design Control Document, APP-GW-GL-700	☒ NO ☐ YES	(If YES prepare a report for NRC review of the changes)
	3. Technical Specification in Chapter 16 of the AP1000 Design Control Document, APP-GW-GL-700	☒ NO ☐ YES	(If YES prepare a report for NRC review of the changes)
B.	Does the proposed change involve:		
	1. Closure of a Combined License Information Item identified in the AP1000 Design Control Document, APP-GW-GL-700	☒ NO ☐ YES	(If YES prepare a COL item closure report for NRC review.)
	2. Completion of an ITAAC item identified in Tier 1 of the AP1000 Design Control Document, APP-GW-GL-700	☒ NO ☐ YES	(If YES prepare an ITAAC completion report for NRC review.)

☐ The questions above are answered no, therefore the departure from the DCD in a COL application does not require prior NRC review unless review is required by the criteria of 10 CFR Part 52 Appendix D Section VIII B.5.b. or B.5c

II. TECHNICAL DESCRIPTION AND JUSTIFICATION

The DCD changes described herein were developed as a result of the preparation and review of a Final Safety Analysis Report (FSAR) referencing the AP1000 DCD and supporting a Combined License (COL) application. This FSAR preparation and review identified DCD text that was not consistent with the language and practices included in the ASME Operations and Maintenance (OM) Code. Most of the changes identified in this report are included to make the DCD text consistent with the ASME OM Code and provide clarification. In addition Regulatory Guide 1.206 suggests the inclusion of information that was not included in the DCD up through Revision 16. The changes included in this report will provide for standardization of COL applications referencing the AP1000 and minimize departures from and supplements to the AP1000 DCD.

The changes in this report are intended to be sufficient to result in DCD information that does not require corrections to or departures from the DCD information particularly design information. Some information related to testing and inspection programs is more appropriate to be provided by COL applicant and will be included as supplementary information in FSARs referencing the AP1000. In particular, conformance with Regulatory Guide 1.192 and the use of OM Code editions and addenda approved by the NRC in 10CFR 50.55a since the AP1000 Design Certification Application was docketed are addressed in FSARs supporting COL applications.

In addition to the changes included to provide clarification and conformance as discussed above the following specific changes are noted.

1. Subsection 1.9.5.1.15 is revised to delete a statement that a description of the inservice inspection program is included in the technical specifications. The inservice inspection program is discussed in Subsection 5.2.4 and Section 6.6 and not in the technical specifications. Also Subsection 1.9.5.1.15 is about inservice testing not inservice inspection.
2. Subsection 3.9.3.4.3 is revised and 3.9.3.4.4 is added to provide for a discussion of an inservice testing program for dynamic restraints (snubbers). This is in conformance with Regulatory Guide 1.206.
3. In several places in Subsection 3.9.6 reference to ASME Section XI is replaced with ASME OM Code. This is to bring the DCD text into conformance with changes in ASME Section XI and the OM Code.
4. In Subsection 3.9.6.2 the information about NRC and industry programs and documents used to develop inservice testing program requirements is updated.
5. In Subsection 3.9.6.2 the requirement for bidirectional testing of check valves is acknowledged. This is consistent with NRC and ASME OM requirements.
6. In Subsection 3.9.6.2.2 requirements in 10 CFR 50.55a are cited. The approval of the ASME OM Code includes conditions that are specified in 10 CFR 50.55a.
7. Additional articles and subsections of the ASME Code are referenced to address all classes of valves, supports, and snubbers requiring inspection and testing.
8. In several places reference to inservice inspection requirements in the technical specifications is deleted. Inservice inspection requirements are not included in the technical specifications.
9. In 5.2.2.9 and 5.4.9.4 the subsection reference for inservice inspection is corrected to 5.2.4. Subsection 5.4.8 describes design requirements for valves and does not include inservice inspection requirements.
10. In Subsection 5.2.4 reference to inservice testing is deleted. The subject of Subsection 5.2.4 is inservice inspection.
11. Subsection 5.3.4.7 is revised to delete a statement that a description of the reactor vessel inservice inspection program is detailed in the technical specifications. The inservice inspection program for ASME Class 1 components is discussed in Section 6.6 not in the technical specifications. There is no separate reactor vessel inservice inspection program.

12. In Section 6.6 specific reference to ASME Class MC (Metal Containment) is added. Previously Class MC was implicitly treated as being part of ASME Class 2.
13. In Table 3.9-16 the type of valve and actuator are added for power-operated valves. Previously this information was available in P&IDs and sketches included in the DCD. This change was included to address Regulatory Guide 1.206 guidance.
14. In Table 3.9-16 the ASME Code Classes are added. Previously this information was available in Section 3.2 of the DCD. This change was included to address Regulatory Guide 1.206 guidance.
15. In Table 3.9-16 the MSS Moisture Separator Reheater Steam Supply Bypass Control Valves are deleted. These valves do not have a function credited in safety analyses.
16. In Table 3.9-16 one PCS valve is removed from the table and two SFS valves are added to reflect previous system design changes included in DCD Revision 16.
17. In Table 3.9-16 the test frequency for pressure isolation valves leak tests is changed to 2 years to be consistent with ASME OM Code requirements.
18. In Table 3.9-16 the test frequency for manual valve exercise tests is changed to 2 years to be consistent with 10 CFR 50.55a requirements. Note Number 37 was added to explain this frequency.
19. In Table 3.9-16 Note 33 is revised to remove the frequency requirement of "performed during refueling shutdowns prior to removing the fuel transfer tube flange". Since this is a manual valve, the appropriate frequency is 2 years. Note 37 also applies to this valve.
20. In Table 3.9-16 the partial stroke test for the main steam isolation valves is deleted and the associated Note 20 revised to delete reference to partial stroke testing. Partial stroke testing of main steam isolation valves has been determined to result in inadvertent closure of the valve and resultant reactor trip at too high a rate to support a partial stroke testing requirement during operation. Note 20 is also revised to clarify how the slow closure test supports the operability status of these valves.
21. In Table 3.9-16 the exercise stroke test for the pressure regulating valves in the VES is modified by adding Note 38.
22. In Table 3.9-16, Note 1 is modified to add symbols for air-operated, motor-operated, and solenoid - operated valves.
23. In Table 3.9-16 Note 2 is modified to clarify fail safe testing.

III. DCD MARK-UP

Revise the third paragraph of the AP1000 Response for Subsection 1.9.5.1.15 as follows

> Subsection 3.9.6 summarizes the requirements for the in-service testing program, including industry standards and NRC recommendations. ~~A description of the in-service inspection program is included in the technical specifications provided in Chapter 16.~~ The AP1000 system and valve designs generally allow implementation of the NRC recommendations in Generic Letters 89-04 and 89-10. Requirements for nonsafety-related pumps and valves that support the operation of

systems that preclude unnecessary operation of the safety-related passive systems are outlined in subsection 3.9.6.

Revise the final paragraph of Subsection 3.9.3.4.3 as follows

The operability of essential snubbers is verified as described in subsection 3.9.3.4.4 and ~~discussed~~ in the inservice testing program required by subsection 3.9.8.3 by verifying the proper installation of the snubbers, and performing visual inspections and measurements of the cold and hot positions of the snubbers as required during plant heatup to verify the snubbers are performing as intended. The ASME OM Code used to develop the inservice testing plan for the AP1000 Design Certification is the 1995 Edition and 1996 Addenda. Inservice testing is performed in accordance with ~~Section XI of~~ the ASME Code and applicable addenda~~, as~~ required by 10 CFR 50.55a.

Add a new Subsection 3.9.3.4.4 as follows:

3.9.3.4.4 Inspection, Testing, Repair and/or Replacement of Snubbers

A program for inservice examination and testing of dynamic supports (snubbers) in the AP1000 is prepared in accordance with the requirements of ASME OM Code, Subsection ISTD.

The inservice examination and testing includes a thermal motion monitoring program that is established for verification of snubber movement, adequate clearance and gaps, including motion measurements and acceptance criteria to assure compliance with ASME Section III Subsection NF.

The inservice examination and testing plan for applicable snubbers is prepared in accordance with the requirements of the ASME OM Code, Subsection ISTD. Snubber maintenance, repairs, replacements and modifications are performed in accordance with the requirements of the ASME OM Code, Subsection ISTD. Details of the inservice examination and testing program, including test schedules and frequencies, are reported in the inservice inspection and testing plan included in the inservice testing program required by Subsection 3.9.8.3.

Revise the first paragraph of 3.9.6 as follows:

Inservice testing of ASME Code, Section III, Class 1, 2, and 3 pumps and valves is performed in accordance with ~~Section XI of~~ the ASME Operations and Maintenance (OM) Code and applicable addenda, as required by 10 CFR 50.55a(f), except where specific relief has been granted by the NRC in accordance with 10 CFR 50.55a(f). The Code includes requirements for leak tests and functional tests for active components.

Revise the sixth and seventh Paragraph of 3.9.6 as follows:

The AP1000 inservice test plan includes periodic systems level tests and inspections that demonstrate the capability of safety-related features to perform their safety-related functions such as passing flow or transferring heat. For this system level testing ~~T~~the test and inspection frequency is once every 10 years. Staggering of the tests of redundant components is not required. These tests may be performed in conjunction with inservice tests conducted to exercise check

valves or to perform power-operated valve operability tests. Alternate means of performing these tests and inspections that provide equivalent demonstration may be developed in the inservice test program as described in subsection 3.9.8. Table 3.9-17 identifies the system ~~inservice~~ level tests. The system level testing is not governed by the ASME OM Code.

A preservice test program, which identifies the required functional testing, is to be submitted to the NRC prior to performing the tests and following the start of construction as discussed in subsection 3.9.8. The inservice test program, which identifies requirements for functional testing, is to be submitted to the NRC prior to the anticipated date of commercial operation as described in subsection 3.9.8. Table 3.9-16 identifies the components subject to the preservice and the inservice test program. This table also identifies the method~~, extent,~~ and frequency of preservice and inservice testing.

Revise the third, fourth and fifth paragraph of 3.9.6.2 as follows:

The valve test program is controlled administratively by the Combined License holder and is based on the plan outlined in this subsection. Valves (including relief valves) subject to inservice testing in accordance with the ASME Code are indicated in Table 3.9-16. This table includes the type of testing to be performed and the frequency at which the testing should be performed. The test program conforms to the requirements of ASME OM, Subsection ISTC, to the extent practical. The guidance in NRC Generic Letters, AEOD reports, and industry and utility guidelines (including NRC Generic Letter 89-04) is also considered in developing the test program. Inservice testing incorporates the use of nonintrusive techniques to periodically assess degradation and performance of selected valves. The testing of power operated valves utilizes guidance from Generic Letter 96-05 and the Joint Owners Group (JOG) MOV Periodic Verification (PV) study, MPR 2524-A (November 2006). During the inservice testing period the following are performed to demonstrate the acceptability of the functional performance of power operated valves other than motor-operated valves; (1) periodically assess the diagnostic methods used in the verification of valve function; and (2) evaluation of lessons learned through other related programs such as MOV Generic Letter (GL) 89-10 and (GL) 96-05 Programs.

Safety-related check valves with a~~n~~ ~~active~~ safety function to open or with a safety function to close or remain closed to prevent reverse flow are exercised ~~in response to flow.~~ to both the open and closed positions regardless of safety function position in accordance with the ASME OM Code. Safety-related power-operated valves with an active function are subject to an exercise test and an operability test. The operability test may be either a static or a dynamic (flow and differential pressure) test. Refer to subsection 3.9.6.2.1 for additional information.

