Entergy

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PNP 2016-006

April 28, 2016

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Inservice Testing Program Plan Fifth 10-year Interval

Palisades Nuclear Plant
Docket 50-255
Renewed Facility Operating License No. DPR-20

References:

1. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2015-024, *Relief Requests, Proposed Alternatives, for the Fifth 10-Year Inservice Test Interval,* dated May 19, 2015 (ADAMS Accession Number ML15142A643)

2. NRC e-mail to Entergy Nuclear Operations, Inc., *Palisades – Request for Additional Information Regarding the Relief Request No. RR 5-2 (MF6248)*, dated August 19, 2015 (ADAMS Accession Number ML15231A586)

3. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2015-069, *Response to Request for Additional Information – Palisades Nuclear Plant Relief Request No. RR 5-2*, dated September 09, 2015 (ADAMS Accession Number ML15253A682)

4. NRC letter to Entergy Nuclear Operations, Inc., *Palisades Nuclear Plant – Relief Request Numbers 5-2 and 5-3, Proposed Alternative to the Requirements of the ASME OM Code for the Fifth 10-Year Inservice Test Interval (CAC No. MF6248)*, dated December 22, 2015 (ADAMS Accession No. ML15334A307)

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a, *Codes and standards*, and American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code-2004, *Code for Operation and Maintenance of Nuclear Power Plants,* Section ISTA-3200, *Administrative Requirements,* Entergy Nuclear Operations, Inc. (ENO) hereby submits the enclosed Palisades Nuclear Plant's (PNP) inservice testing (IST) program plan for the fifth 10-year interval, which began on March 24, 2016.

Pursuant to 10 CFR 50.55a(f), *Inservice testing requirements*, as conditioned by 10 CFR 50.55a(b), *Use and conditions on the use of standards*, PNP's plan will comply with the ASME OM Code, 2004 Edition through the 2006 Addenda as altered by 10 CFR 50.55a(z), *Alternatives to codes and standards requirements.*

A047
NRR

In Reference 1, PNP proposed two alternative, relief requests to the requirements of the ASME OM Code for the duration of the fifth 10-year IST interval, RR 5-2 and RR 5-3. RR 5-2 proposed to apply ASME OM Code Case OMN-20, *Inservice Test Frequency*, in lieu of the test frequency requirements of the ASME OM Code. RR 5-3 requested relief from the stroke time testing requirements of ASME OM Code, subsection ISTC paragraph ISTC-5131, *Valve Stroke Testing,* for two pneumatically operated valves, due to impracticality of performance. In Reference 2, the NRC requested additional information (RAI) associated with RR 5-2. In Reference 3, PNP provided a response to the NRC RR 5-2 RAI. In Reference 4, the NRC staff authorized use of the proposed alternatives in requests RR 5-2 and RR 5-3.

This letter contains no new commitments and no revised commitments.

Sincerely,

JAH/jpm

Enclosure: Entergy Nuclear Operations, Inc., Palisades Nuclear Plant, Palisades Inservice Testing Program Plan Fifth 10-Year Interval

cc: Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

ENCLOSURE

ENTERGY NUCLEAR OPERATIONS, INC.

PALISADES NUCLEAR PLANT

Palisades Inservice Testing Program Plan

Fifth 10-Year Interval

274 pages follow

ENTERGY NUCLEAR OPERATIONS, INC.

PALISADES NUCLEAR PLANT
27780 Blue Star Memorial Highway
Covert, Michigan 49043-9530

Commercial Service Date:
December 31, 1971

Inservice Testing (IST) Program Plan

Fifth Ten-Year Interval
March 24, 2016 – March 23, 2026

Palisades Nuclear Plant
Inservice Testing (IST) Program Plan

Fifth Ten-Year Interval

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Palisades Nuclear Plant
Inservice Testing (IST) Program Plan

Fifth Ten-Year Interval

Section 1.0

Inservice Testing Program Description

Palisades Inservice Testing (IST) Program plan is implemented through three site Engineering Program Sections. When combined these three Engineering Program Sections describe how the Palisades IST Program satisfies the regulatory requirements of Title 10 of the Code of Federal Regulations, Part 50, Section 55a (10 CFR 50.55a, "Codes and Standards") and the ASME OM Code, 2004 Edition, with Addenda through 2006, "Operations and Maintenance of Nuclear Power Plants, Subsections ISTA, ISTB, ISTC, Mandatory Appendix I, and Mandatory Appendix II". The three IST Engineering Program Sections are:

SEP-PLP-IST-101, "Inservice Testing of Plant Valves"
SEP-CV-PLP-002, "Check Valve Condition Monitoring and Inservice Testing Program"
SEP-PLP-IST-102, "Inservice Testing of Selected Safety-Related Pumps"

Palisades Nuclear Plant
Inservice Testing (IST) Program Plan

Fifth Ten-Year Interval

Section 2.0

SEP-PLP-IST-101

Inservice Testing of Plant Valves

(143 pages follow)

INSERVICE TESTING OF PLANT VALVES

ENGINEERING NUCLEAR ENGINEERING PROGRAMS

APPLICABLE SITES

All Sites: ☐

Specific Sites: ANO ☐ GGNS ☐ IPEC ☐ JAF ☐ PLP ☒ PNPS ☐ RBS ☐ VY ☐ W3 ☐ HQN ☐

Safety Related: ☒ **Yes** ☐ **No**

Program Section Revision Summary	
Current Revision	**Description of Change**
3	Revised section 2.1 to correct the IST interval start and end dates. Revised Attachment 7 to reflect Cold Shutdown Justification 31.
2	Revised the Program Section to reflect the 10 year code update from The ASME OM Code 2001 Edition through 2003 Addenda to the 2004 Edition through the 2006 Addenda.
1	Added references to Program Sections SEP-ISI-PLP-003, "Palisades Inservice Inspection Master Plan Fourth Interval, ASME Section XI, Division 1" and CEP-RR-001, "ASME Section XI Repair/Replacement Program" as 3.2.3.i and 3.2.3.j per WT-WTPLP-2012-00427 CA-37 and WT-PLP-2012-00427 CA-43 Added a statement to section 5.5.3 that the check valves in the Condition Monitoring program are identified by the Condition Monitoring Analysis (CMA) number in Attachment 10 per WT-PLP-2012-00427 CA-41 Added references 3.1.16 and 3.1.17 for the NRC correspondence related to Palisades fourth 10 year interval update per WT-WTPLP-2012-00141 CA-1 Added Cold Shutdown justifications CS34, CS35, and CS36 to Attachment 4 per WT-WTPLP-2012-00427 CA-45 and added CR-PLP-2013-02543 as reference 3.2.8.j Revised the approval section of Attachment 8 to require the Preparer of the IST Valve Reference Value(s)/Range(s) Change Form to be a qualified IST Engineer instead of the approver. A non IST qualified individual should not be preparing the change form. This requires the preparer to be qualified and allows approval by the supervisor or another knowledgeable person. Revised Attachment 10 to reflect the correct Condition Monitoring Analyses (CMA's) per CR-PLP-2014-04891 CA-2 and WT-WTPLP-2013-00044 CA-5.

	Added a statement to use CEP-IST-4 "Standard on Inservice Testing" as a guide for determining applicable code interpretations in section 5.2.3 per WT-WTPLP-2012-00427.
0	Transitioned from Palisades Engineering Manual EM-09-02, Revision 28, "Inservice Testing of Plant Valves". The transition also performed the following: • Incorporated the following Document Revision Notices: PCR01088173 DRN-11-01124 DRN-11-01824 • Revised section 4.1 to include additional definitions specified in the code. • Revised section 5.2.4 to include position statements identified in CEP-IST-4 • Revised section 5.2.5 to delete references to NMC documents for 10 year code updates • Revised section 5.3.3 to update procedural references • Deleted section 7 "Special Reviews" as this is not required per EN-DC-174. • Revised section 5.10.1 and added Attachment 8, "Inservice Testing Program Valve Reference Value/Ranges Change Form" as a method for changing reference values. • Added Attachment 9. "Inservice Testing Program Valve Scoping Form" and revised section 5.4 to give guidance on using the form. • Revised section 5.10.1.c.3 to allow other limiting values based on not exceeding the design value for the stroke time and the value being able to suggest valve degradation. • Added Attachment 10. "Inservice Testing Program, Valve Test Tables." • Revised section 5.11.2.b.2 to comply with the ASME OM Code requirement • Updated references and made editorial changes throughout the document

REVIEW AND CONCURRENCE SHEET

Program Section Title: Inservice Testing Of Plant Valves	
Prepared By: G Katt	**Date:** 4-22-16
Checked By: R White	**Date:** 4-22-16
Reviewed By: N/A **(Optional)**	N/A **Date:**
ANII: N/A **(Reviewed By or N/A)**	N/A **Date:**
Concurred: for JM Jerz per Telecon JM Jerz **Responsible Supervisor**	**Date:** 4-22-16

REVISION STATUS SHEET

SECTION	PAGE NO.	REVISION
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ATTACHMENTS

1.0 PURPOSE

1.1 To describe how the Palisades Inservice Testing (IST) Valve Program satisfies the regulatory requirements of Title 10 of the Code of Federal Regulations, Part 50, Section 55a (10 CFR 50.55a, "Codes and Standards") and Technical Specifications.

1.2 To provide an overview of the Palisades procedures and processes used to administer and implement the IST Valve Program.

1.3 To identify regulatory, code, and guidance documents that provide specific requirements (including scope, categorization, type and methods of testing, acceptance criteria, corrective actions, and documentation) and guidance (including grouping valves, nonintrusive testing techniques, and requests for regulatory relief) for inservice testing of valves.

1.4 To outline the process of scheduling tests, testing valves, evaluating test results, taking corrective actions, trending test results, and documenting valve information pertinent to the Palisades IST Valve Program.

1.5 For details related to the Palisades check valve IST program, refer to Site Engineering Program SEP-CV-PLP-002, "Check Valve Condition Monitoring and Inservice Testing Program."

2.0 SCOPE

2.1 This procedure is developed to the requirements (with exception of the relief requests) of 10 CFR 50.55a, March 2015 Edition; which incorporates by reference the Code for Operations and Maintenance of Nuclear Power Plants, 2004 Edition with Addenda through 2006 identified in this procedure as the Code.

The requirements of these regulations and codes were implemented on March 24, 2016 and are in effect through Palisades' fifth 120-month interval ending March 23, 2026.

2.2 This procedure applies to ASME Class 1, 2, and 3 valves as specified in 10 CFR 50.55a and in Technical Specifications ADMIN 5.5.7. The Code of Federal Regulation (10 CFR 50.55a(f)(4)) requires valves that are Class 1, 2, and 3 valves be tested in accordance with the ASME OM Code.

2.3 This procedure applies to ASME Class or Non-Class valves that are tested in accordance with commitments Palisades has made with the NRC.