Relief from the requirements for testing is discussed in Section 3.9.6.3.~~,~~ I~~i~~f required~~, and~~ the alternative to the tests are justified and documented in DCD Table 3.9-16.

Revise 3.9.6.2.1 as follows:

3.9.6.2.1 Valve Functions Tested

The AP1000 inservice testing program plan identifies the safety-related missions for safety-related valves for the AP1000 systems. The following safety-related valve missions have been identified in Table 3.9-16.

- Maintain closed
- Maintain open
- Transfer closed (active function)
- Transfer open (active function)
- Throttle flow (active function)

Based on the safety-related missions identified for each valve, the inservice tests to confirm the capability of the valve to perform these missions are identified. Active valves include valves that transfer open, transfer closed, and/or have throttling missions. Active valves, as defined in the ASME Code, include valves that change obturator (the part of the valve that blocks the flow stream) position to accomplish the safety-related function(s). Valve missions to maintain closed and maintain open are designated as passive and do not include valve exercise inservice testing. Although the throttling function is included in the AP1000 inservice testing program, testing of throttling (pressure regulation) is not required in the ASME OM Code.

If upon removal of the actuation power (electrical power, air or fluid for actuation) an active valve fails to the position associated with performing its safety-related function, it is identified as "active-to-fail" in Table 3.9-16. The 'fail-safe' test is not specifically identified; this function is tested as part of the exercise test.

Valve and actuator characteristics and functions are used in determining the type of inservice testing for the valve. These valve functions include:

- Active or active-to-fail for fulfillment of the safety-related mission(s)

- Reactor coolant system pressure boundary isolation function

- Containment isolation function

- Seat leakage (in the closed position), is limited to a specific maximum amount when important for fulfillment of the safety-related mission(s)

- Actuators that fail to a specific position (open/closed) upon loss of actuating power for fulfillment of the safety-related mission(s)

- Safety-related remote position indication

The ASME inservice testing categories are assigned based on the safety-related valve functions and the valve characteristics. The following criteria are used in assigning the ASME inservice testing categories to the AP1000 valves.

Category A – safety-related valves with safety-related seat leakage requirements (valves for

which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of their required function(s))

Category B – safety-related valves requiring inservice testing, but without safety-related seat leakage requirements (valves for which seat leakage in the closed position is inconsequential for fulfillment of the required function(s)

Category C – safety-related, self-actuated valves (such as check valves and pressure relief valves) (valves that 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))

Category D – safety-related, explosively actuated valves and nonreclosing pressure relief devices (valves that are actuated by an energy source capable of only on operation, such as rupture disks or explosively actuated valves)

Revise the first paragraph under **Remote Valve Position Indication Inservice Tests** in 3.9.6.2.2 as follows:

Valves that are included in the inservice testing program that have position indication will be observed locally during valve exercising to verify proper operation of the position indication. The frequency for this position indication test is once every two years, unless otherwise justified. Where local observation is not practicable, other methods will be used for verification of valve position indicator operation. The alternate method and justification are provided in Table 3.9-16. Position indication testing requirements for passive valves are identified in Table 3.9-16.

Revise the second, third, and fourth paragraphs under **Valve Leakage Inservice Tests** in 3.9.6.2.2 as follows

Containment isolation valves are tested in accordance with 10 CFR 50, Appendix J. Depending on the function and configuration, some valves are tested during the integrated leak rate testing (Type A) or individually as a part of the Type C testing or both. The leak rate test frequency for containment isolation valves is defined in subsection 6.2.5. The provisions in 10 CFR 50.55a (b) 2 that require leakage limits and corrective actions for individual containment isolation valves by reference to ASME~~/ANSI~~ OM, ISTC, which addresses the corrective actions to be taken following the measured inability of a valve to meet its leakage criteria, ~~Part 10~~ apply to the AP1000 containment isolation valves. ~~Changes to these provisions are discussed in subsection 3.9.8.~~

The ASME Code specifies a test frequency for other than containment isolation valves of at least once every 2 years. The ASME Code does not require additional leak testing for valves that demonstrate operability during the course of plant operation. In such cases, the acceptability of the valve performance is recorded during plant operation to satisfy inservice testing requirements. Therefore, a specific inservice test need not be performed on valves that meet this criterion. The AP1000 maximum leakage requirement for pressure isolation valves that provide isolation between high and low pressure systems is included in the surveillance requirements for Technical Specification 3.4.~~16~~15. The pressure isolation valves that require leakage testing are tabulated in Table 3.9-18.

Revise the first and second paragraphs under **Manual/Power-Operated Valve Tests** in 3.9.6.2.2 as follows

> Manual/Power-Operated Valve Exercise Tests - Safety-related active valves and other selected active valves, both manual- and power-operated (motor-operated, air-operated, hydraulically operated, solenoid-operated) will be exercised periodically. The ASME code specifies a quarterly valve exercise frequency for power-operated valves. Active manual valves are exercised once every two years in accordance with 10 CFR 50.55a(b)(3)(iv). The AP1000 test frequencies are identified in Table 3.9-16.
>
> In some cases, the valves are tested on a less frequent basis because it is not practicable to exercise the valve during plant operation. If ~~an exception is taken to performing~~ quarterly full-stroke exercise testing of a valve is not practicable, then full-stroke testing will be performed during cold shutdowns on a frequency not more often than quarterly. If this is not practicable, then the full-stroke testing will be performed each refueling cycle.

Revise the fifth paragraphs under **Manual/Power-Operated Valve Tests** in 3.9.6.2.2 as follows

> Safety-related valves that fail to the safety-related actuation position to perform the safety-related missions~~,~~ are subject to a valve exercise inservice test. The test verifies that the valve repositions to the safety-related position on loss of actuator power. The valve exercise test satisfies this test as long as the test removes actuator power for the valve. The fail-safe test is not identified as a separate test in Table 3.9-16.

Revise the first paragraph under **Power-Operated Valve Operability Tests** in 3.9.6.2.2 as follows

> The inservice operability testing of power-operated valves ~~rely~~ relies on non-intrusive diagnostic techniques to permit periodic assessment of valve operability at design basis conditions. Operability testing as required by 10 CFR 50.55a(b)(3)(ii) is performed on motor-operated valves (MOVs) that are included in the ASME OM Code inservice testing program to demonstrate that the MOVs are capable of performing their design basis safety function(s). Table 3.9-16 identifies valves that may require valve operability testing. The specified frequency for operability testing is a maximum of once every 10 years. The initial test frequency is the longer of every 3 refueling cycles or 5 years until sufficient data exists to determine a longer test frequency is appropriate in accordance with Generic Letter 96-05.

Revise the second bullet under **Power-Operated Valve Operability Tests** in 3.9.6.2.2 as follows

- Functional Margin

Revise the first, second, and third paragraphs under **Check Valve Tests** in 3.9.6.2.2 as follows

> **Check Valve ~~Flow~~ Exercise Tests** - Safety-related check valves identified with specific safety-related missions to transfer open or transfer closed or maintain closed are tested periodically. ~~Exercising a check valve confirms the valve capability to move to the position(s) to fulfill the safety-related mission(s).~~ Category C check valves are exercised to both the open and closed positions regardless of safety function position in accordance with ASME OM Code ISTC. The

exercise test shows that the check valve opens in response to flow and closes when the flow is stopped. Sufficient flow is provided to fully open the check valve unless the maximum accident flows are not sufficient to fully open the check valve. ~~Either permanently or temporarily installed nonintrusive check valve indication is used for this test.~~ During the exercise test, valve obturator position is verified by direct measurements using nonintrusive devises or by other positive means (i.e., changes in system pressure, temperature, flow rate, level, seat leakage or nonintrusive test results). Valves that can not be checked using a flow test may use other means to exercise the valve to the open and closed position.

Valves that normally operate at a frequency that satisfies the exercising requirement need not be additionally exercised, provided that the observations required of inservice testing are made and recorded at intervals no greater than that specified in this section.

The ASME Code specifies a quarterly valve exercise frequency. The AP1000 test frequencies are identified in Table 3.9-16. In some cases, check valves are tested on a less frequent basis because it is not practical to exercise the valve during plant operation. If ~~an exception is taken to performing~~ quarterly exercise testing is not practicable, then exercise testing is performed during cold shutdown on a frequency not more often than quarterly. If this is not practical, the exercise testing is performed during each refueling outage. If exercise testing during a refueling outage is not practical, then ~~an alternative~~ another means is provided. ~~Alternative~~ Other means include nonintrusive diagnostic techniques or valve disassembly and inspection. ~~Nonintrusive methods may include monitoring an upstream pressure indicator, monitoring tank level, performing a leak test, a system hydrostatic, or pressure test, or radiography.~~

Revise Subsection 3.9.6.2.3 as follows:

3.9.6.2.3 Valve Disassembly and Inspection

~~Section 3.9.8 discusses developing a~~ The program for periodic check valve disassembly and inspection~~.~~ includes ~~E~~evaluation ~~of the factors below will~~ to determine which of the valves identified in the inservice testing program in Table 3.9-16 ~~will~~ require disassembly and inspection and the frequency of the inspection. If the test methods in ISTC-5221(a) and ISTC-5521(b) are impractical for certain check valves, or if sufficient flow cannot be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement. The sample disassembly examination program shall group check valves of similar design, application, and service condition and require a periodic examination of one valve from each group.

Disassembly and inspection of other types of valves will be performed based on information from inservice testing, or other program requirements, as noted below:

- AP1000 PRA importance measures.
- Design reliability assurance program contained in DCD Section 16.2.
- Historical performance of power-operated valves (identify valve types which experience unacceptable degradation in service.)

- Basic design of valves including the use of components subject to aging and requiring periodic replacement.

- Analysis of trends of valve test parameters during valve inservice tests.

- Results of nonintrusive techniques. Disassembly and inspection may not be needed if nonintrusive techniques are sufficient to detect unacceptable valve degradation.

Revise Subsection 3.9.6.3 as follows:

3.9.6.3 Relief Requests

Considerable experience has been used in designing and locating systems and valves to permit preservice and inservice testing required by ~~Section XI of~~ the ASME OM Code. Deferral of testing to cold shutdown or refueling outages in conformance with the rules of the ASME OM Code when testing during power operation is not practical is not considered a relief request. Relief from the testing requirements of the ASME OM Code will be requested when full compliance with requirements of the ASME OM Code ~~of the Code~~ is not practical. In such cases, specific information will be provided which identifies the applicable code requirements, justification for the relief request, and the testing method to be used as an alternative.

Revise Table 3.9-16 as shown in the attached markup.

Revise the second paragraph of Appendix 3D, Attachment A, Subsection 4.Y.7.1 as follows:

Aging in mechanical components is associated with corrosion, erosion, particle deposits and embrittlement. In new construction, corrosion and erosion are considered by providing additional material thickness as a corrosion or erosion allowance above the required design. The other aging phenomena are considered during inservice inspections of operating components as contained in ~~plant technical specifications and~~ ASME Code, Section XI. Aging qualification of metallic parts of equipment except for corrosion and erosion is in compliance with ASME Code, Section XI, therefore aging effects on metallic components are not addressed herein.

Revise 5.2.2.9 as follows:

5.2.2.9 System Reliability

ASME Code safety valves and relief valves have demonstrated a high degree of reliability over many years of service. The in-service inspection and testing required of safety valves and relief valves (s~~S~~ubsections 3.9.6 and ~~5.4.8~~5.2.4 and Section 6.6) provides assurance of continued reliability and conformance to setpoints. The assessment of reliability, availability, and maintainability which is done to evaluate the estimated availability for the AP1000 includes estimates for the contribution of safety valves and relief valves to unavailability. These estimates were based on experience for operating units.

Revise the second, third and fourth paragraphs of 5.2.4 as follows:

The specific edition and addenda of the Code used to determine the requirements for the inspection and testing plan for the initial and subsequent inspection intervals is to be delineated in the inspection program. The Code includes requirements for system pressure tests and functional tests for active components. The requirements for system pressure tests are defined in Section XI,

IWA-5000 and IWB-5000. These tests verify the pressure boundary integrity in conjunction with inservice inspection. Section 6.6 discusses Classes 2 and 3 component examinations.

In conformance with ASME Code and NRC requirements, the preparation of inspection ~~and testing~~ programs is discussed in subsection 5.2.6. A preservice inspection program (nondestructive examination) ~~and a preservice test program for valves~~ for the AP1000 will be developed and submitted to the NRC. The in-service inspection program ~~and in-service test program~~ will be submitted to the NRC as discussed in subsection 5.2.6. These programs will comply with applicable in-service inspection provisions of 10 CFR 50.55a(b)(2).

The preservice programs provide details of areas subject to examination, as well as the method and extent of preservice examinations. The ~~I~~in-service programs details the areas subject to examination and the method, extent, and frequency of examinations. Additionally, component supports and ~~snubber testing~~ examination requirements are included in the inspection programs.

Revise the second paragraph of 5.2.4.3 as follows:

The reactor vessel is designed so that the reactor pressure vessel (RPV) inspections can be performed primarily from the vessel internal surfaces. These inspections can be done remotely using existing inspection tool designs to minimize occupational radiation exposure and to facilitate the inspections. Access is also available for the application of inspection techniques from the outside of the complete reactor pressure vessel. Reactor pressure vessel welds are examined to meet the requirements of Appendix VIII of ASME Code, Section XI which has been incorporated into the guidance of Regulatory Guide 1.150 as defined in subsection 1.9.1.

Revise Subsection 5.2.4.5 as follows:

5.2.4.5 Examination Categories and Requirements

The examination categories and requirements are established according to Subarticle IWB-2500 and Table IWB-2500-1 of the ASME Code, Section XI. Class 1 piping supports will be examined in accordance with ASME Section XI, IWF-2500.

The preservice examinations comply with IWB-2200.

Revise Subsection 5.2.4.6 as follows:

5.2.4.6 Evaluation of Examination Results

Examination results are evaluated according to IWA-3000 and IWB-3000, with flaw indications according to IWB-3400 and Table IWB-3410-1. Repair procedures, if required, are according to ~~IWB~~IWA-4000 of the ASME Code, Section XI.

Revise the final paragraph of Subsection 5.3.4.7 as follows

The vessel design and construction enables inspection in accordance with the ASME Code, Section XI. ~~The reactor vessel inservice inspection program is detailed in the technical specifications.~~

Revise the third paragraph of 5.3.9.4 as follows:

Reactor coolant system pressure relief devices are subjected to preservice and inservice hydrostatic tests, seat leakage tests, operational tests, and inspections, as required. The preservice and inservice inspection and testing programs for valves are described in subsections 3.9.6 and ~~5.4.8~~ 5.2.4 and Section 6.6. The test program for the safety valves complies with the requirements of ANSI/ASME OM, Part 1.

Revise the fifth bullet of 6.2.2.4.3 as follows:

- Test frequency is consistent with the ~~plant technical specifications (subsection 16.3.6) and~~ inservice testing program (subsection 3.9.6).

Revise the title of Section 6.6 as follows

6.6 Inservice Inspection of Class 2, ~~and~~ 3, and MC Components

Revise the first paragraph of Subsection 6.6.1 as follows:

Preservice and inservice inspections of Quality Group B and C pressure retaining components (ASME Code, Section III Class 2 and 3 components) such as vessels, piping, pumps, valves, bolting, and supports as identified in subsection 3.2.2 are performed in accordance with the ASME Code, Section XI, as required by 10 CFR 50.55a(g). This includes the ASME Code Section XI Mandatory Appendices. Preservice and inservice inspections of Quality Group B components that are ASME Class MC (metallic containment) pressure-retaining components and integral attachments are performed in accordance with the ASME Code, Section XI, as required by 10 CFR 50.55a. Refer to subsection 3.8.2 "Steel Containment" for design details, including accessibility, of primary containment.

Revise the first paragraph of Subsection 6.6.2 as follows:

ASME Code Class 2, ~~and~~ 3, and MC components are designed so that access is provided in the installed condition for visual, surface and volumetric examinations specified by the ASME Code. See subsection 5.2.1.1 for a discussion of the baseline ASME Code edition and Addenda. Design provisions, in accordance with Section XI, IWA-1500, are formally implemented in the Class 2, ~~and~~ 3, and MC component design processes.

Revise the sixth paragraph of Subsection 6.6.2 as follows:

Relief from Section XI requirements will not be required for ASME Code, Section III, Class 2, ~~and~~ 3, and MC pressure-retaining components in the AP1000 plant for the baseline design certification code. Future unanticipated changes in the Section XI requirements could, however, necessitate relief requests. Relief from the inspection requirements of Section XI will be requested when full compliance is not practical according to the requirements of 10 CFR 50.55a. In such

cases, specific information will be provided to identify the applicable ASME Code requirements, justification for the relief request, and the inspection method to be used as an alternative.

Revise the second paragraph of Subsection 6.6.3 as follows:

The liquid penetrant or magnetic particle methods are used for surface examinations. ~~Radiography, u~~Ultrasonic, or eddy current methods (whether manual or remote) are used for volumetric examinations.

Revise the first paragraph of Subsection 6.6.4 as follows:

Inspection intervals included in the inspection program are as defined in subarticle IWA-2400, IWC-2400, IWD-2400, IWE-2400, and IWF-2400 of the ASME Code, Section XI. The periods within each inspection interval may be extended by as much as one year to permit inspections to be concurrent with plant outages. It is intended that inservice examinations be performed during normal plant outages, such as refueling shutdown or maintenance shutdowns occurring during the inspection interval.

Revise Subsection 6.6.5 as follows:

6.6.5 Examination Categories and Requirements

Examination categories and examination requirements (examination methods, acceptance criteria, extent of examination, and frequency of examination) for Class 2 components are in accordance with Subsection IWC and table IWC-2500 of the ASME Code, Section XI. Similar information for Class 3 components are in conformance with ~~Article IWD-2000~~ Subsection IWD and ~~t~~Table IWD-2500-1 for component supports examination categories and examination requirements are in conformance with Subsection IWF and Table IWF-2500-1; and for Class MC components examination categories and examination requirements are in conformance with Subsection IWE and Table IWE-2500-1of ASME Code, Section XI.

The pre-service examination of Class 2 components is according to the requirements of Subarticle IWC-2200. The pre-service examination of Class MC components is in accordance with the requirements of Subarticle IWE-2200. The pre-service examination requirements for component supports is in accordance with the requirements of Subarticle IWF-2200. The pre-service examination of Class 3 components is according to the requirements of Subarticle IWD-2200~~2100~~. ~~Inservice test requirements for component supports comply with ASME Code, Section XI, Article IWF-5000.~~

As provided in ASME Section XI, IWC-1220, IWD-1220, and IWE-1220, certain portions of Class 2, 3, and MC systems are exempt from the volumetric, surface and visual examination requirements of IWC-2500, IWD-2500, and IWE-2500. Supports associated with Class 2, 3 and MC components are also exempt in accordance with the requirements of IWF-1230.

Revise Subsection 6.6.6 as follows:

6.6.6 Evaluation of Examination Results

Examination results are evaluated per the acceptance standards found in IWA-3000, IWC-3000, ~~and~~ IWD-3000, IWE-3000, and IWF-3000 of the ASME Code, Section XI. Repair and replacement procedures are in accordance with ASME Code, Section XI, Article IWA-4000. ~~If the guidelines of IWA-4000 are inappropriate for the components, then the guidelines of ASME Code Section XI, IWC-4000 and IWD-4000 apply.~~

Revise Subsection 6.6.7 as follows:

6.6.7 System Pressure Tests

System pressure tests comply with IWA-5000, IWC-5000, ~~and~~ IWD-5000, and IWE-5000 of the ASME Code, Section XI, for Class 2, ~~and~~ 3, and MC components. Pressure testing of Class MC components is performed per the 10 CFR 50 Appendix J "Containment Leak Rate Testing" Program.

IV. REGULATORY IMPACT

A. REGULATORY ASSESSMENT

The NRC discusses inservice testing in NRC Final Safety Evaluation Report (FSER) (NUREG-1793), Section 3.9.6. The NRC discusses inservice inspection in FSER Section 5.2.4 and 6.6. The commitments and information included in the DCD used by the NRC to make the conclusions documented in the FSER are not significantly altered. The DCD changes included in this report are primarily to provide clarification and additional information. The DCD changes included in this report affect the descriptions of inservice testing and inservice inspection and do not affect the design of the AP1000 or the capability to perform inservice testing or inservice inspection. These changes should not impact the conclusions of the FSER. These changes are not in conflict with the NRC approval of the OM Code included in 10 CFR 50.55a or any conditions on the use of the OM Code included in 10 CFR 50.55a

Westinghouse performed a regulatory assessment of the information contained in this technical report (TR) against the regulatory basis for the original AP1000 certified design, which is described in DCD Revision 15, Sections 3.1, 1.9 and Appendix 1A. The results of the regulatory assessment appear below. Unless specifically noted, the changes described in the TR are not intended to change the regulatory basis for the design, but are instead meant to be incremental changes that are necessary to properly describe standard aspects of the AP1000 and to allow successful construction of the plant. The regulatory requirements of DCD Revision 15, Sections 3.1, 1.9 and Appendix 1A, therefore remain valid.

- Regulatory requirements and guidance are defined in AP1000 DCD Section 1.9 and Appendix 1A. This technical report does not affect the conformance to these requirements and guidance where applicable.
- Nuclear Regulatory Commission General Design Criteria (GDC) are defined in AP1000 DCD section 3.1. This technical report does not affect the conformance of the AP1000 to the GDCs, where applicable.
- The technical report was reviewed against WCAP-15799 Rev. 1 (SRP Conformance) and WCAP-15800 Rev. 3 (AP1000 Operational Assessment). This technical report does not affect the AP1000 conformance as described in these WCAPs. This includes the commitments to any applicable Branch Technical Positions.
- The report was reviewed against the AP1000 Probabilistic Risk Assessment (PRA). This technical report does not negatively impact the AP1000 PRA results as documented in Westinghouse documents APP-PRA-GER-001.
- This technical report was reviewed against the AP1000 DCD Chapter 15 Accident Analyses. It has been concluded that the safety analyses results documented in DCD Chapter 15 remain bounding.
- This technical report was reviewed against the AP1000 Technical Specifications (AP1000 DCD Chapter 16.1). This technical report does not affect the AP1000 Technical Specifications.
- This technical report was reviewed against barriers and alarms that control access to protected areas of the plant, as well as requirements for security personnel. This technical report does not have an adverse impact on the security assessment of the AP1000.
- This technical report was reviewed against design features that mitigate severe accidents. This technical report does not have an adverse affect on the AP1000's ability to mitigate severe accidents.
- This technical report was reviewed against the Tier 1 information of the DCD Rev.16. It is determined that this report does not reflect a change to the Tier 1 information.

B. SCREENING QUESTIONS (Check correct response and provide justification for that determination under each response)

1. Does the proposed change involve a change to an SSC that adversely affects a DCD described design function? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not alter the design function of the valves. The changes in the inservice test requirements and the inservice inspection requirements do not adversely affect the reliability of the systems containing the valves.