2.4 This procedure may be applicable to Non-Class valves, including:

a. Certain components that are outside the scope of the Code but have Technical Specifications Surveillance Testing Requirements.

b. Certain components that are outside the scope of the Code but have a specific function in shutting down the reactor to Technical Specification Mode 5 or in mitigating the consequences of an accident.

c. Certain components that are outside the scope of the Code, but are deemed important by the owner to test.

2.5 Nothing in the Code shall be construed to supersede the requirements of any Technical Specifications. When requirements of the ASME Code and Technical Specifications conflict, either the Technical Specifications shall be changed, or the provisions of the more stringent program shall be followed.

2.6 Site Engineering Program Section SEP-ISI-PLP-002, " ASME Code Boundaries For ASME Section XI Inservice Inspection Program," provides the ASME boundary classifications for valves, and references the Color Coded P&IDs as a visible means of identifying what we have committed to as the plant Code Boundaries.

2.7 The plant valves that are in scope to the inservice test program are identified in Attachment 10, "Inservice Testing Program, Valve Test Tables".

2.8 The OM Code excludes the following valves from the IST requirements of this procedure, provided that they are not required to perform a specific safety function:

a. Valves used only for operating convenience, such as vent, drain, and instrument and test valves.

b. Valves used only for system control, such as, pressure regulating, temperature control and flow control and without a safety related fail safe function.

c. Valves used only for system or component maintenance.

2.9 In accordance with the OM Code, skid-mounted valves are excluded from the requirements of the IST Program, provided that they are adequately tested as part of the major component.

2.10 10CFR50.55a(b)(3)(ii) OM condition: Motor-Operated Valve (MOV) testing. Licensees must comply with the provisions for MOV testing in OM Code ISTC 4.2, 1995 Edition with the 1996 and 1997 Addenda, or ISTC–3500, 1998 Edition through the latest edition and addenda incorporated by reference in paragraph (a)(1)(iv) of that section, and must establish a program to ensure that motor-operated valves continue to be capable of performing their design basis safety functions.

3.0 REFERENCES

3.1 SOURCE DOCUMENTS

3.1.1 Technical Specifications SR 3.0.1, SR 3.0.2, SR 3.0.3, SR 3.0.4

3.1.2 Technical Specifications ADMIN 5.5.7

3.1.3 Technical Specifications Bases Table B 3.4.14-1

3.1.4 Final Safety Analysis Report - 6.9.2.2

3.1.5 Code of Federal Regulations Title 10, Part 50, Section 55a (10 CFR 50.55a), "Codes and Standards"

3.1.6 Code of Federal Regulations Title 10, Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plant and Fuel Reprocessing Plants"

3.1.7 Code of Federal Regulations Title 10, Part 50 (10 CFR 50), Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Reactors"

3.1.8 ASME OM Code, 2004 Edition, with Addenda through 2006, "Operations and Maintenance of Nuclear Power Plants, Subsections ISTA, ISTB, ISTC, ISTD, Mandatory Appendix I, and Mandatory Appendix II"

3.1.9 USNRC NUREGs, Generic Letters, Information Notices, and IE Bulletins

a. Generic Letter 87-06, "Periodic Verification of Leak Tight Integrity of Pressure Isolation Valves" (3621/1538)

b. Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs" (D074/2279)

c. Generic Letter 89-10, "Safety Related Motor Operated Valve Testing and Surveillance" (D121/0323, Supplement D256/0378)

d. Generic Letter 96-05 - Periodic Verification of Design-Basis Capability of Safety-Related Power-Operated Valves

e. Generic Letter 96-06 - Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions

f. NUREG 0737, "Clarification of TAI Action Plan Requirements" (C/F - 9427/1033)

g. NUREG-1482, Rev 2 "Guidelines for Inservice Testing at Nuclear Power Plants"

h. NUREG/CR-6396, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements"

i. Memorandum: Summary of Public Workshops Held in NRC Regions on Inspection Procedure 73756, "Inservice Testing of Pumps and Valves," and Answers to Panel Questions on Inservice Testing Issues, Joseph Colaccino, July 18, 1997

3.1.10 Entergy Quality Assurance Program Manual (QAPM)

3.1.11 Miscellaneous Correspondence

a. NRC letter dated January 13, 1978 (C/F - 2511/2358)

b. NRC Order dated April 20, 1981 regarding Event V PIVs (C/F - 9018/1126)

c. Palisades letter to the NRC dated June 5, 1987, Palisades Plant Response to Generic Letter 87-06 – Periodic Verification of Leak Tight Integrity of Pressure Isolation Valves"

3.1.12 Other Codes, Standards, and Guides

a. ANSI/ANSI 51.1, 1983, "American National Standard Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants"

b. Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water, Steam and Radioactive Waste Containing Components of Nuclear Power Plants"

c. ANSI N45.2.6, 1978, "Qualifications of Inspection, Examination and Testing Personnel for Nuclear Power Plants"

d. ANSI N18.7, "Administrative Controls and Quality Assurance for Operational Phase of Nuclear Power Plants"

e. Nuclear Energy Institute (NEI) White Paper entitled, "Standard Format for Requests from Commercial Reactor Licensees Pursuant to 10 CFR 50.55a, Revision 1," dated June 7, 2004 (ADAMS Accession No. ML070100400)

3.1.13 Plant Equipment Data Base (EDB)

3.1.14 Plant Piping and Instrument Diagrams (P&IDs)

3.1.15 NRC Letter to Palisades, dated March 22, 2007. "Palisades Nuclear Plant - Request For Relief From Inservice Testing Requirements For The Fourth 10-Year Pump And Valve Inservice Testing Program: (TAC Nos. MD1122, MD1123, MD1124, MD1125, MD1126, MD1127, AND MD1163)"

3.1.16 NRC Letter to Palisades, dated December 22, 2015, Palisades Nuclear Plant- Relief Request Numbers RR 5-2 and 5-3, Proposed Alternative To The Requirements of the ASME OM Code For The Fifth 10-Year Inservice Test Interval (CAC No. MF6248)

3.2 REFERENCE DOCUMENTS

3.2.1 Final Safety Analysis Report - 5.1.6.6 and 6.9.2.2

3.2.2 Palisades Administrative Procedures:

a. 3.19, "Technical Specifications Programs"

b. 5.19, "Post Maintenance Testing"

c. 9.20, "Technical Specification Surveillance and Special Test Program"

d. 10.51, "Writer's Guideline for Site Procedures"

3.2.3 Site Engineering Manuals and Programs:

a. EM-04-08, "Shutdown Margin Requirements"

b. SEP-APJ-10, "Containment Leak Rate Testing Program"

c. SEP-CV-PLP-002, "Check Valve Condition Monitoring and Inservice Testing Program"

d. SEP-MOV-PLP-001, "Motor Operated Valve Program"

e. SEP-CV-PLP-001, "Check Valve Program"

f. SEP-AOV-PLP-001, "Air and Solenoid Operated Valve Program"

g. SEP-MOV-PLP-002, "Motor Operated Valve (MOV) Periodic Verification and Trending Program"

h. SEP-RV-PLP-001, "Relief Valve Program Standard"

i. Program Section SEP-ISI-PLP-003, "Palisades Inservice Inspection Master Plan Fifth Interval, ASME Section XI, Division 1"

j. Program Section CEP-RR-001, "ASME Section XI Repair/Replacement Program"

3.2.4 Technical Specification Surveillance Procedures:

a. MO-7A-1, "Emergency Diesel Generator 1-1"

b. MO-7A-2, "Emergency Diesel Generator 1-2"

c. QO-1, "Safety Injection System"

d. QO-2, "Recirculation Actuation System"

e. QO-5, "Valve Test Procedure (Includes Containment Isolation Valves)"

f. QO-6, "Cold Shutdown Valve Test Procedure (Includes Containment Isolation Valves)"

g. QO-8B, "ESS Check Valve Operability Test and LPSI Motor Operated Valve Position Verification Test (Modes 5 and 6)"

h. QO-14, "Inservice Test Procedure - Service Water Pumps"

i. QO-15, "Inservice Test Procedure - Component Cooling Water Pumps"

j. QO-16, "Inservice Test Procedure - Containment Spray Pumps"

k. QO-19, "Inservice Test Procedure - HPSI Pumps and ESS Check Valve Operability Test"

l. QO-20, "Inservice Test Procedure - Low Pressure Safety Injection Pumps"

m. QO-21, "Inservice Test Procedure, Auxiliary Feedwater Pumps"

n. QO-37, "Main Steam Isolation and Bypass Valve Testing"

o. QO-41, "Main Feedwater Regulating Valves Inservice Stroke Test"

p. QO-42, "Section XI Testing of Shutdown Cooling Control Valves"

q. QO-43, " Shutdown Cooling Bypass and Loop Isolation Valves Inservice Test"

r. RI-17, "Main Steam Isolation Valve Circuits Test and Valve Closure Testing"

s. RI-115, "Power Operated Relief Valves"

t. RM-29, "Main Steam Safety Valve Setpoint Testing"

u. RO-32, "LLRT - Local Leak Rate Test Main Procedure"

v. RO-52, "Fire Suppression Water System Functional Test and Fire Pump Capacity Test"

w. RO-65, "High Pressure Safety Injection (HPSI) Trains 1 and 2, and Hot Leg Injection (HLI) Check Valve Test and Cold Leg/Hot Leg Injection Flow Balance Test"

x. RO-98, "LPSI and Containment Spray Comprehensive Pump Test and Check Valves Test"

y. RO-105, "Full Flow Test for SIT Check Valves and PCS Loop Check Valves"

z. RO-112, "Reactor Head/Pressurizer Vent Flow Check"

aa. RO-119, "Inservice Testing of Engineered Safeguards Valves CV-3027 and CV-3056"

ab. RO-127, "Auxiliary Feedwater System, 18 Month Test Procedure"

ac. RO-143, "Nonintrusive Testing of Charging Header Check Valves and Charging Header Control Valve Testing"

ad. RO-144, "Comprehensive Pump Test Procedure, Service Water Pumps P-7A, P-7B and P-7C"

ae. RO-145, "Comprehensive Pump Test Procedure, Auxiliary Feedwater Pumps P-8A, P-8B and P-8C"

af. RO-146, "Comprehensive Pump Test Procedure, Component Cooling Water Pumps P-52A, P-52B and P-52C"

ag. RO-147, "Comprehensive Pump Test Procedure, High Pressure Safety Injection Pumps P-66A, P-66B and P-66C"

ah. RT-41, "Pressurizer Safety Valves RV-1039, RV-1040, and RV-1041"

ai. RT-71L, "Technical Specification ADMIN 5.5.2 Pressure Test of ESS Pump Suction Piping"

aj. RT-116, "Miscellaneous Systems Safety Valve Setpoint Testing"

ak. SO-4A, "Personnel Air Lock Penetration Leak Test"

al. RT-122, "Inservice Test Program - Check Valve Disassembly and Inspection Program"

am. SHO-1, "Operator's Shift Items Modes 1, 2, 3, and 4"

an. RO-217, "Technical Specification Leak Rate Testing of Engineered Safeguards Check Valves"

ao. Technical Specification Surveillance Procedure RT-41, "Pressurizer Safety Valves RV-1039, RV-1040, and RV-1041"

ap. Technical Specification Surveillance Procedure RT-116, "Miscellaneous Systems Safety Valve Setpoint Testing"

aq. Technical Specification Surveillance Procedure RT-122, "Inservice Test Program - Check Valve Disassembly and Inspection Program"

3.2.5 Entergy Procedures:

a. EN-PL-155, "Entergy Nuclear Change Management "

b. EN-DC-167, "Classification of Structures, Systems, and Components "

c. EN-OP-104, "Operability Determination Process"

d. EN-DC-324, "Preventive Maintenance Program"

e. EN-WM-100, "Work Request (WR) Generation, Screening and Classification"

f. EN-AD-101, "Procedure Process"

g. EN-AD-103, "Document Control and Records Management Programs "

h. EN-DC-332, "Inservice Testing Duties and Responsibilities"

i. EN-LI-102, "Corrective Action Process"

j. EN-WM-102, "Work Implementation and Closeout."

k. EN-WM-101, "On line Work Management Process"

3.2.6 Other Procedures:

a. GOP-2, "Mode 5 to Mode 3 $\geq$ 525°F"

b. GOP-9, "Mode 3 $\geq$ 525°F to Mode 4 or Mode 5"

c. CH 6.30, "Process Monitor Operational Check – Quarterly"

d. Preoperational Test Procedure #12, "Engineered Safeguards System and Shutdown Cooling System"

e. MSM-M-60, "ASME Safety/Relief Valve Testing For Valves Included in ASME Section XI Scope"

f. MSM-M-70, "In-Place Testing of Safety/Relief Valves Using the KT3000 AccuTEST System"

g. SEP-ISI-PLP-002, " ASME Code Boundaries For ASME Section XI Inservice Inspection Program

3.2.7 Preventive Maintenance Activities:

a. PMID 50085190-01, " CV-0884/VOP-0884, Rebuild Valve/Operator "

b. PMID 50085191-01, "CV-0884/VOP-0884, Rebuild Valve/Operator"

c. PMID 50083972-01, "FPS/SWS to AFW Valve PM"

d. PMID 50085512-01, "Manual Isolation Valve PM Program (CDS)"

e. PMID 50083974-01, "Manual Stroke of CV-2008 and CV-2010"

f. PMID 50083975-01, "Manual Operation of CV-0736A and CV-0737A"

3.2.8 Miscellaneous References:

a. Action Item Report A-RE-82-002, "Required SIRW Tank Volume" (C/F - 9084/0461)

b. Facility Change FC-441, Hot Leg Injection (0869/0536 and 9126/0004)

c. NOMIS Report Request 90-04-081/Report Number 8163A (Located in Document Control Center)

d. Tech Data Book (Located in Document Control Center)

e. C-PAL-97-1380, "CV-0703 Failed Valve Position Verification" (4613/0420)

f. CEP-COS-100, Control and Use of Iddeal Concepts Software

g. Iddeal Concepts Software Suite®

h. Engineering Assistance Request EAR 99-0081, "CVCS Declassification"

i. Corporate Engineering Program CEP-IST-4 "Standard on Inservice Testing"

j. CR-PLP-2013-02543

4.0 DEFINITIONS AND RESPONSIBILITIES

4.1 DEFINITIONS

4.1.1 Exercising – A demonstration based on direct visual or indirect positive indications that the moving parts of a component function.

4.1.2 Full Stroke Time - The time interval from initiation of the actuating signal to the indication of the end of the operating stroke.

4.1.3 Inservice Test – A test to assess the operational readiness of a system, structure, or component after first electrical generation by nuclear heat.

4.1.4 Instrument Loop - two or more instruments or components working together to provide a single output.

4.1.5 Instrument Loop Accuracy – The accuracy of an instrument loop based on the square root of the sum of the squares of the inaccuracies of each instrument or component in the loop when considered separately. Alternatively, the allowable inaccuracy of the instrument loop may be based on the output for a known input into the instrument loop.

4.1.6 Maintenance – The replacement of parts, adjustments, and similar actions that do not change the design (configuration and material) of an item.

4.1.7 Modification – The alteration in the design of a system, structure, or component.

4.1.8 Monitoring – The continuous or periodic observation or measurement to ascertain the performance or obtain characteristics of a system, structure, or component.

4.1.9 Nonintrusive Testing – Testing that is performed on a component without disassembly or disturbing the boundary of the component.

4.1.10 Obturator – The valve closure member (disk, gate, plug, etc.).

4.1.11 Operational Readiness – The ability of a component to perform its specified functions.

4.1.12 Overpressure Protection – The means by which components are protected from overpressure by the use of pressure-relieving devices or other design provisions as required by the BPV Code, Section III, or other applicable construction codes.

4.1.13 Owner: - An organization owning or operating a facility where items are installed or used.

4.1.14 Performance Testing - A test to determine whether a system or component meets specified acceptance criteria.

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

4.1.16 Power Operated Relief Valve (PORV) – A power-operated valve that can perform a pressure-relieving function and is remotely actuated by either a signal from a pressure-sensing device or a control switch. A power-operated relief valve is not capacity certified under ASME Section III overpressure protection requirements.

4.1.17 Preservice Test – A test performed after completion of construction activities related to the component and before first electrical generation by nuclear heat, or in an operating plant, before the component is initially placed in service.

4.1.18 Preservice Test Period - The period of time following completion of construction activities related to the component and before first electrical generation by nuclear heat, in which component and system testing takes place, or in an operating plant prior to the component being initially placed in service.

4.1.19 Qualitative Testing – Testing that is performed to establish parameters without determining the specific measure of the parameter.

4.1.20 Quantitative Testing – Testing that is performed to establish the specific measure or limit of a parameter, such as that required to establish that a parameter is within a specified range.

4.1.21 Reactor Coolant System Pressure Isolation - That function that prevents intersystem overpressurization between the reactor coolant system and connected low pressure systems.

4.1.22 Reference Point - A point of operation at which reference values are established and inservice test parameters are measured for comparison with applicable acceptance criteria.

4.1.23 Reference Values - One or more values of parameters as measured or determined when the equipment is known to be operating acceptably. Reference values provide baseline values for comparison in subsequent IST for detecting pump or valve degradation. Reference values are determined from the results of a baseline preoperational or inservice test. They shall be at points of operation which are readily duplicated during subsequent inservice testing, the results of which are compared to these reference values.

4.1.24 Relief Request - A written request to the NRC seeking relief from certain Code requirements when those requirements are impractical, cause unreasonable hardship without a compensating increase in safety or when a proposed alternative provides an acceptable level of quality and safety.

4.1.25 Repair - The process of restoring a degraded item to its original design requirements.

4.1.26 Routine Servicing – The performance of planned, preventive maintenance.

4.1.27 Skid-mounted Pumps and Valves - Pumps and valves integral to or that support operation of major components, even though these pumps and valves may not be located directly on the skid. In general, these pumps and valves are supplied by the manufacturer of the major component.

4.1.28 Substitute Examination or Test - An examination or test which replaces a Code-required examination or test when the Code requirements are considered to be impractical.

4.1.29 System Resistance – The hydraulic resistance to flow.

4.1.30 Trending - A comparison of current data to previous data obtained under similar conditions for the same equipment.

4.1.31 Valves, Active - Valves that are required to change obturator position to accomplish a specific function in shutting down a reactor to the safe shutdown condition, maintaining the safe shutdown condition, or mitigating the consequences of an accident.

4.1.32 Valves, Passive - Valves that maintain obturator position and are not required to change obturator position to accomplish the required function(s) in shutting down a reactor to the safe shutdown condition, maintaining the safe shutdown condition, or mitigating the consequences of an accident.

4.2 RESPONSIBILITIES

4.2.1 Procedure EN-DC-332, "Inservice Testing," identifies division of responsibilities at the Department level for each Entergy site.

4.2.2 IST Coordinator - That individual assigned to oversee performance of the pump testing program. The IST Coordinator performs the following: , evaluate test data, and identify the need for corrective action to the appropriate System Engineer.

- Develops and implements the IST Program and Plan.
- Reviews and records IST test results and informs applicable department head(s) of recommended corrective actions or new IST values.
- Reviews inservice and pre-service test results and determines appropriate reference values, when required.
- Notifies appropriate plant departments of the need for special inservice testing.
- Reviews surveillance procedures used to implement the IST Program with respect to applicability and compliance with the IST Program.

- Reviews plant modifications and other information provided by the Design Engineering Manager with respect to activities that have a potential impact on the scope of the IST Program.
- Provides assistance to the Operations Manager in determining the post-work test requirements including the testing required for establishing revised IST values and limits.
- Ensures all tests and test parameter measurements are properly documented and in compliance with the requirements of the IST Program for Pumps and Valves.
- Provides a copy of the IST Program Plan, including subsequent revisions, to the Licensing Manager for submittal to the NRC as necessary.

4.2.3 Technical Specification Surveillance Program Administrator (TSSPA) - The individual responsible for the administration of the Technical Specification Surveillance Program.

4.2.4 System Engineer - Service manager for the system in question.

5.0 PROCEDURE

5.1 PROGRAM DESCRIPTION

The Palisades Valve Inservice Testing Program is designed to satisfy the requirements of the Code of Federal Regulations 10 CFR 50.55a, "Codes and Standards," and Technical Specifications ADMIN 5.5.7.

5.2 REGULATIONS AND CODES

5.2.1 10 CFR 50.55a, "Codes and Standards"

The Code of Federal Regulations (CFR) is a "living document" that is revised on a periodic basis. The current Palisades Valve Inservice Testing Program is based on the ASME OM Code, 2001 Edition with Addenda through 2003. Title 10 of the Code of Federal Regulations, Part 50, Section 55a, requires that each licensee of a nuclear power facility have an inservice testing program as described in paragraph (f), (ie, 10 CFR 50.55a(f)).

10 CFR 50.55a(f)(4)(ii) requires that each licensee comply with the requirements of the ASME OM Code as specified in 10 CFR 50.55a(b)(3).

5.2.2 ASME/ANSI Code For Operation And Maintenance Of Nuclear Power Plants

The ASME OM Code is a "living document" that is revised on a periodic basis. Similar to the ASME B&PV Code, the OM Code also has addenda that are approved on a more frequent interval and editions that incorporate desired addenda, updated on a less frequent interval.

The current Palisades Valve Inservice Testing Program is established based on the ASME OM Code, 2004 Edition with Addenda through 2006. Subsection ISTC covers inservice testing of valves in nuclear power plants, including requirements for testing of safety and relief valves, which is contained in Mandatory Appendix I.