2. Does the proposed change involve a change to a procedure that adversely affects how DCD described SSC design functions are performed or controlled? ☐ YES ☒ NO

The changes in the inservice test requirements and the inservice inspection requirements do not affect the performing or controlling of design functions.

3. Does the proposed activity involve revising or replacing an DCD described evaluation methodology that is used in establishing the design bases or used in the safety analyses? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not impact safety analysis evaluation methodology.

4. Does the proposed activity involve a test or experiment not described in the DCD, where an SSC is utilized or controlled in a manner that is outside the reference bounds of the design for that SSC or is inconsistent with analyses or descriptions in the DCD? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not alter the operation of the reactor, reactor coolant system, or associated systems.

C. EVALUATION OF DEPARTURE FROM TIER 2 INFORMATION (Check correct response and provide justification for that determination under each response)

10 CFR Part 52, Appendix D, Section VIII. B.5.a. provides that an applicant for a combined licensee who references the AP1000 design certification may depart from Tier 2 information, without prior NRC approval, if it does not require a license amendment under paragraph B.5.b. The questions below address the criteria of B.5.b.

1. Does the proposed departure result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not alter the design function of reactor coolant system or associated systems. The changes in the inservice test requirements and the inservice inspection requirements will not affect accident precursors.

2. Does the proposed departure result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety and previously evaluated in the plant-specific DCD? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not alter the design function of the reactor coolant system or components and systems relied on to mitigate postulated accident conditions.

3. Does the proposed departure result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD? ☐ YES ☒ NO

   The change in the inservice test requirements and the inservice inspection requirements do not alter the response of systems relied on to mitigate postulated accident conditions. Therefore the calculated radioactivity release from a postulated accident condition is not affected.

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4. Does the proposed departure result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the plant-specific DCD? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not alter the design functions or response to postulated accident conditions and anticipated transients for the components in the reactor coolant system or associated systems. Therefore the calculated radioactivity release from a malfunction of equipment is not affected.

5. Does the proposed departure create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not alter the design functions of the reactor coolant system. The changes in the inservice test requirements and the inservice inspection requirements do not add or modify accident precursors.

6. Does the proposed departure create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not alter operating conditions or design functions of SSCs important to safety. Therefore there is no new malfunction.

7. Does the proposed departure result in a design basis limit for a fission product barrier as described in the plant-specific DCD being exceeded or altered? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not alter the pressure boundary integrity design function of the reactor coolant system or other SSCs important to safety.

8. Does the proposed departure result in a departure from a method of evaluation described in the plant-specific DCD used in establishing the design bases or in the safety analyses? ☐ YES ☒ NO

   The changes in the inservice test requirements and the inservice inspection requirements do not alter the methodology of the evaluation of the pressure boundary integrity or of the safety analyses.

☒ The answers to the evaluation questions above are "NO" and the proposed departure from Tier 2 does not require prior NRC review to be included in plant specific FSARs as provided in 10 CFR Part 52, Appendix D, Section VIII. B.5.b

☐ One or more of the answers to the evaluation questions above are "YES" and the proposed change requires NRC review.

D. IMPACT ON RESOLUTION OF A SEVERE ACCIDENT ISSUE

10 CFR Part 52, Appendix D, Section VIII. B.5.a. provides that an applicant for a combined licensee who references the AP1000 design certification may depart from Tier 2 information, without prior NRC approval, if it does not require a license amendment under paragraph B.5.c. The questions below address the criteria of B.5.c.

1. Does the proposed activity result in an impact to features that mitigate severe accidents. If the answer is Yes answer Questions 2 and 3 below. ☒ YES ☐ NO

   The changes in the inservice test requirements and the inservice inspection requirements include changes to test requirements for valves in systems and subsystems used to mitigate severe accidents

2. Is there is a substantial increase in the probability of a severe accident such that a particular severe accident previously reviewed and determined to be not credible could become credible? ☐ YES ☒ NO ☐ N/A

   There is no change to the response of the valves and systems to severe accidents due to the change in the inservice test requirements and the inservice inspection requirements.

3. Is there a substantial increase in the consequences to the public of a particular severe accident previously reviewed? ☐ YES ☒ NO ☐ N/A

   There is no change to the response of the valves and systems to severe accidents due to the change in the inservice test requirements and the inservice inspection requirements.

☒ The answers to the evaluation questions above are "NO" or are not applicable and the proposed departure from Tier 2 does not require prior NRC review to be included in plant specific FSARs as provided in 10 CFR Part 52, Appendix D, Section VIII. B.5.c

☐ One or more of the he answers to the evaluation questions above are "YES" and the proposed change requires NRC review.

E. SECURITY ASSESSMENT

1. Does the proposed change have an adverse impact on the security assessment of the AP1000? ☐ YES ☒ NO

   The changes to the inservice test requirements and the inservice inspection requirements will not alter barriers or alarms that control access to protected areas of the plant. The changes to the inservice test requirements and the inservice inspection requirements will not alter requirements for security personnel.

Additional DCD Markups

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Title: Inservice Testing and Inservice Inspection Requirements.

Markups for DCD Table 3.9-16 are defined in the following attachment. (Pages A-1 to A-28)

VALVE INSERVICE TEST REQUIREMENTS

Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Freq
ir Supply Outside Containment Isolation	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Refueling Shutdown Operability Test
ir Supply Inside Containment Isolation	Check	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test Check Exercise/Refueling Shutdown
Supply Outside Containment Isolation	Manual	Maintain Close	Containment Isolation Safety Seat Leakage	Class 2 Category A	Containment Isolation Leak Test
Supply Inside Containment Isolation	Check	Maintain Close	Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test
ment Isolation Valve - Inlet Line ORC	Remote MO Butterfly	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Cold Shutdown Operability Test
ment Isolation Valve - Inlet Line IRC	Check	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test Check Exercise/Cold Shutdown
ment Isolation Valve - Outlet Line IRC	Remote MO Butterfly	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Cold Shutdown Operability Test
ment Isolation Valve - Outlet Line ORC	Remote MO Butterfly	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Cold Shutdown Operability Test
tion Stop	Remote MO GATE	Maintain Close Transfer Close	Active Safety Seat Leakage Remote Position	Class 1 Category A	Remote Position Indication, Exercise/2 Years RCS Isolation Leak Test/Refueling Exercise Full Stroke/Cold Shutdown Operability Test
tion Stop	Remote MO GATE	Maintain Close Transfer Close	Active Safety Seat Leakage Remote Position	Class 1 Category A	Remote Position Indication, Exercise/2 Years RCS Isolation Leak Test/Refueling Exercise Full Stroke/Cold Shutdown Operability Test
tion Stop	Remote MO GLOBE	Maintain Close Transfer Close	Active Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test

VALVE INSERVICE TEST REQUIREMENTS

Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Freq
IRC Isolation	Manual	Maintain Close	Containment Isolation Safety Seat Leakage	Class 2 Category A	Containment Isolation Leak Test
ORC Isolation	Manual	Maintain Close	Containment Isolation Safety Seat Leakage	Class 2 Category A	Containment Isolation Leak Test
:ontainment Isolation Relief	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test Class 2/3 Relief Valve Tests/10 Years and 20% i
ntainment Isolation IRC	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed RCS Pressure Boundary Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test
ntainment Isolation ORC	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed RCS Pressure Boundary Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test
ıtion Return Line Check Valve	Check	Maintain Close Transfer Close	Active Safety Seat Leakage	Class 3 Category AC	Check Exercise/Cold Shutdown RCS Isolation Leak Test/Refueling
ıtion Return Line Stop Valve	AO Stop Check	Maintain Close Transfer Close	Active Safety Seat Leakage	Class 1 Category AC	Check Exercise/Cold Shutdown RCS Isolation Leak Test/Refueling
ıtion Return Line Check Valve	Check	Maintain Close Transfer Close	Active Safety Seat Leakage	Class 1 Category AC	Check Exercise/Cold Shutdown RCS Isolation Leak Test/Refueling
essurizer Spray Line Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Safety Seat Leakage Remote Position	Class 1 Category A	Remote Position Indication, Exercise/2 Years RCS Isolation Leak Test/Refueling Exercise Full Stroke/Cold Shutdown Operability Test
essurizer Spray Line	Check	Maintain Close Transfer Close	Active Safety Seat Leakage	Class 1 Category AC	Check Exercise/Cold Shutdown RCS Isolation Leak Test/Refueling
; Containment Isolation	Remote MO GATE	Maintain Close Transfer Close	Active RCS Pressure Boundary Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test

Table 3.9-16 (Sheet 3 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
CVS-PL-V091	Makeup Line Containment Isolation	Remote MO GATE	Maintain Close Transfer Close	Active RCS Pressure Boundary Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
CVS-PL-V092	Hydrogen Addition Containment Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed RCS Pressure Boundary Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operation Operability Test	27, 31
CVS-PL-V094	Hydrogen Addition IRC Isolation	Check	Maintain Close Transfer Close	Active RCS Pressure Boundary Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category AC	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Check Exercise/Quarterly Operation	27
CVS-PL-V100	Makeup Line Containment Isolation Relief	Check	Maintain Close Transfer Close Transfer Open	Active Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test/2 Years Check Exercise/Refueling Shutdown	23, 27
CVS-PL-V136A	Demineralized Water System Isolation	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
CVS-PL-V136B	Demineralized Water System Isolation	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
DWS-PL-V244	Demineralized Water Supply Containment Isolation - Outside	Manual	Maintain Close	Containment Isolation Safety Seat Leakage	Class 2 Category A	Containment Isolation Leak Test	27
DWS-PL-V245	Demineralized Water Supply Containment Isolation - Inside	Check	Maintain Close	Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test	27
FPS-PL-V050	Fire Water Containment Supply Isolation	Manual	Maintain Close	Containment Isolation Safety Seat Leakage	Class 2 Category A	Containment Isolation Leak Test	27
FPS-PL-V052	Fire Water Containment Supply Isolation - Inside	Check	Maintain Close	Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test	27
FHS-PL-V001	Fuel Transfer Tube Isolation Valve	Manual	Transfer Close Maintain Open	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Refueling Shutdown~~	33, 37

Table 3.9-16 (Sheet 4 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
MSS-PL-V001	Turbine Bypass Control Valve	Remote AO Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	29, 31, 34
MSS-PL-V002	Turbine Bypass Control Valve	Remote AO Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	29, 31, 34
MSS-PL-V003	Turbine Bypass Control Valve	Remote AO Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	29, 31, 34
MSS-PL-V004	Turbine Bypass Control Valve	Remote AO Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	29, 31, 34
MSS-PL-V005	Turbine Bypass Control Valve	Remote AO Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	29, 31, 34
MSS-PL-V006	Turbine Bypass Control Valve	Remote AO Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	29, 31, 34
MSS-PL-V016A	Moisture Separator Reheater Steam Supply Control Valve	Remote AO Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Part Stroke/Operation Exercise Full Stroke/Cold Shutdown Operability Test	25, 31, 34
~~MSS-PL-V017A~~	~~Moisture Separator Reheater Steam Supply Bypass Control Valve~~	~~Remote~~	~~Maintain Close Transfer Close~~	~~Active-to-Failed Remote Position~~	~~B~~	~~Remote Position Indication, Exercise/2 Years~~ ~~Exercise Part Stroke/Operation~~ ~~Exercise Full Stroke/Cold Shutdown~~ ~~Operability Test~~	~~25, 31, 34~~
MSS-PL-V016B	Moisture Separator Reheater Steam Supply Control Valve	Remote AO Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Part Stroke/Operation Exercise Full Stroke/Cold Shutdown Operability Test	25, 31, 34
~~MSS-PL-V017B~~	~~Moisture Separator Reheater Steam Supply Bypass Control Valve~~	~~Remote~~	~~Maintain Close Transfer Close~~	~~Active-to-Failed Remote Position~~	~~B~~	~~Remote Position Indication, Exercise/2 Years~~ ~~Exercise Part Stroke/Operation~~ ~~Exercise Full Stroke/Cold Shutdown~~ ~~Operability Test~~	~~25, 31, 34~~

Table 3.9-16 (Sheet 5 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
MTS-PL-V001A	Turbine Stop Valve	Remote Electro Hydraulic Angle Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	31, 34, 35, 36
MTS-PL-V001B	Turbine Stop Valve	Remote Electro Hydraulic Angle Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	31, 34, 35, 36
MTS-PL-V002A	Turbine Control Valve	Remote Electro Hydraulic Angle Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Part Stroke/Operation Exercise Full Stroke/Cold Shutdown Operability Test	25, 31, 34, 36
MTS-PL-V002B	Turbine Control Valve	Remote Electro Hydraulic Angle Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Part Stroke/Operation Exercise Full Stroke/Cold Shutdown Operability Test	25, 31, 34, 36
MTS-PL-V003A	Turbine Stop Valve	Remote Electro Hydraulic Angle Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	31, 34, 35, 36
MTS-PL-V003B	Turbine Stop Valve	Remote Electro Hydraulic Angle Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	31, 34, 35, 36
MTS-PL-V004A	Turbine Control Valve	Remote Electro Hydraulic Angle Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Part Stroke/Operation Exercise Full Stroke/Cold Shutdown Operability Test	25, 31, 34, 36
MTS-PL-V004B	Turbine Control Valve	Remote Electro Hydraulic Angle Globe	Maintain Close Transfer Close	Active-to-Failed Remote Position	Non Code Category B	Remote Position Indication, Exercise/2 Years Exercise Part Stroke/Operation Exercise Full Stroke/Cold Shutdown Operability Test	25, 31, 34, 36
PCS-PL-V001A	PCCWST Isolation	Remote AO Butterfly	Maintain Open Transfer Open	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PCS-PL-V001B	PCCWST Isolation	Remote AO Butterfly	Maintain Open Transfer Open	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PCS-PL-V001C	PCCWST Isolation	Remote MO GATE	Maintain Open Transfer Open	Active Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31

Table 3.9-16 (Sheet 6 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
PCS-PL-V002A	PCCWST Series Isolation	Remote MO GATE	Maintain Open Transfer Open	Active Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PCS-PL-V002B	PCCWST Series Isolation	Remote MO GATE	Maintain Open Transfer Open	Active Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PCS-PL-V002C	PCCWST Series Isolation	Remote MO GATE	Maintain Open Transfer Open	Active Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PCS-PL-V005	PCCWST Supply to Fire Protection Service Isolation	Manual	Maintain Close Transfer Close	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
PCS-PL-V009	Spent Fuel Pool Emergency Makeup Isolation	Manual	Maintain Close Transfer Open Maintain Open	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
~~PCS-PL-V014~~	~~Post-72 Hour Water Source Isolation~~	~~Manual/ Check~~	~~Transfer Open~~	~~Active~~	~~Class 3 Category B~~C	~~Exercise Full Stroke/Quarterly Check Exercise/Refueling~~	
PCS-PL-V015	Water Bucket Makeup Line Drain Valve	Manual	Maintain Close Transfer Close	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
PCS-PL-V020	Water Bucket Makeup Line Isolation Valve	Manual	Maintain Open Transfer Open	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
PCS-PL-V023	PCS Recirculation Return Isolation	Manual	Maintain Close Transfer Close	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	13, 37
PCS-PL-V039	PCCWST Long-Term Makeup Check Valve	Check	Maintain Open Transfer Open	Active	Class 3 Category ~~B~~C	Check Exercise/Refueling	21
PCS-PL-V042	PCCWST Long-Term Makeup Isolation Drain Valve	Manual	Maintain Close Transfer Close	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
PCS-PL-V044	PCCWST Long-Term Makeup Isolation Valve	Manual	Maintain Open Transfer Open	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
PCS-PL-V045	Emergency Makeup to the Spent Fuel Pool Isolation Valve	Manual	Maintain Open Transfer Open	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
PCS-PL-V046	PCCWST Recirculation Return Isolation Valve	Manual	Maintain Close Transfer Close	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
PCS-PL-V049	Emergency Makeup to the Spent Fuel Pool Drain Isolation Valve	Manual	Maintain Close Transfer Close	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
PCS-PL-V050	Spent Fuel Pool Long-Term Makeup Isolation Valve	Manual	Maintain Open Transfer Open	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37

Table 3.9-16 (Sheet 7 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
PCS-PL-V051	Spent Fuel Pool Emergency Makeup Lower Isolation Valve	Manual	Maintain Close Transfer Close	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
PSS-PL-V008	Containment Air Sample Containment Isolation IRC	Remote SO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
PSS-PL-V010A	Liquid Sample Line Containment Isolation IRC	Remote SO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
PSS-PL-V010B	Liquid Sample Line Containment Isolation IRC	Remote SO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
PSS-PL-V011	Liquid Sample Line Containment Isolation ORC	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
PSS-PL-V023	Sample Return Line Containment Isolation ORC	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
PSS-PL-V024	Sample Return Containment Isolation Check IRC	Check	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test Check Exercise/Refueling Shutdown	19, 27
PSS-PL-V046	Air Sample Line Containment Isolation ORC	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
PXS-PL-V002A	Core Makeup Tank A Cold Leg Inlet Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years	
PXS-PL-V002B	Core Makeup Tank B Cold Leg Inlet Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years	
PXS-PL-V014A	Core Makeup Tank A Discharge Isolation	Remote AO GLOBE	Maintain Open Transfer Open	Active-to-Failed Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PXS-PL-V014B	Core Makeup Tank B Discharge Isolation	Remote AO GLOBE	Maintain Open Transfer Open	Active-to-Failed Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31

Table 3.9-16 (Sheet 8 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
PXS-PL-V015A	Core Makeup Tank A Discharge Isolation	Remote AO GLOBE	Maintain Open Transfer Open	Active-to-Failed Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PXS-PL-V015B	Core Makeup Tank B Discharge Isolation	Remote AO GLOBE	Maintain Open Transfer Open	Active-to-Failed Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PXS-PL-V016A	Core Makeup Tank A Discharge Check	Check	Maintain Open Transfer Open Transfer Close	Active Remote Position	Class 1 Category BC	Remote Position Indication, Exercise/2 Years Check Exercise/Refueling Shutdown	10
PXS-PL-V016B	Core Makeup Tank B Discharge Check	Check	Maintain Open Transfer Open Transfer Close	Active Remote Position	Class 1 Category BC	Remote Position Indication, Exercise/2 Years Check Exercise/Refueling Shutdown	10
PXS-PL-V017A	Core Makeup Tank A Discharge Check	Check	Maintain Open Transfer Open Transfer Close	Active Remote Position	Class 1 Category BC	Remote Position Indication, Exercise/2 Years Check Exercise/Refueling Shutdown	10
PXS-PL-V017B	Core Makeup Tank B Discharge Check	Check	Maintain Open Transfer Open Transfer Close	Active Remote Position	Class 1 Category BC	Remote Position Indication, Exercise/2 Years Check Exercise/Refueling Shutdown	10
PXS-PL-V022A	Accumulator A Pressure Relief	Relief	Maintain Close Transfer Open Transfer Close	Active	Class 3 Category BC	Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	
PXS-PL-V022B	Accumulator B Pressure Relief	Relief	Maintain Close Transfer Open Transfer Close	Active	Class 3 Category BC	Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	
PXS-PL-V027A	Accumulator A Discharge Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years	
PXS-PL-V027B	Accumulator B Discharge Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years	
PXS-PL-V028A	Accumulator A Discharge Check	Check	Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position Safety Seat Leakage	Class 1 Category AC	Remote Position Indication, Exercise/2 Years Check Exercise/Refueling Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~	9
PXS-PL-V028B	Accumulator B Discharge Check	Check	Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position Safety Seat Leakage	Class 1 Category AC	Remote Position Indication, Exercise/2 Years Check Exercise/Refueling Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~	9

Table 3.9-16 (Sheet 9 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
PXS-PL-V029A	Accumulator A Discharge Check	Check	Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position Safety Seat Leakage	Class 1 Category AC	Remote Position Indication, Exercise/2 Years Check Exercise/Refueling Shutdown Pressure Isolation Leak Test/Refueling Shutdown	9
PXS-PL-V029B	Accumulator B Discharge Check	Check	Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position Safety Seat Leakage	Class 1 Category AC	Remote Position Indication, Exercise/2 Years Check Exercise/Refueling Shutdown Pressure Isolation Leak Test/Refueling Shutdown	9
PXS-PL-V042	Nitrogen Supply Containment Isolation ORC	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
PXS-PL-V043	Nitrogen Supply Containment Isolation IRC	Check	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category AC	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Check Exercise/Quarterly	27
PXS-PL-V101	PRHR HX Inlet Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years	
PXS-PL-V108A	PRHR HX Control	Remote AO GLOBE	Maintain Open Transfer Open	Active-to-Failed Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PXS-PL-V108B	PRHR HX Control	Remote AO GLOBE	Maintain Open Transfer Open	Active-to-Failed Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PXS-PL-V117A	Containment Recirculation A Isolation	Remote MO GATE	Maintain Open Maintain Close Transfer Open	Active Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PXS-PL-V117B	Containment Recirculation B Isolation	Remote MO GATE	Maintain Open Maintain Close Transfer Open	Active Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PXS-PL-V118A	Containment Recirculation A Isolation	Squib	Maintain Open Maintain Close Transfer Open	Active Remote Position	Class 3 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
PXS-PL-V118B	Containment Recirculation B Isolation	Squib	Maintain Open Maintain Close Transfer Open	Active Remote Position	Class 3 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
PXS-PL-V119A	Containment Recirculation A Check	Check	Maintain Open Maintain Close Transfer Open	Active Remote Position	Class 3 Category BC	Remote Position Indication, Exercise/2 Years Check-Initial Open Differential Pressure/2 Years Check Exercise/Refueling Shutdown	11

Table 3.9-16 (Sheet 10 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
PXS-PL-V119B	Containment Recirculation B Check	Check	Maintain Open Maintain Close Transfer Open	Active Remote Position	Class 3 Category BC	Remote Position Indication, Exercise/2 Years Check-Initial Open Differential Pressure/2 Years Check Exercise/Refueling Shutdown	11
PXS-PL-V120A	Containment Recirculation A Isolation	Squib	Maintain Open Maintain Close Transfer Open	Active Remote Position	Class 3 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
PXS-PL-V120B	Containment Recirculation B Isolation	Squib	Maintain Open Maintain Close Transfer Open	Active Remote Position	Class 3 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
PXS-PL-V121A	IRWST Line A Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years	
PXS-PL-V121B	IRWST Line B Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years	
PXS-PL-V122A	IRWST Injection A Check	Check	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category BC	Remote Position Indication, Exercise/2 Years Check-Initial Open Differential Pressure/2 Years Check Exercise/Refueling Shutdown	12
PXS-PL-V122B	IRWST Injection B Check	Check	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category BC	Remote Position Indication, Exercise/2 Years Check-Initial Open Differential Pressure/2 Years Check Exercise/Refueling Shutdown	12
PXS-PL-V123A	IRWST Injection A Isolation	Squib	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
PXS-PL-V123B	IRWST Injection B Isolation	Squib	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
PXS-PL-V124A	IRWST Injection A Check	Check	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category BC	Remote Position Indication, Exercise/2 Years Check-Initial Open Differential Pressure/2 Years Check Exercise/Refueling Shutdown	12
PXS-PL-V124B	IRWST Injection B Check	Check	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category BC	Remote Position Indication, Exercise/2 Years Check-Initial Open Differential Pressure/2 Years Check Exercise/Refueling Shutdown	12
PXS-PL-V125A	IRWST Injection A Isolation	Squib	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
PXS-PL-V125B	IRWST Injection B Isolation	Squib	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
PXS-PL-V130A	IRWST Gutter Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31