5.2.3 ASME OM Interpretations

In the case where interpretations are incorporated, they will be discussed in the applicable section of this procedure. CEP-IST-4 "Standard on Inservice Testing" may also be used as a resource for identifying applicable code interpretations.

In some cases ASME has issued interpretations to clarify the requirements or the intent of Code specifications. Interpretations provide valuable direction for implementation of an inspection program.

5.2.4 Technical Position Statements

In some cases, items such as Code rules and interpretations, 10 CFR 50 rules and industry standards are subject to interpretation and, therefore, require further clarification on their implementation and use. Position statements and clarifications developed for the program will be included in the applicable sections. Corporate IST position statements are included in CEP-IST-4 "Standard on Inservice Testing". They include:

Position 1, Category A Valves – Designation Criteria
Position 2, Position on Component Preconditioning
Position 3, On-Line Maintenance Impact on IST
Position 4, IST Relief Valve Additional Tests
Position 5, IST Relief Valve Temperature Correlation

5.2.5 Regulation And Code Updates

Requirements within the Code of Federal Regulations change as revisions occur. However, the new requirements may not be effective immediately upon the revision date; certain amounts of time are usually allowed to implement new requirements.

10 CFR 50.55a(f)(4) requires licensees to update their valve inservice testing program every 120 months. The program is to be updated to include the requirements of the *latest* ASME OM Code, approved for incorporation by reference by the Director of the Federal Register, in 10 CFR 50.55a(b)(3), including limitations and modifications. The *latest* ASME OM Code, is the Code that is referenced in 10 CFR 50.55a(b)(3), twelve (12) months before the start of the licensees next 120 month interval (reference 10 CFR 50.55a(f)(4)(ii)).

The Palisades Plant Inservice Valve Testing Program Code of record will be in effect through the fifth 120-month interval and will be updated in accordance with 10 CFR 50.55a (f).

5.3 PLANT PROCEDURES

5.3.1 Procedures/Specifications Requiring the Valve Inservice Testing Program

The following documents require an inservice test program to exist:

a. Technical Specifications ADMIN 5.5.7, "Inservice Testing Program"

b. Palisades Administrative Procedure 3.19, "Technical Specifications Programs"

5.3.2 Procedure Development

There are numerous plant procedures used to administer and implement the valve inservice test program. These procedures are developed and revised in accordance with the following:

a. Palisades Administrative Procedure 10.51, "Writer's Guideline for Site Procedures"

b. Palisades Administrative Procedure 9.20, "Technical Specification Surveillance and Special Test Program"

5.3.3 Valve IST Governing Procedures

a. The primary procedure governing the valve inservice test program, which incorporates the Regulatory and Code requirements, is:

- Site Engineering Program SEP-PLP-IST-101, "Inservice Testing of Plant Valves"

b. The primary procedure governing the condition monitoring of check valves is:

- Site Engineering Program SEP-CV-PLP-002, "Check Valve Condition Monitoring and Inservice Testing Program"

c. The primary tool used to hold relevant information, trend data and provide reports on an as needed basis, is the Iddeal Concepts Software Suite®

d. Other procedures used to assist in the administration of the valve inservice test program are:

- Condition Report Entergy Procedure EN-LI-102, "Corrective Action Process"

- Entergy Procedure EN-OP-104, "Operability Determination Process"

- Entergy Procedure EN-WM-100, "Work Request (WR) Generation, Screening and Classification"
- Entergy Procedure EN-DC-324, "Preventive Maintenance Program"
- Entergy Procedure EN-WM-107, "Post Maintenance Testing"
- Palisades Administrative Procedure 9.20, "Technical Specification Surveillance and Special Test Program"
- Site Engineering Program SEP-APJ-010, "Containment Leak Rate Testing Program"
- Site Engineering Program SEP-CV-PLP-002, "Check Valve Condition Monitoring and Inservice Testing Program"
- Site Engineering Program SEP-MOV-PLP-001, "Motor Operated Valve Program"
- Site Engineering Program SEP-CV-PLP-001, "Check Valve Program"
- Site Engineering Program SEP-AOV-PLP-001, "Air and Solenoid Operated Valve Program"
- Site Engineering Program SEP-MOV-PLP-002, "Motor Operated Valve (MOV) Periodic Verification and Trending Program"
- Site Engineering Program SEP-RV-PLP-001, "Relief Valve Program Standard"

5.3.4 Valve IST Implementing Procedures/Processes

a. Valves in the scope of the inservice testing program are tested under one of the following:

- Technical Specification Surveillance Procedure
- Departmental Procedure (eg, Operations, Maintenance, etc)
- Maintenance Work Order
- Preventive Maintenance Program
- Operations Log

b. A listing of the procedures/processes used to test valves in scope to the inservice testing program are in Attachment 10, "Inservice Testing Program, Valve Test Tables".

5.4 CATEGORIZATION OF VALVES IN IST PROGRAM

In accordance with the ASME OM Code, Subsection ISTC, valves within the scope shall be placed in one or more of the following categories. When more than one distinguishing category characteristic is applicable, all requirements of each of the individual categories are applicable, although duplication or repetition of common testing requirements is not necessary.

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

b. Category B - Valves for which seat leakage in the closed position is inconsequential for fulfillment of the required safety function(s),

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

d. Category D - Valves which are actuated by an energy source capable of only one operation, such as rupture disks or explosively actuated valves. Palisades has no valves in Category D.

The categorization of each valve in scope to the inservice test program is contained in the Iddeal Concepts Software Suite® and also located in Attachment 10, "Inservice Testing Program, Valve Test Tables". New valves to be considered for incorporation into the Inservice Testing Program can be scoped using Attachment 9, "Inservice Testing Program Valve Scoping Form" or an equivalent form containing the scoping information required by the code.

5.5 TYPE OF TESTING REQUIRED FOR VALVE CATEGORIES

The types of inservice testing required for the four (4) categories of valves are described in ASME OM Code, Subsections ISTC-3500 and ISTC-5100. Refer to the Code for specific details on the various valve categories. The type of tests required for each valve in scope to the inservice test program are contained in the Iddeal Concepts Software Suite®.

5.6 METHODS OF TESTING VALVE FUNCTIONS

The test methods to assess that a valve is capable of performing its safety function(s) are located in the ASME OM Code, Subsection ISTC-5100, ISTC-5200 and Mandatory Appendix I. Refer to the Code for specific test methods that are acceptable.

5.7 GROUPING SIMILAR VALVES FOR TESTING EFFICIENCIES

5.7.1 Safety and Relief Valves

ASME OM Code, Mandatory Appendix I, Sections I-1320(a) and I-1350(a) permit valves of the same type and manufacture may be tested as a group.

5.8 INTERVALS FOR TESTING VALVES

The frequency required for performing each test type is identified in ASME OM Code, Subsection ISTC-3510.

Unless otherwise specified each inservice test surveillance requirement (SR) shall be performed within the specified time interval in accordance with the ASME OM Code or as allowed by Relief Request RR 5-2 which incorporates the requirements of ASME OM code case OMN-20 "IST Frequencies for Pumps and Valves."

Test frequencies for valve tests are identified in the Iddeal Concepts Software Suite®.

5.8.1 Quarterly Testing Intervals

Ensuring valves can perform their open or close safety functions (including Fail Safe functions) is to be done on a quarterly basis (ie, every 92 days) if practicable. Further detail is provided in ASME OM Code, Subsection ISTC-3521 and ISTC-3522 which identifies the test periodicity requirements if quarterly testing is not practicable. Documentation of justifications is described in NUREG-1482 Revision 2.

5.8.2 18 Month/2 Year Testing Intervals

a. Valves with Position Indication Functions

Ensuring remote valve indication matches actual valve position is required to be done every 2 years by ASME OM Code, Subsection ISTC-3700. Typically, Palisades performs this testing on an 18 month interval to coincide with refueling outages and comply with Technical Specification Surveillance Requirement SR 3.3.7.2 for Containment Isolation Valve Position.

b. Valves with Containment Isolation and PCS Pressure Isolation Functions

Valves with both of these functions shall be tested in accordance with 10 CFR 50, Appendix J. They shall also be tested at least once every 2 years as identified in ASME OM Code, Subsection ISTC-3630(a).

c. Valves with Functions Other Than Containment Isolation

Valves that have close safety functions where seat leakage is limited shall be tested at least once every 2 years as identified in ASME OM Code, Subsection ISTC-3630(a).

5.8.3 Appendix J Testing - Valves With Containment Isolation Function Only

Valves whose only safety function is to isolate containment are tested on an interval as specified in 10 CFR 50, Appendix J, which is implemented in accordance with Site Engineering Program SEP-APJ-010, "Containment Leak Rate Testing Program."

5.8.4 Cold Shutdown Testing Intervals

a. If it is not practicable to perform quarterly testing of a valve or group of valves at power, then a justification shall be written and documented in the IST Program for performing required testing during cold shutdowns as specified in Subsections ISTC-3521(c) and ISTC-3522(b).

b. Valve exercising during cold shutdowns shall commence within 48 hours of achieving cold shutdown, and continue until all testing is complete or the plant is ready to return to power as specified in Subsections ISTC-3521(g) and ISTC-3522(e).

1. For extended outages, testing need not be commenced in 48 hours provided all valves required to be tested during cold shutdown will be tested prior to plant startup.

2. It is not required to keep the plant in cold shutdown (Technical Specifications Mode 5) in order to complete cold shutdown testing. If cold shutdown testing is not completed, then a justification shall be written documenting why the testing was not completed, per Palisades Administrative Procedure 9.20, "Technical Specification Surveillance and Special Test Program."

c. Cold Shutdown Justifications are contained in the Iddeal Concepts Software Suite®. An index of these justifications is provided in Attachment 4, "Cold Shutdown Justification Index.

5.8.5 Refueling Outage Testing Intervals

a. If it is not practicable to perform quarterly or cold shutdown testing of a valve or group of valves, then a justification shall be written and documented in the IST Program for performing required testing during refueling outages (Technical Specifications Mode 6) as specified in Subsections ISTC-3521(e) and ISTC-3522(c).

b. All valve testing required to be performed during a refueling outage shall be completed prior to returning the plant to operation.

c. Refueling Outage Justifications are contained in the Iddeal Concepts Software Suite®. An index of these justifications is provided in Attachment 5, "Refueling Outage Justification Index.

5.8.6 Group / Sample Testing Intervals

Relief Valve Setpoint Testing

a. A sample relief valve testing plan may be used per ASME OM Code, Mandatory Appendix I, Subsections I-1320(a) and I-1350(a).

b. Class 1 Pressure Relief Devices and Main Steam Safety Valves

- Setpoints shall be verified every five years.
- 20% of the valves in each group shall be tested within any 24 month period.
- If there is only one valve in a valve group, then that valve will require testing every 24 month period.
- In the event that the 20% minimum calculation produces a fractional value, then the fractional value will be rounded up to the nearest whole number (eg, 1.4 valves will be rounded to 2 valves).
- The valves tested shall consist of valves that have not been previously tested during the current five year period.

c. Class 2 and 3 Pressure Relief Devices

- Setpoints shall be verified every ten years.
- 20% of the valves in each group shall be tested within any 48 month period.
- If there is only one valve in a valve group, then that valve will require testing every 48 month period.
- In the event that the 20% minimum calculation produces a fractional value, then the fractional value will be rounded up to the nearest whole number (eg, 1.4 valves will be rounded to 2 valves).
- The valves tested shall consist of valves that have not been previously tested during the current ten year period.

d. Relief valves that are used solely for thermal relief applications shall be tested or replaced at least once every ten years per ASME OM Code, Appendix I, Subsection I-1390. The sampling requirements of Subsection I-1350(a) are not applicable for relief valves utilized solely for thermal relief applications.

e. Palisades relief valve groupings for setpoint testing and the testing frequencies are identified in Technical Specification Surveillance Basis Procedures RT-116, "Miscellaneous Systems Safety Valve Setpoint Testing," and RT-41, "Pressurizer Safety Valves RV-1039, RV-1040, and RV-1041."

5.8.7 Changes To Testing Intervals

It is the responsibility of the IST Coordinator to notify the Technical Specification Surveillance Procedure Program Administrator (TSSPA) of any change in the testing frequency for a particular piece of equipment. This change shall be documented in the test record.

5.8.8 Exceptions to Testing At Code Intervals

If Code required testing cannot be met, then a Relief Request shall be submitted for approval to the NRC as required by 10 CFR 50.55a(f)(5). Relief requests shall be prepared in accordance with NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives," and Nuclear Energy Institute (NEI) White Paper entitled, "Standard Format for Requests from Commercial Reactor Licensees Pursuant to 10 CFR 50.55a, Revision 1," dated June 7, 2004 (ADAMS Accession No. ML070100400).

5.8.9 Testing Interval Identification/Reference

Relief Requests associated with Code testing interval exceptions, are contained in the Iddeal Concepts Software Suite®. An index of the Relief Requests is provided in Attachment 6, "Relief Request Justification Index."

5.9 SCHEDULING VALVE INSERVICE TESTS

5.9.1 Technical Specification Surveillance Procedures

Most valve inservice tests are documented in Technical Specification Surveillance Procedures. These procedures are written to be conducted during specific plant mode(s) and are scheduled to be conducted in accordance with Palisades Administrative Procedure 9.20, "Technical Specification Surveillance and Special Test Program."

5.9.2 Departmental Procedures

Other valve inservice tests are documented in operating procedures such as General Operating Procedures (GOPs) and department procedures such as Chemistry (CH) procedures. These procedures are scheduled in accordance with the Entergy Work Control Process.

5.9.3 Preventive Maintenance

Several valve inservice tests are a part of the Preventive Maintenance Program. Preventive Maintenance activities are controlled by Entergy Procedure EN-DC-324, "Preventive Maintenance Program."

5.9.4 Work Orders

Valve inservice testing may also be accomplished with Work Orders. Work Orders are scheduled in accordance with Entergy Procedure EN-WM-100, "Work Request (WR) Generation, Screening and Classification"

5.9.5 Operations Logs

Various operational occurrences may verify that a valve is performing its safety function. These operational occurrences may be used as inservice tests if they are performed within required frequencies and when acceptable results are documented as required by ISTA-9230 Inservice Test and Examination Results.

5.10 CRITERIA FOR ACCEPTING TEST RESULTS

Acceptance criteria and corrective action requirements are provided in ASME OM Code, Subsections ISTC-5100 and ISTC-5200.

5.10.1 Open And Close Stroke Time Tests - Power Operated Valves

a. Reference Values

The criterion, for acceptance of stroke time test results, is based on *reference values*. Reference Values are discussed in detail in ASME OM Code, Subsections ISTC-3300, ISTC-3310 and ISTC-3320. Consult these sections when determining reference values for valves. Following is an overview.

1. *Reference Values* are defined as one or more values of test parameters measured or determined when the valve is known to be operating acceptably.

2. Reference Values shall be determined under conditions as near as practicable to those expected during subsequent inservice testing.

3. When timing the (open or close) stroke of a valve, the reference value is the time interval from initiation of the actuating signal to the indication of the end of the stroke. Stroke times are typically measured to the nearest tenth of a second; however, valves with long stroke times may be measured to the nearest second.

4. Reference Values are established based on past operating data, if available. If such information is not available, then the value is based on initial testing (single or multiple strokes) after the valve has been added to the program, or initial testing after maintenance, as appropriate.

5. When a reference value or set of values may have been affected by repair or routine servicing of a valve, a new reference value or set of values shall be determined or the previous values reconfirmed by an inservice test run prior to declaring the valve operable. Attachment 8, "Inservice Testing Program Valve Reference Value/Ranges Change Form" (or equivalent) should be used as the engineering evaluation to establish, calculate, and evaluate any new reference values and acceptance limits.

b. Acceptance Criteria

Acceptance Criteria for stroke time tests is calculated in accordance with ASME OM Code, Subsections ISTC-5114, ISTC-5122, ISTC-5132, ISTC-5142, ISTC-5152, ISTC-5210, and ISTC-5220. When establishing acceptance criteria for valve stroke times, consult that section. Following is an overview:

1. *Acceptance Criteria* for stroke time tests are typically values that bracket the reference value by a predetermined percentage. (Valves that stroke in less than 2 seconds may only have an upper criterion.)

2. The purpose of the stroke time acceptance criteria is to identify an adverse condition, and allow corrective actions to be performed, before the valve becomes inoperable.

3. The acceptance criteria percentages are usually less than, but never greater than, the stroke time limiting value percentage of the reference value.

c. Limiting Values

With the issuance of NRC Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," it became a requirement to base the limiting stroke time on the expected stroke time (ie, reference value) for each valve, as opposed to a system required time.

1. ASME OM Code, Subsections ISTC-5113(b), ISTC-5121(b), ISTC-5131(b), ISTC-5141(b) and ISTC-5151(b), "Valve Stroke Testing," allows each utility the freedom to establish its own limiting value for each valve; however, the Generic Letter specifies that this value must be based on the components reference value and set at a value that will most likely suggest valve degradation.

2. The purpose of the limiting value is to identify a degraded condition that renders a valve inoperable when exceeded.

3. The limiting value percentage is usually greater than, but never less than, the acceptance criteria percentage(s) of the reference value. The following guidance is used for developing the limiting values for Palisades. Different limiting values are acceptable provided they do not exceed the minimum Technical Specifications or FSAR Design Basis Accident value and are set at a value that will most likely suggest valve degradation.

<u>Motor Operated Valve Limiting Value</u>

- The Limiting Value for valves with reference stroke times greater than 10 seconds should be the lesser of the minimum Technical Specifications or FSAR Design Basis Accident value, or +25% change in stroke time when compared to the reference value.

- The Limiting Value for valves with reference stroke times less than or equal to 10 seconds should be the lesser of the minimum Technical Specifications or FSAR Design Basis Accident value, or +50% change in stroke time when compared to the reference value.

Power Operated Valves other than Motor Operated Limiting Stroke Values

- The Limiting Value for valves with reference stroke times greater than 10 seconds should be the lesser of the minimum Technical Specifications or FSAR Design Basis Accident value, or +50% change in stroke time when compared to the reference value.

- The Limiting Value for valves with reference stroke times less than or equal to 10 seconds should be the lesser of the minimum Technical Specifications or FSAR Design Basis Accident value, or +75% change in stroke time when compared to the reference value.

Rapid Acting Valves

- Valves with stroke times less than 2.0 seconds may be considered rapid acting valves. Criteria for Limiting Values for rapid acting valves are in accordance with the ASME OM Code, Subsections ISTC-5114(c), ISTC-5122(c), ISTC-5132(c), ISTC-5142(c) and ISTC-5152(c).

- Valves that stroke in less than 2 seconds may be exempted from the Limiting Value timing criteria specified above. In such cases, the maximum limiting stroke time shall be 2 seconds.

5.10.2 Leak Rate Tests

a. For containment isolation valves with leak rate requirements, the acceptance criteria for the Leak Rate tests shall be in accordance with 10 CFR 50, Appendix J, for containment isolation valves. Site Engineering Program SEP-APJ-010, "Containment Leak Rate Testing Program," provides the acceptance criteria that shall be satisfied for containment isolation valves.

b. For valves with safety functions (in addition to), or other than, containment isolation, acceptance criteria shall (also) be in accordance with the ASME OM Code, Subsection ISTC-3630.

5.10.3 Set Pressure/Seat Tightness Tests

Safety and Relief Valve acceptance criteria for set pressure and seat tightness tests shall be in accordance with the ASME OM Code, Appendix I.

5.10.4 Position Indication Tests

Valve position indication shall be performed in accordance with the ASME OM Code, Subsection ISTC-3700, Position Verification Testing.

5.10.5 Acceptance Criteria Outside of Code Allowed

a. If acceptance criteria used is outside Code allowed acceptance criteria, then a Relief Request shall be submitted for approval to the NRC as required by 10 CFR 50.55a(f)(5). Relief requests shall be prepared in accordance with NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives" and Nuclear Energy Institute (NEI) White Paper entitled, "Standard Format for Requests from Commercial Reactor Licensees Pursuant to 10 CFR 50.55a, Revision 1," dated June 7, 2004 (ADAMS Accession No. ML070100400).

b. Relief Requests are contained in the Iddeal Concepts Software Suite®. An index of the Relief Requests is provided in Attachment 6, "Relief Request Justification Index."

5.10.6 Acceptance Criteria Identification/Reference

The acceptance criteria for each valve test is maintained in the document used to perform the test (ie, the implementing procedures).

5.11 VALVE FAILURE/CORRECTIVE ACTION

5.11.1 Processing Test Discrepancies

Test discrepancies identified shall be processed in accordance with Entergy Procedure EN-LI-102, "Corrective Action Process" Condition Report

5.11.2 Failure Of A Valve

Corrective action requirements are Category A, B, C and D valve tests are contained in ASME OM Code, Subsections ISTC-5115, ISTC-5123, ISTC-5133, ISTC-5143 and ISTC-5153, "Stroke Test Corrective Action."

a. Category A Valve - Leak Testing

In accordance with ASME OM Code, Subsection ISTC-3630(f);

1. Valves or valve combinations with leakage rates in excess of those specified in the appropriate test procedure shall be declared inoperable and either repaired or replaced.

2. A successful retest shall be performed prior to declaring the valve operable.

b. Category A and B Valves - Stroke Time/Position Indication Tests

In accordance with ASME OM Code, Subsections ISTC-5115, ISTC-5123, ISTC-5133, ISTC-5143, ISTC-5153, and ISTC-5224, "Corrective Action."