Table 3.9-16 (Sheet 11 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
PXS-PL-V130B	IRWST Gutter Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
PXS-PL-V208A	RNS Suction Leak Test	Manual	Maintain Close	Containment Isolation Safety Seat Leakage	Class 2 Category A	Containment Isolation Leak Test/2 Years	
RCS-PL-V001A	First Stage Automatic Depressurization System	Remote MO GLOBE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V001B	First Stage Automatic Depressurization System	Remote MO GLOBE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V002A	Second Stage Automatic Depressurization System	Remote MO GLOBE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V002B	Second Stage Automatic Depressurization System	Remote MO GLOBE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V003A	Third Stage Automatic Depressurization System	Remote MO GLOBE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V003B	Third Stage Automatic Depressurization System	Remote MO GLOBE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V004A	Fourth Stage Automatic Depressurization System	Squib	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
RCS-PL-V004B	Fourth Stage Automatic Depressurization System	Squib	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
RCS-PL-V004C	Fourth Stage Automatic Depressurization System	Squib	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
RCS-PL-V004D	Fourth Stage Automatic Depressurization System	Squib	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category D	Remote Position Indication, Alternate/2 Years Charge Test Fire/20% in 2 Years	5
RCS-PL-V005A	Pressurizer Safety Valve	Relief	Maintain Close Transfer Open Transfer Close	Active RCS Pressure Boundary Remote Position	Class 1 Category BC	Remote Position Indication, Alternate/2 Years Class 1 Relief Valve Tests/5 Years and 20% in 2 Years	7

Table 3.9-16 (Sheet 12 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
RCS-PL-V005B	Pressurizer Safety Valve	Relief	Maintain Close Transfer Open Transfer Close	Active RCS Pressure Boundary Remote Position	Class 1 Category BC	Remote Position Indication, Alternate/2 Years Class 1 Relief Valve Tests/5 Years and 20% in 2 Years	7
RCS-PL-V010A	Automatic Depressurization System Discharge Header A Vacuum Relief	Relief	Transfer Open	Active	Class 3 Category BC	Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	
RCS-PL-V010B	Automatic Depressurization System Discharge Header B Vacuum Relief	Relief	Transfer Open	Active	Class 3 Category BC	Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	
RCS-PL-V011A	First Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V011B	First Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V012A	Second Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V012B	Second Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V013A	Third Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V013B	Third Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open Maintain Close Transfer Open	Active RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	3, 31
RCS-PL-V014A	Fourth Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years	
RCS-PL-V014B	Fourth Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years	
RCS-PL-V014C	Fourth Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years	
RCS-PL-V014D	Fourth Stage Automatic Depressurization System Isolation	Remote MO GATE	Maintain Open	Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years	
RCS-PL-V150A	Reactor Vessel Head Vent	Remote SO GLOBE	Maintain Open Maintain Close Transfer Open	Active-to-Failed RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	4, 31
RCS-PL-V150B	Reactor Vessel Head Vent	Remote SO GLOBE	Maintain Open Maintain Close Transfer Open	Active-to-Failed RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	4, 31
RCS-PL-V150C	Reactor Vessel Head Vent	Remote SO GLOBE	Maintain Open Maintain Close Transfer Open	Active-to-Failed RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	4, 31

Table 3.9-16 (Sheet 13 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
RCS-PL-V150D	Reactor Vessel Head Vent	Remote SO GLOBE	Maintain Open Maintain Close Transfer Open	Active-to-Failed RCS Pressure Boundary Remote Position	Class 1 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Operability Test	4, 31
RCS-K03	Safety Valve Discharge Chamber Rupture Disk	Relief	Transfer Open	Active	Class 3 Category BC	Inspect and Replace/5 Years	
RCS-K04	Safety Valve Discharge Chamber Rupture Disk	Relief	Transfer Open	Active	Class 3 Category BC	Inspect and Replace/5 Years	
RNS-PL-V001A	RNS Hot Leg Suction Isolation - Inner	Remote MO GATE	Maintain Close Transfer Close	Active RCS Pressure Boundary Safety Seat Leakage Remote Position	Class 1 Category A	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~ Operability Test	15, 31
RNS-PL-V001B	RNS Hot Leg Suction Isolation - Inner	Remote MO GATE	Maintain Close Transfer Close	Active RCS Pressure Boundary Safety Seat Leakage Remote Position	Class 1 Category A	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~ Operability Test	15, 31
RNS-PL-V002A	RNS Hot Leg Suction and Containment Isolation - Outer	Remote MO GATE	Maintain Close Transfer Close	Active RCS Pressure Boundary Containment Isolation Safety Seat Leakage Remote Position	Class 1 Category A	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~ Operability Test	15, 16, 31
RNS-PL-V002B	RNS Hot Leg Suction and Containment Isolation - Outer	Remote MO GATE	Maintain Close Transfer Close	Active RCS Pressure Boundary Containment Isolation Safety Seat Leakage Remote Position	Class 1 Category A	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Cold Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~ Operability Test	15, 16, 31
RNS-PL-V003A	RCS Pressure Boundary Valve Thermal Relief	Check	Maintain Close Transfer Open Transfer Close	Active RCS Pressure Boundary	Class 2 Category BC	Check Exercise/Refueling Shutdown	23
RNS-PL-V003B	RCS Pressure Boundary Valve Thermal Relief	Check	Maintain Close Transfer Open Transfer Close	Active RCS Pressure Boundary	Class 2 Category BC	Check Exercise/Refueling Shutdown	23
RNS-PL-V011	RNS Discharge Containment Isolation Valve - ORC	Remote MO GATE	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
RNS-PL-V013	RNS Discharge Containment Isolation - IRC	Check	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test Check Exercise/Quarterly	27
RNS-PL-V015A	RNS Discharge RCS Pressure Boundary	Check	Maintain Close Transfer Close	Active RCS Pressure Boundary Safety Seat Leakage	Class 1 Category AC	Check Exercise/Refueling Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~	24

Table 3.9-16 (Sheet 14 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
RNS-PL-V015B	RNS Discharge RCS Pressure Boundary	Check	Maintain Close Transfer Close	Active RCS Pressure Boundary Safety Seat Leakage	Class 1 Category AC	Check Exercise/Refueling Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~	24
RNS-PL-V017A	RNS Discharge RCS Pressure Boundary	Check	Maintain Close Transfer Open Transfer Close	Active RCS Pressure Boundary Safety Seat Leakage	Class 1 Category AC	Check Exercise/Refueling Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~	24
RNS-PL-V017B	RNS Discharge RCS Pressure Boundary	Check	Maintain Close Transfer Open Transfer Close	Active RCS Pressure Boundary Safety Seat Leakage	Class 1 Category AC	Check Exercise/Refueling Shutdown Pressure Isolation Leak Test/2 Years~~Refueling Shutdown~~	24
RNS-PL-V021	RNS Hot Leg Suction Pressure Relief	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test/2 Years Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	17, 27
RNS-PL-V022	RNS Suction Header Containment Isolation - ORC	Remote MO GATE	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
RNS-PL-V023	RNS Suction from IRWST - Containment Isolation	Remote MO GATE	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	17, 27, 31
RNS-PL-V045	RNS Pump Discharge Relief	Relief	Maintain Close Transfer Open Transfer Close	Active	Class 3 Category BC	Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	
RNS-PL-V046	RNS Heat Exchanger A Channel Head Drain Isolation	Manual	Maintain Open Transfer Open	Active	Class 3 Category B	Exercise Full Stroke/2 Years~~Quarterly~~	37
RNS-PL-V061	RNS Return from CVS - Containment Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
SFS-PL-V034	SFS Suction Line Containment Isolation	Remote MO Butterfly	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
SFS-PL-V035	SFS Suction Line Containment Isolation	Remote MO Butterfly	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31

Table 3.9-16 (Sheet 15 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
SFS-PL-V037	SFS Discharge Line Containment Isolation	Check	Maintain Close Transfer Close Transfer Open	Active Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test Check Exercise/Quarterly	27
SFS-PL-V038	SFS Discharge Line Containment Isolation	Remote MO Butterfly	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
SFS-PL-V066	Spent Fuel Pool to Cask Washdown Pit Isolation	Manual	Transfer Open Transfer Close Maintain Close	Active	Class 3 Category B	Exercise Full Stroke/2 Years	37
SFS-PL-V068	Cask Washdown Pit Drain Isolation	Manual	Transfer Open Transfer Close Maintain Close	Active	Class 3 Category B	Exercise Full Stroke/2 Years	37
SFS-PL-V071	Refueling Cavity to Steam Generator Compartment	Check	Transfer Open Transfer Close Maintain Close	Active	Class 3 Category BC	Check Exercise/Refueling Shutdown	26
SFS-PL-V072	Refueling Cavity to Steam Generator Compartment	Check	Transfer Open Transfer Close Maintain Close	Active	Class 3 Category BC	Check Exercise/Refueling Shutdown	26
SGS-PL-V027A	Power-Operated Relief Valve Block Valve Steam Generator 01	Remote MO GATE	Maintain Close Transfer Close	Active Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V027B	Power-Operated Relief Valve Block Valve Steam Generator 02	Remote MO GATE	Maintain Close Transfer Close	Active Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V030A	Main Steam Safety Valve Steam Generator 01	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V030B	Main Steam Safety Valve Steam Generator 02	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V031A	Main Steam Safety Valve Steam Generator 01	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V031B	Main Steam Safety Valve Steam Generator 02	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7

SGS-PL-V032A	Main Steam Safety Valve Steam Generator 01	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7

Table 3.9-16 (Sheet 16 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
SGS-PL-V032B	Main Steam Safety Valve Steam Generator 02	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V033A	Main Steam Safety Valve Steam Generator 01	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V033B	Main Steam Safety Valve Steam Generator 02	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V034A	Main Steam Safety Valve Steam Generator 01	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V034B	Main Steam Safety Valve Steam Generator 02	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V035A	Main Steam Safety Valve Steam Generator 01	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V035B	Main Steam Safety Valve Steam Generator 02	Relief	Maintain Close Transfer Open Transfer Close	Active Containment Isolation Remote Position	Class 2 Category BC	Remote Position Indication, Alternate/2 Years Class 2/3 Relief Valve Tests/5 Years and 20% in 2 Years	7
SGS-PL-V036A	Steam Line Condensate Drain Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V036B	Steam Line Condensate Drain Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V040A	Main Steam Line Isolation	Remote Pneumatic Hydraulic GATE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years ~~Exercise Part Stroke/Quarterly~~ Exercise Full Stroke/Cold Shutdown Operability Test	20, 31
SGS-PL-V040B	Main Steam Line Isolation	Remote Pneumatic Hydraulic GATE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years ~~Exercise Part Stroke/Quarterly~~ Exercise Full Stroke/Cold Shutdown Operability Test	20, 31