1. If a valve fails to exhibit the required change of obturator position or exceeds the *limiting values* of full-stroke time, the valve shall be immediately declared inoperable.

2. Valves with measured stroke times that do not meet the acceptance criteria shall be immediately retested or declared inoperable.

<u>Retest - Satisfactory</u>

- If the second set of data meets the acceptance criteria, the cause of the initial deviation shall be analyzed and the results documented in the record of tests.

<u>Retest - Unsatisfactory</u>

- If the valve is retested and the second set of data also does not meet the acceptance criteria, the data shall be analyzed within 96 hrs to verify that the new stroke time represents acceptable valve operation, or the valve shall be declared inoperable.

3. Valves declared inoperable may be repaired, replaced, or the data may be analyzed to determine the cause of the deviation and the valve shown to be operating acceptably.

4. Valve operability based upon analysis shall have the results of the analysis recorded in the record of tests.

5. Prior to returning a repaired or replacement valve to service, a test demonstrating satisfactory operation shall be performed.

c. Category A and B Valves - Position Indication

NUREG-1482, Revision 2 clearly implies that the intent of verifying valve remote position indication is to assure accuracy when performing valve exercising and/or timing. Therefore, the following applies for Category A and B valves that do not have Technical Specification position indication requirements:

- Failure of remote position indication to accurately reflect actual valve position does not in itself cause a valve to be inoperable. When remote position indication fails to accurately indicate actual valve position, an Condition Report should be initiated in accordance with Entergy Procedure EN-LI-102, "Corrective Action Process" Condition Report and operability determined in accordance with Entergy Procedure EN-OP-104, "Operability Determination Process."

- However, valves that are stroke-timed by observing remote position indication do become inoperable when their inservice testing stroke time is due, and their remote position indication fails to accurately reflect actual valve position.

5.11.3 Failure of A Valve In A Group

a. Safety and Relief Valves

1. ASME OM Code, Appendix I, Sections I-1320 and I-1350 provide requirements for additional testing of other valves in the same group, should a valve in a group fail a test.

2. For Category C safety and relief valve testing, the following action shall be taken if any valve fails the "As Found" set pressure test. The "As Found" set pressure test is defined as the first test actuation after removal from the system.

   - Additional valves shall be tested on the basis of two additional valves to be tested for each valve failure within the original sample set, up to the total number of valves within the valve group.

   - If any of the additional valves tested fails the "As Found" set pressure acceptance criteria, then all valves of the valve group shall be tested.

   - The cause of failure shall be determined and corrected, and the valve shall successfully pass a retest before it is returned to service.

- Based on the evaluation, the need for testing to address any generic concerns that could apply to valves in the same or other valve groups shall be determined.

5.12 TRENDING

The IST Coordinator is responsible to record and trend test data in order to predict when valve degradation will exceed limits. The goal of this trending is to identify when a valve's ability to perform its function is degrading, allowing performance of needed repairs during convenient times prior to the valve becoming inoperable. Trending is typically accomplished with the Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

The IST Coordinator may issue a Program Heath Assessment rating the health of the IST Valve program, and summarizing Corrective Actions. This periodic summary should be available for review by auditors and Plant personnel.

5.13 PRESSURE ISOLATION VALVES (PIV'S)

Pursuant to the guidance provided by NUREG-1482 Rev. 2, pressure isolation valves are defined as two normally closed valves in series that isolate the reactor coolant system (RCS) from an attached low-pressure system. Palisades PIV's were identified in response to Generic Letter 87-06 "Periodic Verification of Leak Tight Integrity of Pressure Isolation Valves". NUREG-1482 R2 recommends that the PIV's be tested in accordance with subsection ISTC-3600. The following is the listing of Palisades PIV's and a description of how they are tested.

Component ID	Description	Test	Code Requirement
CK-ES3101	HP SAFETY INJECTION CHECK VALVE (LOOP 1A)	SO-9	ISTC-3630
CK-ES3104	HIGH PRESS INJECTION CHECK VALVE LOOP 1A	SO-9	ISTC-3630
CK-ES3116	HP SAFETY INJECTION CHECK VALVE (LOOP 1B)	SO-9	ISTC-3630
CK-ES3119	HIGH PRESS INJECTION CHECK VALVE LOOP 1B	SO-9	ISTC-3630
CK-ES3131	HP SAFETY INJECTION CHECK VALVE (LOOP 2A)	SO-9	ISTC-3630
CK-ES3134	HIGH PRESS INJECTION CHECK VALVE LOOP 2A	SO-9	ISTC-3630
CK-ES3146	HP SAFETY INJECTION CHECK VALVE (LOOP 2B)	SO-9	ISTC-3630
CK-ES3149	HIGH PRESS INJECTION CHECK VALVE LOOP 2B	SO-9	ISTC-3630
CK-ES3103	LOW PRESSURE INJECTION CHECK VALVE	SO-9	ISTC-3630

CK-ES3118	LOW PRESSURE INJECTION CHECK VALVE	SO-9	ISTC-3630
CK-ES3133	LOW PRESSURE INJECTION CHECK VALVE	SO-9	ISTC-3630
CK-ES3148	LOW PRESSURE INJECTION CHECK VALVE	SO-9	ISTC-3630
MO-3015	SDC FROM PCS	None	ISTC-3610
MO-3016	SDC FROM PCS	None	ISTC-3610
CK-ES3102	SAFETY INJECTION TANK T-82A CHECK VALVE	None	ISTC-3610
CK-ES3117	SAFETY INJECTION TANK T-82B CHECK VALVE	None	ISTC-3610
CK-ES3132	SAFETY INJECTION TANK T-82C CHECK VALVE	None	ISTC-3610
CK-ES3147	SAFETY INJECTION TANK T-82D CHECK VALVE	None	ISTC-3610
CV-3038	SAFETY INJECTION TANK T-82D PRESSURE CONTROL	None	ISTC-3610
CV-3047	SAFETY INJECTION TANK T-82C PRESSURE CONTROL	None	ISTC-3610
CV-3046	SAFETY INJECT TANK T-82B PRESSURE CONTROL	None	ISTC-3610
CV-3042	SAFETY INJECTION TANK T-82A PRESSURE CONTROL	None	ISTC-3610

ISTC-3610 states that "Category A valves shall be leakage tested, except that valves which function in the course of plant operation in a manner that demonstrates functionally adequate seat leak tightness need not be additionally leakage tested. In such cases the valve record shall provide the basis for the conclusion that operational observations constitute satisfactory demonstration." The following is the basis for the PIV's that are tested in accordance with IST-3610.

a. MO-3015, "SDC FROM PCS"

Per Palisades' response to Generic letter 87-06, no periodic test is performed on MO-3015 based on the following: "If these valves leak, it would pressurize in-line relief valves RV-0401 and RV-3164. These would discharge to the quench tank and primary coolant tank respectively which have high level alarms." The following operational observations provide demonstration of satisfactory seat leak tightness.

- Technical Specification Surveillance Requirement (SR) 3.4.14.2 verifies the suction interlock prevents the valve from opening with a PCS pressure ≥ 280 psia.

- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators Daily/Weekly Items Modes 1, 2, 3, and 4"
- Level Monitoring of the Primary System Drain Tank (T-74) in Operator Rounds (23-89%)

b. MO-3016, "SDC FROM PCS"

Per Palisades' response to Generic letter 87-06, a periodic test is performed based on the following: "If these valves leak, it would pressurize in-line relief valves RV-0401 and RV-3164. These would discharge to the quench tank and primary coolant tank respectively which have high level alarms." The following operational observations provide demonstration of satisfactory seat leak tightness.

- Technical Specification Surveillance Requirement (SR) 3.4.14.2 verifies the suction interlock prevents the valve from opening with a PCS pressure ≥ 280 psia
- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators Daily/Weekly Items Modes 1, 2, 3, and 4"

c. CK-ES3102, "SAFETY INJECTION TANK T-82A CHECK VALVE"

Per Palisades' response to Generic letter 87-06, the following periodic test is performed: "Each tank level is monitored (if check valve leaks, tank level rises." The following operational observations provide demonstration of satisfactory seat leak tightness.

- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators Daily/Weekly Items Modes 1, 2, 3, and 4"
- Shiftly Level Monitoring of the Safety Injection Tank T-82A recorded in SHO-1, "Operator's Shift Items Modes 1, 2, 3, and 4"
- Level trend monitoring hourly per NCO Control Room Data Sheet (Group 11 Trend Check)
- Safety Injection tank alarms EK-1313 (high level alarms at 48% level) and EK-1314 (high level alarms at 62% level). Reference Alarm Response Procedure ARP-8 "Safeguards Safety Injection and Isolation Scheme EK-13 (EC-13)"

d. CK-ES3117, "SAFETY INJECTION TANK T-82B CHECK VALVE"

Per Palisades' response to Generic letter 87-06, the following periodic test is performed: "Each tank level is monitored (if check valve leaks, tank level rises." The following operational observations provide demonstration of satisfactory seat leak tightness.

- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators Daily/Weekly Items Modes 1, 2, 3, and 4"
- Shiftly Level Monitoring of the Safety Injection Tank T-82B recorded in SHO-1, "Operator's Shift Items Modes 1, 2, 3, and 4"
- Level trend monitoring hourly per NCO Control Room Data Sheet (Group 11 Trend Check)
- Safety Injection tank alarms EK-1319 (high level alarms at 48% level) and EK-1320 (high level alarms at 62% level). Reference Alarm Response Procedure ARP-8 "Safeguards Safety Injection and Isolation Scheme EK-13 (EC-13)"

e. CK-ES3132, "SAFETY INJECTION TANK T-82C CHECK VALVE"

Per Palisades' response to Generic letter 87-06, the following periodic test is performed: "Each tank level is monitored (if check valve leaks, tank level rises." The following operational observations provide demonstration of satisfactory seat leak tightness.

- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators Daily/Weekly Items Modes 1, 2, 3, and 4"
- Shiftly Level Monitoring of the Safety Injection Tank T-82C recorded in SHO-1, "Operator's Shift Items Modes 1, 2, 3, and 4"
- Level trend monitoring hourly per NCO Control Room Data Sheet (Group 11 Trend Check)
- Safety Injection tank alarms EK-1325 (high level alarms at 48% level) and EK-1326 (high level alarms at 62% level). Reference Alarm Response Procedure ARP-8 "Safeguards Safety Injection and Isolation Scheme EK-13 (EC-13)"

f. CK-ES3147, "SAFETY INJECTION TANK T-82D CHECK VALVE"

Per Palisades' response to Generic letter 87-06, the following periodic test is performed: "Each tank level is monitored (if check valve leaks, tank level rises." The following operational observations provide demonstration of satisfactory seat leak tightness.

- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators Daily/Weekly Items Modes 1, 2, 3, and 4"
- Shiftly Level Monitoring of the Safety Injection Tank T-82D recorded in SHO-1, "Operator's Shift Items Modes 1, 2, 3, and 4"
- Level trend monitoring hourly per NCO Control Room Data Sheet (Group 11 Trend Check)

- Safety Injection tank alarms EK-1331 (high level alarms at 48% level) and EK-1332 (high level alarms at 62% level). Reference Alarm Response Procedure ARP-8 "Safeguards Safety Injection and Isolation Scheme EK-13 (EC-13)"

g. CV-3038, "SAFETY INJECTION TANK T-82D PRESSURE CONTROL"

CV-3038 was not included as a PIV in Palisades' response to Generic letter 87-06. Per Palisades' response to Generic letter 87-06, no periodic test is performed based on the following: "Several other drain valves which drain to the Primary System Drain Tank were also not included on the valve list. The Primary System Drain Tank is equipped with level and pressure alarms which would identify any excessive leakage from the primary system. Additionally the daily PCS leak rate surveillance provides early detection of leakage and verification of PCS integrity." CV-3038 drains to the Primary System Drain Tank through valve CV-3069, "SIT DRAIN TO PSDT". However, this valve is normally closed. Leakage past CV-3038 would pressurize the line downstream of the valve and cause RV-3161, "SIT DRAINS TO QUENCH TANK T-73" to lift. RV-3161 drains to the Quench Tank which will alarm on high level (EK-0733). The following operational observations provide demonstration of satisfactory seat leak tightness.

- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators Daily/Weekly Items Modes 1, 2, 3, and 4". CV-3038 leakage would be manifested in the PCS unidentified leak rate.

h. CV-3047, "SAFETY INJECTION TANK T-82C PRESSURE CONTROL"

CV-3047 was not included as a PIV in Palisades' response to Generic letter 87-06. Per Palisades' response to Generic letter 87-06, no periodic test is performed based on the following: "Several other drain valves which drain to the Primary System Drain Tank were also not included on the valve list. The Primary System Drain Tank is equipped with level and pressure alarms which would identify any excessive leakage from the primary system. Additionally the daily PCS leak rate surveillance provides early detection of leakage and verification of PCS integrity." CV-3047 drains to the Primary System Drain Tank through valve CV-3069, "SIT DRAIN TO PSDT". However, this valve is normally closed. Leakage past CV-3047 would pressurize the line downstream of the valve and cause RV-3161, "SIT DRAINS TO QUENCH TANK T-73" to lift. RV-3161 drains to the Quench Tank which will alarm on high level (EK-0733). The following operational observations provide demonstration of satisfactory seat leak tightness.

- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators

Daily/Weekly Items Modes 1, 2, 3, and 4". CV-3047 leakage would be manifested in the PCS unidentified leak rate.

i. CV-3046, "SAFETY INJECTION TANK T-82B PRESSURE CONTROL"

CV-3046 was not included as a PIV in Palisades' response to Generic letter 87-06. Per Palisades' response to Generic letter 87-06, no periodic test is performed based on the following: "Several other drain valves which drain to the Primary System Drain Tank were also not included on the valve list. The Primary System Drain Tank is equipped with level and pressure alarms which would identify any excessive leakage from the primary system. Additionally the daily PCS leak rate surveillance provides early detection of leakage and verification of PCS integrity." CV-3046 drains to the Primary System Drain Tank through valve CV-3069, "SIT DRAIN TO PSDT". However, this valve is normally closed. Leakage past CV-3046 would pressurize the line downstream of the valve and cause RV-3161, "SIT DRAINS TO QUENCH TANK T-73" to lift. RV-3161 drains to the Quench Tank which will alarm on high level (EK-0733). The following operational observations provide demonstration of satisfactory seat leak tightness.

- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators Daily/Weekly Items Modes 1, 2, 3, and 4". CV-3046 leakage would be manifested in the PCS unidentified leak rate.

j. CV-3042, "SAFETY INJECTION TANK T-82A PRESSURE CONTROL"

CV-3042 was not included as a PIV in Palisades' response to Generic letter 87-06. Per Palisades' response to Generic letter 87-06, no periodic test is performed based on the following: "Several other drain valves which drain to the Primary System Drain Tank were also not included on the valve list. The Primary System Drain Tank is equipped with level and pressure alarms which would identify any excessive leakage from the primary system. Additionally the daily PCS leak rate surveillance provides early detection of leakage and verification of PCS integrity." CV-3042 drains to the Primary System Drain Tank through valve CV-3069, "SIT DRAIN TO PSDT". However, this valve is normally closed. Leakage past CV-3042 would pressurize the line downstream of the valve and cause RV-3161, "SIT DRAINS TO QUENCH TANK T-73" to lift. RV-3161 drains to the Quench Tank which will alarm on high level (EK-0733). The following operational observations provide demonstration of satisfactory seat leak tightness.

- PCS leak rate monitoring in accordance with Technical Specification Surveillance Requirement SR 3.4.13.1 and DWO-1, "Operators Daily/Weekly Items Modes 1, 2, 3, and 4". CV-3042 leakage would be manifested in the PCS unidentified leak rate.

6.0 ATTACHMENTS AND RECORDS

6.1 ATTACHMENTS

6.1.1 Attachment 1, Iddeal Concepts Software Suite®.

6.1.2 Attachment 2, "Cold Shutdown Justification Index"

6.1.3 Attachment 3, "Refueling Outage Justification Index"

6.1.4 Attachment 4, "Relief Request Justification Index"

6.1.5 Attachment 5, "Inservice Testing Program Valve Reference Value/Ranges Change Form"

6.1.6 Attachment 6, "Inservice Testing Program Valve Scoping Form"

6.1.7 Attachment 7, "Valve Summary Listing"

6.2 RECORDS

6.2.1 A record is maintained for each valve covered in the IST Program. The records include and are maintained as follows:

a. The valve manufacturer and associated model numbers, serial numbers, or other unique identification numbers, are maintained in the Plant Equipment Data Base.

b. Limiting values of full stroke time, category of each valve, justification for deferral of stroke testing are maintained in site procedures and Site Engineering Program Sections and are controlled by Administrative Procedure 10.41 "Site Procedure and Policy Processes" and EN-DC-174, "Engineering Program Sections."

6.2.2 Each completed preservice and inservice test is considered a record and is controlled by Administrative Procedure 9.20 "Technical Specification Surveillance and Special Test Program" and EN-WM-102, "Work Implementation and Closeout." Each completed test procedure includes the following:

a. Valve identification

b. Date of test.

c. Reason for test.

d. Test procedure that was used

e. Identification of instruments used.

f. Calibration records or identification of calibrated equipment

g. Values of measured and observed parameters.

h. Comparisons with allowable ranges of test values and analysis of deviations.

i. Requirement for corrective action.

j. Evaluation and justification for changes to reference values.

k. Signature of the person or persons responsible for conducting and analyzing the test.

6.2.3 Corrective actions required by the ASME OM Code are considered records and are controlled in accordance with Entergy Procedure EN-LI-102, "Corrective Action Process". Inservice Testing related corrective actions include the following:

a. Summary of the corrective actions made

b. Inservice Test used for conformation of operational adequacy

c. Identification of the person(s) responsible for the corrective action

Iddeal Concepts Software Suite®.

The IDDEAL Software Suite® integrates information from specific user defined examination programs to facilitate ease and efficiency in organizing, scheduling and tracking of all inspection and examination work. This integrated Data Management program provides simplified input methods and multi-functional management and tracking features for Engineering and Inspection needs.

- IDDEAL Software Suite® provides the following features:
- Component information recommended by NUREG-1482 Revision 2 for the IST Basis Document can be input, kept, updated and reported.
- Test procedures that implement the inservice tests required for each valve can be input, kept, updated and reported.
- Data from IST surveillance tests can be input, kept as an accurate and complete record of past test results, and trended using graphic capabilities.
- Allows for acceptance criteria (eg, flow, stroke time, differential pressure) to be assigned for each type of test.
- Allows for comments to be associated for each test.
- Justifications for performing tests during cold shutdowns or refueling outages, and relief requests; can be input, kept, updated and reported.
- Provides different levels of security such as read only, read and write access, and approval of data entry.

Acronyms, Abbreviations and Definitions

Valve Code Class	Database Standardization
ASME Class 1	1
ASME Class 2	2
ASME Class 3	3
Not Applicable	NA
Non Code	NC

Valve Category	Database Standardization
A - Seat Leakage Limited	A
A/C Both Categories A and C	A/C

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Valve Category	Database Standardization
B - Seat Leakage Not Required	B
B/C - Both Categories B and C	B/C
C - Self Actuating Valves	C
D - Single Use Valves	D
N/A = included as a Commitment	N/A

Valve Type	Database Standardization
Air release	AR
Angle	ANG
Ball	BA
Butterfly	BF
Check	CK
Clevis	CL
Diaphragm	DIA
Gate	GA
Globe	GL
Needle	NDL
Plug	PLG
Pressure Control	PCV
Relief or Safety	RV
Rupture Disk	RD
Shear Plug (explosive actuated)	XA
Sluice Gate	SG
Stop Check	SCK
Temperature control	TC
Three-way	3W
Vacuum Relief	VRV

Normal Position	Database Standardization
Closed	C
De-energized	D
Energized	E
Locked Closed	LC
Locked Open	LO
Open	O
Open or Closed	O/C
System Condition Dependent	SYS

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Normal Position	Database Standardization
Throttled	TH

Safety Position	Database Standardization
Closed	C
De-energized	D
De-energized/Energized	D/E
Energized	E
Open/Actuator Key Locked	OKL
Closed/Actuator Key Locked	CKL
Locked Closed	LC
Locked Open	LO
Locked Throttled	LT
No Safety Related Position	N/A
Open	O
Open and Closed	O/C
Throttled	TH

Fail Position	Database Standardization
Closed	C
Fail As-is	FAI
Open	O
No Safety Related Position	N/A

Actuator Type	Database Standardization
Air	AO
Explosive charge	EXP
Hand (manual)	H
Hydraulic	HO
Hydraulic/pneumatic	HP
Motor	MO
Self (system) actuated	SA
Solenoid	SO

Valve Test Type	Database Standardization
Check Valve Bi-directional Closed	BDC
Check Valve Bi-directional Open	BDO

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Valve Test Type	Database Standardization
Check Valve Close	CVC
Check Valve Open	CVO
Check Valve Partial Stroke Test	CVP
Condition Monitoring	CM
Diagnostic Test	DIAG
Disassembly & Inspect	D&I
Exercise Test Closed	ETC
Exercise Test Open	ETO
Explosive Test	EXP
Fail Safe Closed (P/F)	FSC
Fail Safe Closed	FSC
Fail Safe Open (P/F)	FSO
Fail Safe Open	FSO
Leak Rate Test App J	LTJ
Leak Rate Test App J (P/F)	LTJ
Leak Rate Test	LT
Leak Rate Test (P/F)	LT
Leak Rate Test PIV	LT-PIV
Leak Rate Test CIV	LT-CIV
Partial Stroke Close	PSC
Partial Stroke Open	PSO
Partial Stroke Exercise	PSE
Position Indication Test	RPI
Relief Valve Test	RV
Relief Valve Setpoint	RV-SET
Rupture Disk	RD
Stroke Time Closed	STC
Stroke Time Open	STO