Table 3.9-16 (Sheet 17 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
SGS-PL-V057A	Main Feedwater Isolation	Remote Pneumatic Hydraulic GATE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years ~~Exercise Part Stroke/Quarterly~~ Exercise Full Stroke/Cold Shutdown Operability Test	20, 31
SGS-PL-V057B	Main Feedwater Isolation	Remote Pneumatic Hydraulic GATE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years ~~Exercise Part Stroke/Quarterly~~ Exercise Full Stroke/Cold Shutdown Operability Test	20, 31
SGS-PL-V067A	Startup Feedwater Isolation	Remote MO GATE	Maintain Close Transfer Close	Active Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V067B	Startup Feedwater Isolation	Remote MO GATE	Maintain Close Transfer Close	Active Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V074A	Steam Generator Blowdown Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V074B	Steam Generator Blowdown Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V075A	Steam Generator Series Blowdown Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V075B	Steam Generator Series Blowdown Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V086A	Steam Line Condensate Drain Control	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operation Operability Test	31
SGS-PL-V086B	Steam Line Condensate Drain Control	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V233A	Power-Operated Relief Valve	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V233B	Power-Operated Relief Valve	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31

Table 3.9-16 (Sheet 18 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
SGS-PL-V240A	Main Steam Isolation Valve Bypass Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V240B	Main Steam Isolation Valve Bypass Isolation	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Remote Position	Class 2 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V250A	Main Feedwater Control	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Part Stroke/Quarterly Operation Exercise Full Stroke/Cold Shutdown Operability Test	25, 31
SGS-PL-V250B	Main Feedwater Control	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Part Stroke/Quarterly Operation Exercise Full Stroke/Cold Shutdown Operability Test	25, 31
SGS-PL-V255A	Startup Feedwater Control	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
SGS-PL-V255B	Startup Feedwater Control	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VBS-PL-V186	MCR Supply Air Isolation Valve	Remote Electric Hydraulic Butterfly	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VBS-PL-V187	MCR Supply Air Isolation Valve	Remote Electric Hydraulic Butterfly	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VBS-PL-V188	MCR Return Air Isolation Valve	Remote Electric Hydraulic Butterfly	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VBS-PL-V189	MCR Return Air Isolation Valve	Remote Electric Hydraulic Butterfly	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VBS-PL-V190	MCR Exhaust Air Isolation Valve	Remote Electric Hydraulic Butterfly	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31

Table 3.9-16 (Sheet 19 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
VBS-PL-V191	MCR Exhaust Air Isolation Valve	Remote Electric Hydraulic Butterfly	Maintain Close Transfer Close	Active-to-Failed Remote Position	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VES-PL-V001	Air Delivery Isolation Valve	Manual	Maintain Close Transfer Open Maintain Open	Active	Class 3 Category B	Exercise Full Stroke/~~Quarterly~~2 Years	37
VES-PL-V002A	Pressure Regulating Valve A	Press. Reg.	Throttle Flow	Active	Class 3 Category B	Exercise ~~Full~~ Stroke/Quarterly Operability Test	31, 38
VES-PL-V002B	Pressure Regulating Valve B	Press. Reg.	Throttle Flow	Active	Class 3 Category B	Exercise ~~Full~~ Stroke/Quarterly Operability Test	31, 38
VES-PL-V005A	Air Delivery Isolation Valve A	Remote SO GLOBE	Maintain Open Transfer Open	Active-to-Failed	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VES-PL-V005B	Air Delivery Isolation Valve B	Remote SO GLOBE	Maintain Open Transfer Open	Active-to-Failed	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VES-PL-V022A	Pressure Relief Isolation Valve A	Remote AO Butterfly	Maintain Open Transfer Open	Active-to-Failed	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VES-PL-V022B	Pressure Relief Isolation Valve B	Remote AO Butterfly	Maintain Open Transfer Open	Active-to-Failed	Class 3 Category B	Remote Position Indication, Exercise/2 Years Exercise Full Stroke/Quarterly Operability Test	31
VES-PL-V040A	Air Tank Safety Relief Valve A	Relief	Maintain Close Transfer Open	Active	Class 3 Category BC	Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	
VES-PL-V040B	Air Tank Safety Relief Valve B	Relief	Maintain Close Transfer Open	Active	Class 3 Category BC	Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	
VES-PL-V041A	Air Tank Safety Relief Valve A	Relief	Maintain Close Transfer Open	Active	Class 3 Category BC	Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	
VES-PL-V041B	Air Tank Safety Relief Valve B	Relief	Maintain Close Transfer Open	Active	Class 3 Category BC	Class 2/3 Relief Valve Tests/10 Years and 20% in 4 Years	
VES-PL-V044	Main Air Flowpath Isolation Valve	Manual	Maintain Close Transfer Open	Active	Class 3 Category B	Exercise Full Stroke/~~Quarterly~~2 Years	37

Table 3.9-16 (Sheet 20 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
VFS-PL-V003	Containment Purge Inlet Containment Isolation Valve	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
VFS-PL-V004	Containment Purge Inlet Containment Isolation Valve	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
VFS-PL-V009	Containment Purge Discharge Containment Isolation Valve	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
VFS-PL-V010	Containment Purge Discharge Containment Isolation Valve	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 31
VWS-PL-V058	Fan Coolers Supply Containment Isolation	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 28, 31
VWS-PL-V062	Fan Coolers Supply Containment Isolation	Check	Maintain Close Transfer Close	Active Containment Isolation Safety Seat Leakage	Class 2 Category AC	Containment Isolation Leak Test Check Exercise/Quarterly	27, 28
VWS-PL-V082	Fan Coolers Return Containment Isolation	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 28, 31
VWS-PL-V086	Fan Coolers Return Containment Isolation	Remote AO Butterfly	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operability Test	27, 28, 31
WLS-PL-V055	Sump Discharge Containment Isolation IRC	Remote AO Plug	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operation Operability Test	27, 31

Table 3.9-16 (Sheet 21 of 21)

VALVE INSERVICE TEST REQUIREMENTS

Valve Tag Number	Description[1]	Valve/Actuator Type	Safety-Related Missions	Safety Functions[2]	ASME Class/ IST Category	Inservice Testing Type and Frequency	IST Notes
WLS-PL-V057	Sump Discharge Containment Isolation ORC	Remote AO PLUG	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operation Operability Test	27, 31
WLS-PL-V067	Reactor Coolant Drain Tank Gas Outlet Containment Isolation IRC	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operation Operability Test	27, 31
WLS-PL-V068	Reactor Coolant Drain Tank Gas Outlet Containment Isolation ORC	Remote AO GLOBE	Maintain Close Transfer Close	Active-to-Failed Containment Isolation Safety Seat Leakage Remote Position	Class 2 Category A	Remote Position Indication, Exercise/2 Years Containment Isolation Leak Test Exercise Full Stroke/Quarterly Operation Operability Test	27, 31
WLS-PL-V071A	CVS Compartment to Sump	Check	Maintain Close Transfer Close	Active	Class 3 Category BC	Check Exercise/Refueling Shutdown	26
WLS-PL-V071B	PXS A Compartment to Sump	Check	Maintain Close Transfer Close	Active	Class 3 Category BC	Check Exercise/Refueling Shutdown	26
WLS-PL-V071C	PXS B Compartment to Sump	Check	Maintain Close Transfer Close	Active	Class 3 Category BC	Check Exercise/Refueling Shutdown	26
WLS-PL-V072A	CVS Compartment to Sump	Check	Maintain Close Transfer Close	Active	Class 3 Category BC	Check Exercise/Refueling Shutdown	26
WLS-PL-V072B	PXS A Compartment to Sump	Check	Maintain Close Transfer Close	Active	Class 3 Category BC	Check Exercise/Refueling Shutdown	26
WLS-PL-V072C	PXS B Compartment to Sump	Check	Maintain Close Transfer Close	Active	Class 3 Category BC	Check Exercise/Refueling Shutdown	26

Notes:

1. Acronyms:

ADS	automatic depressurization system
CAS	compressed and instrument air system
CCS	component cooling water system
CVS	chemical and volume control system
DWS	demineralized water transfer and storage system
FPS	fire protection system
IRC	inside reactor containment
IRWST	in-containment refueling water storage tank
MSS	main steam system
MTS	main turbine system
ORC	outside reactor containment
PCCWST	passive containment cooling water storage tan
PCS	passive containment cooling system
PSS	primary sampling system
PXS	passive core cooling system
RCS	reactor coolant system
RNS	normal residual heat removal system
SFS	spent fuel pool cooling system
SGS	steam generator system
VBS	nuclear island nonradioactive ventilation system
VES	main control room emergency habitability system
VFS	containment air filtration system
VWS	central chilled water system
WLS	liquid radwaste system
AO	Air Operated
MO	Motor Operated
SO	Solenoid Operated

2. Valves listed as having an active or an active-to-failed safety-related function provide the safety-related valve transfer capabilities identified in the safety-related mission column. Valves having an active-to-failed function will transfer to the position identified in the safety-related mission column on loss of motive power. Valves with an active-to-failed function shall be tested by observing the operation of the actuator upon loss of valve actuating power. This 'fail safe' requirement is not otherwise shown and is performed during exercise testing.

3. This note applies to the ADS stage 1/2/3 valves (RCS-V001A/B, V002A/B, V003A/B, V011A/B, V012A/B, V013A/B). These valves are normally closed to maintain the RCS pressure boundary. These valves have a safety-related function to open following LOCAs to allow safety injection from lower pressure water supplies (accumulators and IRWST). These valves also have beyond design basis functions to depressurize the RCS. These valves have the same design pressure as the RCS and are AP1000 equipment class A. Downstream of the second valve is a lower design pressure and is equipment class C. The discharge of these valves is open to the containment through the IRWST.

   Both ADS valves in each line are normally closed during normal reactor operation in accordance with 10 CFR 50.2 and ANS/ANSI 51.1. If one of these valves is opened, for example for testing, the RCS pressure boundary is not maintained in accordance with the criteria contained in these two documents. In addition, the ADS valve configuration is similar to the normal residual heat removal system suction valve configuration. Even though the RNS suction valve configuration includes a third valve in the high pressure portion of the line, and the first two RNS valves have safety related functions to transfer closed, they are not stroke tested during normal reactor operation to avoid a plant configuration where the mispositioning of one valve would cause a LOCA. Note 15 describes the justification for testing the RNS valves during cold shutdown.

   These ADS valves are tested during cold shutdowns when the RCS pressure is reduced to atmospheric pressure so that mispositioning of a single valve during this IST will not cause a LOCA. Testing these valves every cold shutdown is consistent with the AP1000 PRA which assumes more than 2 cold or refueling shutdowns per year.

4. This note applies to the reactor vessel head vent solenoid valves (RCS-V150A/B/C/D). Exercise testing of these valves at power represents a risk of loss of reactor coolant and depressurization of the RCS if the proper test sequence is not followed. Such testing may also result in the valves developing through seal leaks. Exercise testing of these valves will be performed at cold shutdown.

5. This note applies to squib valves in the RCS and the PXS. The squib valve charge is removed and test fired outside of valve. Squib valves are not exercised for inservice testing. Their position indication sensors will be tested by local inspection.

6. This note applies to the CVS isolation valves (CVS-V001, V002, V003, V080, V081, V082). Closing these valves at power will result in an undesirable temperature transient on the RCS due to the interruption of purification flow. Therefore, quarterly exercise testing will not be performed. Exercise testing will be performed at cold shutdown.

7. This note applies to the pressurizer safety valves (RCS-V005A/B) and to the main steam safety valves (SGS-V030A/B, V031A/B, V032A/B, V033A/B, V034A/B and V035A/B). Since these valves are not exercised for inservice testing, their position indication sensors are tested by local inspection without valve exercise.

8. This note applies to CVS valve (CVS-V081). The safety functions are satisfied by the check valve function of the valve.

9. This note applies to the PXS accumulator check valves (PXS-V028A/B, V029A/B). To exercise these valves, flow must be provided through these valves to the RCS. These valves are not exercised during power operations because the accumulators cannot provide flow to the RCS since they are at a lower pressure. In addition, providing flow to the RCS during power operation would cause undesirable thermal transients on the RCS. During cold shutdowns, a full flow stroke test is impractical because of the potential of adding significant water to the RCS, and lifting the RNS relief valve. There is also a risk of injecting nitrogen into the RCS. A partial stroke test is practical during longer cold shutdowns (≥48 hours in Mode 5). In this test, flow is provided from test connections, through the check valves and into the RCS. Sufficient flow ~~in~~ is not available to provide a detectable obturator movement. Full stroke exercise testing of these valves is conducted during refueling shutdowns.

10. This note applies to the PXS CMT check valves (PXS-V016A/B, V017A/B). These check valves are biased open valves and are fully open during normal operation. These valves will be verified to be open quarterly. In order to exercise these check valves, significant reverse flow must be provided from the DVI line to the CMT. These valves are not tested during power operations because the test would cause undesirable thermal transients on the portion of the line at ambient temperatures and change the CMT boron concentration. These valves are not exercised during cold shutdowns because of changes that would result in the CMT boron concentration. Because this parameter is controlled by Technical Specifications, this testing is impractical. These valves are exercised during refueling when the RCS boron concentration is nearly equal to the CMT concentration and the plant is in a mode where the CMTs are not required to be available by the Technical Specifications.

11. This note applies to the PXS containment recirculation check valves (PXS-V119A/B). Squib valves in line with the check valves prevent the use of IRWST water to test the valves. To exercise these check valves an operator must enter the containment, remove a cover from the recirculation screens, and insert a test device into the recirculation pipe to push open the check valve. The test device is made to interface with the valve without causing valve damage. The test device incorporates loads measuring sensors to measure the initial opening and full open force. These valves are not exercised during power operations because of the need to enter highly radioactive areas and because during this test the recirculation screen is bypassed. These valves are not exercised during cold shutdown operations for the same reasons. These valves are exercised during refueling conditions when the recirculation lines are not required to be available by Technical Specifications LCOs 3.5.7 and 3.5.8 and the radiation levels are reduced.

12. This note applies to the PXS IRWST injection check valves (PXS-V122A/B, V124A/B). To exercise these check valves a test cart must be moved into containment and temporary connections made to these check valves. In addition, the IRWST injection line isolation valves must have power restored and be closed. These valves are not exercised during power operations because closing the IRWST injection valve is not permitted by the Technical Specifications and the need to perform significant work inside containment. Testing is not performed during cold shutdown for the same reasons. These valves are exercised during refueling conditions when the IRWST injection lines are not required to be available by Technical Specifications and the radiation levels are reduced.

13. Deleted.

14. Component cooling water system containment isolation motor-operated valves CCS-V200, V207, V208 and check valve CCS-V201 are not exercised during power operation. Exercising these valves would stop cooling water flow to the reactor coolant pumps and letdown heat exchanger. Loss of cooling water may result in damage to equipment or reactor trip. These valves are exercised during cold shutdowns when these components do not require cooling water.

15. Normal residual heat removal system reactor coolant isolation motor-operated valves (RNS-V001A/B, V002A/B) are not exercised during power operation. These valves isolate the high pressure RCS from the low pressure RNS and passive core cooling system (PXS). Opening during normal operation may result in damage to equipment or reactor trip. These valves are exercised during cold shutdowns when the RNS is aligned to remove the core decay heat.

16. Normal residual heat removal system containment isolation motor-operated valves (RNS-V002A/B) are not containment isolation leak tested. The basis for the exception is:

    - The valve is submerged during post-accident operations which prevents the release of the containment atmosphere radiogas
      or aerosol.
    - The RNS is a closed, seismically-designed safety class 3 system outside containment
    - The valves are closed when the plant is in modes above hot shutdown

17. Normal residual heat removal system containment penetration relief valve (RNS-V021) and containment isolation motor-operated valve (RNS-V023) are subjected to containment leak testing by pressurizing the lines in the reverse direction to the flow which accompanies a containment leak in this path.

18. This note applies to the CAS instrument air containment isolation valves (CAS-V014, V015). It is not practical to exercise these valves during power operation or cold shutdowns. Exercising the valves during these conditions may result in some air-operated valves inadvertently opening or closing, resulting in plant or system transients. These valves are exercised during refueling conditions when system and plant transients would not occur.

19. Primary sampling system containment isolation check valve (PSS-V024) is located inside containment and considerable effort is required to install test equipment and cap the discharge line. Exercise testing is not performed during cold shutdown operations for the same reasons. These valves are exercised during refueling conditions when the radiation levels are reduced.

20. This note applies to the main steam isolation valves and main feedwater isolation valves (SGS-V040A/B, V057A/B). The valves are not full stroke tested quarterly at power since full valve stroking will result in a plant transient during normal power operation. Therefore, these valves ~~will be partially stroked on a quarterly basis and~~ will be full stroke tested on a cold shutdown frequency basis. The full stroke testing will be a full "slow" closure operation. The large size and fast stroking nature of the valve makes it advantageous to limit the number of fast closure operations which the valve experiences. The timed slow closure ~~verifies the valves~~ supports the continued operability status of the valves in the intervals between fast closure tests and ensures that the valve is not mechanically bound.

21. Post-72 hour check valves that require temporary connections for inservice-testing are exercised every refueling outage. These valves require transport and installation of temporary test equipment and pressure/fluid supplies. Since the valves are normally used very infrequently, constructed of stainless steel, maintained in controlled environments, and of a simple design, there is little benefit in testing them more frequently. For example,

valve PCS-V039 is a simple valve that is opened to provide the addition of water to the PCS post-72 hour from a temporary water supply. To exercise the valve, a temporary pump and water supply is connected using temporary pipe and fittings, and the flow rate is observed using a temporary flow measuring device to confirm valve operation.

22. Exercise testing of the auxiliary spray isolation valve (CVS-V084, V085) will result in an undesirable temperature transient on the pressurizer due to the actuation of auxiliary spray flow. Therefore, quarterly exercise testing will not be performed. Exercise testing will be performed during cold shutdowns.

23. Thermal relief check valves in the normal residual heat removal suction line (RNS-V003A/B) and the Chemical and Volume Control System makeup line (CVS-V100) are located inside containment. To exercise test these valves, entry to the containment is required and temporary connections made to gas supplies. Because of the radiation exposure and effort required, this test is not conducted during power operation or during cold shutdowns. Exercise testing is performed during refueling shutdowns.

24. Normal residual heat removal system reactor coolant isolation check valves (RNS-V015A/B, V017A/B) are not exercise tested quarterly. During normal power operation these valves isolate the high pressure RCS from the low pressure RNS. Opening during normal operation would require a pressure greater than the RCS normal pressure, which is not available. It would also subject the RCS connection to undesirable transients. These valves will be exercised during cold shutdowns.

25. This note applies to the main feedwater control valves (SGS-V250A/B), moisture separator reheater steam control valve (MSS-V016A/B), turbine control valves (MTS-V002A/B, V004A/B). The valves are not quarterly stroke tested since full stroke testing would result in a plant transient during power operation. Normal feedwater and turbine control operation provides a partial stroke confirmation of valve operability. The valves will be full stroke tested during cold shutdowns.

26. This note applies to containment compartment drain line check valves (SFS-V071, SFS-V072, WLS-V071A/B/C, WLS-V072A/B/C). These check valves are located inside containment and require temporary connections for exercise testing. Because of the radiation exposure and effort required, these valves are not exercised during power operation or during cold shutdowns. The valves will be exercised during refuelings.

27. Containment isolation valves leakage test frequency will be conducted in accordance with the "Primary Containment Leakage Rate Test Program" in accordance with 10 CFR 50 Appendix J. Refer to SSAR subsection 6.2.5.

28. This note applies to the chilled water system containment isolation valves (VWS-V058, V062, V082 and V086). Closing any of these valves stops the water flow to the containment fan coolers. This water flow may be necessary to maintain the containment air temperature within Technical Specification limits. As a result, quarterly exercise testing will be deferred when plant operating conditions and site climatic conditions would cause the containment air temperature to exceed this limit during testing.

29. Exercise testing of the turbine bypass control valves (MSS-V001, V002, V003, V004, V005 and V006) will result in an undesirable temperature transient on the turbine, condenser and other portions of the turbine bypass due to the actuation of bypass flow. Therefore, quarterly exercise testing will not be performed. Exercise testing will be performed during cold shutdowns.

30. Deleted.

31 These valves may be subject to operability testing. See subsection 3.9.6.2.2 for the factors to be considered in the evaluation of operability testing and subsection 3.9.8.4 for the Combined License information item. The specified frequency for operability testing is a maximum of once every 10 years. The test frequency is the longer of every 3 refueling cycles or 5 years until sufficient data exists to determine a longer test frequency is appropriate in accordance with Generic Letter 96-05. Some of the valves will be tested the first time after a shorter period to provide for trending information.

32. These valves are subject to leak testing to support the nonsafety-related classification of the CVS purification subsystem inside containment. These valves are not included in the PIV integrity Technical Specification 3.4.16. The leakage through valves CVS-V001, CVS-V002, and CVS-V080 will be tested separately with a leakage limit of 1.5 gpm for each valve. The leakage through valves CVS-V081, V082, V084, and V085 will be tested at the same time as a group with a leakage limit of 1 gpm for the group. The leak tests will be performed at reduced RCS pressures. The observed leakage at lower pressures can be assumed to be the leakage at the maximum pressure as long as the valve leakage is verified to diminish with increasing pressure differential. Verification that the valves have the characteristic of decreasing leakage with pressure may be provided with two tests at different test pressures. The test requirements including the minimum test pressure and the difference between the test pressures will be defined by the Combined License applicant in the inservice test program as discussed in subsection 3.9.8.

33. This note applies to valve FHS-V001. This valve closes one end of the fuel transfer tube. The fuel transfer tube is normally closed by a flange except during refuelings. This valve has an active safety function to close when the fuel transfer tube flange is removed and normal shutdown cooling is lost. Closing this valve, along with other actions, provides containment closure which allows long term core cooling to be provided by the PXS. As a result this valve is only required to be operable during refueling operations. ~~The exercise testing of this valves will be performed during refueling shutdowns prior to removing the fuel transfer tube flange.~~

34. This note applies to the moisture separator reheater steam control valve (MSS-V016A/B), turbine control valves (MTS-V002A/B, V004A/B), main turbine stop valves (MTS-V001A/B, V003A/B), the turbine bypass control valves (MSS-V001, V002, V003, V004, V005, V006). These valves are not ASME Code Class 1, 2 or 3 and the ASME IST Category is indicated based on the valve functions listed~~safety-related~~. These valves are relied on in the safety analyses for those cases in which the rupture of the main steam or feedwater piping inside containment is the postulated initiating event. These valves are credited in single failure analysis to mitigate the event.

35. This note applies to the turbine stop valves (MTS-V001A/B, V003A/B). The valves are not quarterly stroke tested since full stroke testing would result in a plant transient during power operation. The valves will be full stroke tested during cold shutdowns. See Note 34 above.

36. In each of the four turbine inlet lines, there is a turbine stop valve and turbine control valve. Only one of the valves in each of the four lines is required by Technical Specification 3.7.2 to be operable.

37. Active Category A and B manual valves are exercised once every two years in accordance with 10 CFR 50.55a(b)(3)(vi).

38. The exercise stroke test for the VES pressure regulating valves is the stroke distance sufficient to provide the pressure

regulating function.

Note: Disregard Document APP-GW-GLN-138 R.0 that you received on October 22, 2007. (The document does not have the strikeouts). This one replaces it.

Thank you