Frequency	Database Standardization
1 Squibb each 24 months; 100% in 120 months	S2
50% each Refueling Outage	P1
Appendix J	AppJ
Cold Shutdown	CS
Condition Monitoring	CM
Disassembly and Inspection Program Freq	DIF
Every 10 years	10Y

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Frequency	Database Standardization
Every 2 years	2Y
Every 5 years	5Y
Every 6 years	6Y
Every 18 Months	18M
Normal Operation	NO
Per the MOV Program	MOV
Quarterly	Q
Refueling Outage	R
Skid Mounted	SK
Technical Specification	TS
Variable	V

COLD SHUTDOWN JUSTIFICATION INDEX

CSJ-01: Cold Shutdown Exercise Testing of Reactor Vessel Vent Valves
- PRV-1067 PRV-1069 PRV-1071
- PRV-1068 PRV-1070 PRV-1072

CSJ-02: Cold Shutdown Testing of Containment Isolation Valves for Primary Coolant Pump
- CV-2083
- CV-2099

CSJ-04: Cold Shutdown Exercise Testing of Containment Isolation Valves for Let Down Flow
- CV-2009

CSJ-08: Cold Shutdown Testing of Containment Spray Valves
- CV-3001
- CV-3002

CSJ-10: Cold Shutdown Exercise Testing of SIRW Minimum Recirculation Isolation Valves
- CV-3027
- CV-3056

CSJ-13: Cold Shutdown Exercise Testing of SIRW Tank Outlet Valves
- CV-3031
- CV-3057

CSJ-14: Cold Shutdown Testing of Containment Sump Isolation Valves
- CV-3029
- CV-3030

CSJ-15: Cold Shutdown Exercise Testing of the Main Steam Isolation Valves
- CV-0501
- CV-0510

CSJ-17: Cold Shutdown Exercise Testing of Component Cooling Containment Valves
- CV-0910 CV-0940
- CV-0911 CK-CC910

CSJ-20: Cold Shutdown Exercise Testing of Service Water Containment Valves
- CV-0824
- CV-0847

CSJ-24: Cold Shutdown Testing of PORV Block Valves
- MO-1042A
- MO-1043A

COLD SHUTDOWN JUSTIFICATION INDEX

CSJ-31: Cold Shutdown Testing of Shutdown Cooling Heat Exchanger to LPSI Valve
- CV-3006

CSJ-33: Cold Shutdown Testing of Service Water Non-Critical Header Isolation Valve
- CV-1359

CSJ-34: Cold Shutdown Testing of Letdown Stop and Bypass Valves (Reference CR-PLP-2013-02543)
- CV-2001
- CV-2002
- CV-2003
- CV-2004
- CV-2005

CSJ-35: Cold Shutdown Testing of Charging Line Containment Isolation (Reference CR-PLP-2013-02543)
- CV-2111

CSJ-36: Cold Shutdown Testing of SIRW Tank Outlet to Charging Pumps (Reference CR-PLP-2013-02543)
- MO-2160

CSJ-37: Cold Shutdown Testing of Main Feedwater Supply Check Valves
- CK-FW701
- CK-FW702

CSJ-38: Cold Shutdown Testing of Low Pressure Safety Injection Pump Discharge Check Valves
- CK-ES3201
- CK-ES3192

CSJ-39: Cold Shutdown Testing of Low Pressure Injection Check Valves
- CK-ES3103
- CK-ES3118
- CK-ES3133
- CK-ES3148

REFUELING OUTAGE JUSTIFICATION INDEX

ROJ-01 Refueling Outage Testing of HPSI Hot Leg Injection Check Valve
- CK-ES3410

ROJ-02 Refueling Outage Testing of High Pressure Safety Injection Check Valves
- CK-ES3104
- CK-ES3119
- CK-ES3134
- CK-ES3149

ROJ-03 Refueling Outage Testing of High Pressure Safety Injection Check Valves
- CK-ES3250
- CK-ES3251
- CK-ES3252
- CK-ES3253

ROJ-04 Refueling Outage Testing of Hot Leg Injection Check Valves
- CK-ES3408
- CK-ES3409

ROJ-05 Refueling Outage Testing of Service Water Pump Discharge Check Valves
- CK-SW401
- CK-SW402
- CK-SW403

ROJ-06 Refueling Outage Testing of Safety Injection Tank Check Valves
- CK-ES3102
- CK-ES3117
- CK-ES3132
- CK-ES3147

ROJ-07 Refueling Outage Testing of PCS Loop Check Valves
- CK-ES3101
- CK-ES3116
- CK-ES3131
- CK-ES3146

ROJ-08 Refueling Outage Testing of Containment Spray Pump Discharge Check Valves
- CK-ES3208
- CK-ES3220
- CK-ES3230

RELIEF REQUEST JUSTIFICATION INDEX

RR No	Description
5-2	Use of OMN-20 IST Frequencies for Pumps and Valves
5-3	Program Valve Stroke Testing (CV-0944 and CV-0977B)

INSERVICE TESTING PROGRAM
VALVE REFERENCE VALUE/RANGES
CHANGE FORM

COMPONENT AND CODE IDENTIFICATION

Component ID:

Component Description:

IST Parameter Being Changed:

Applicable ASME Code: ASME OM Code 2004, OMb-2006, Subsection ISTA, ISTB, ISTC, Mandatory Appendix I and Mandatory Appendix II.

REASON FOR REFERENCE VALUE/ACCEPTANCE CRITERIA CHANGE

Reason for the Reference Value/Acceptance Criteria Change:

☐ Valve or Control System Replaced (ISTC-3310)

☐ Valve or Control System Repaired (ISTC-3310)

☐ Valve or Control System has undergone maintenance that could affect the valve's performance (ISTC-3310)

☐ New component (ISTC-3300)

☐ Establishment of Additional Set of Reference Values (ISTC-3320)

☐ Other: _____

Description of the reason for the Reference Value/Acceptance Criteria change:

BASIS FOR REFERENCE VALUE/ACCEPTANCE CRITERIA CHANGE

Test used to establish Reference Value/Acceptance Criteria:

☐ Preservice Test: _____
Date: _____
Work Order: _____

☐ Inservice Test: _____
Date: _____
Work Order: _____

☐ Other: _____
Date: _____
Work Order: _____

Current IST Reference Value/Range

Reference Value _____
Acceptance Criteria _____
Limiting Value _____

INSERVICE TESTING PROGRAM
VALVE REFERENCE VALUE/RANGES
CHANGE FORM

New IST Reference Value/Range

Reference Value _____
Acceptance Criteria _____
Limiting Value _____

Does the valve have a minimum Technical Specification Value?

☐ Yes
☐ No

Description of value: N/A_____

Does the valve have a FSAR Design Basis Accident Value?

☐ Yes
☐ No

Description of value:

Basis for New IST Reference Value/Acceptance Criteria

ANALYSIS OF NEW REFERENCE VALUE/ACCEPTANCE CRITERIA

Analysis of deviations between the previous and new reference values:

Verification that the new reference value/ranges represent acceptable operation:

DOCUMENT UPDATES

Is a Surveillance Test Procedure Change Required?

☐ Yes
☐ No

If Yes, document the procedure and DRN No.

Are Changes to Other Documents Required?

☐ Yes
☐ No

If Yes, then Describe:

_____
_____

APPROVALS

Prepared by by Qualified IST Engineer:

INSERVICE TESTING PROGRAM
VALVE REFERENCE VALUE/RANGES
CHANGE FORM

Name: _____
Signature: _____
Date: _____

Approved by:

Name: _____
Signature: _____
Date: _____

INSERVICE TESTING PROGRAM
VALVE SCOPING FORM

PART 1COMPONENT DISPOSITION INFORMATION

Valve ID No.: _____ System: _____

System Safety Function: _____

References: _____

Component Safety Function Determination:

Valve QA Category: _____
Valve Operator QA Category: _____
Valve Operator Power Supply: _____
Valve Safety Function: _____
References: _____
Safety Related? ☐ Yes ☐ No

ASME Code Class Determination

System Process Fluid: _____
Containment Isolation Valve? ☐ Yes ☐ No
ASME OM Code Classified? ☐ Yes ☐ No

Active/Passive Determination

Valve Safety Function Position(s): _____
Valve Normal Position from P&ID: _____
Valve Function(s) in Other than Normal Position: _____
Active Valve? ☐ Yes ☐ No
Remarks: _____

INSERVICE TESTING PROGRAM
VALVE SCOPING FORM

PART 2 IST PROGRAM DATA

Recommended for Inclusion in the IST Program? ☐ Yes ☐ No

IST Coordinator: _____ (Print) _____ (Sign) _____ (Date)

System Engineer: _____ (Print) _____ (Sign) _____ (Date)

Remarks: _____

Valve ID: _____
P&ID: _____
P&ID Coordinates: _____

ASME Class:

☐ 1 ☐ 2 ☐ 3 ☐ NC

ASME OM Valve Category:

☐ A ☐ B ☐ C ☐ D

Valve Size: _____ In. Valve Setpoint: _____

Valve Type: _____ Actuator Type: _____

ASME OM Code Test(s): _____

Relief Request(s): _____

Cold Shutdown Justifications(s): _____

Alternate Test(s): _____

Remarks: _____

VALVE SUMMARY LISTING

The following table provides the details of the valves that are in the scope of the Inservice Testing Program.

Valve Summary Listing

Page 1 of 86

VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-FW506A	K-8 STM SUPP STM TRAP ST-0522B INL (MZ-2)	M205-2 / F-6	B	PASS	2	0.75	GA	H	O	O	N/A	NTR	NR	NTR	
MV-FW508A	K-8 STM SUPP STM TRAP ST-0522B B/P (MZ-2)	M205-2 / F-6	B	PASS	2	0.75	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-FW711	K-8 STEAM SUPPLY DRAIN FROM E-50A (MZ-2)	M205-2 / F-6	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-FW712	ST-0522B WYE STRAINER YS-0521 DRAIN (MZ-2)	M205-2 / F-6	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-FW718	AFW SUPPLY TO S/G E-50B DRAIN (MZ-73)	M207-2 / D-3	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-FW720	AFW SUPPLY TO S/G E-50A DRAIN (MZ-9)	M207-2 / A-3	B	PASS	2		GL	H	LC	C	N/A	NTR	NR	NTR	
MV-MS152	K-8 STEAM SUPPLY FROM E-50B ISOL (MZ-3)	M205-2 / H-3	B	PASS	2	4	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-CA122	Service Air Containment Isolation Valve	M212-1 / A-3	A	PASS	2	2	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-10	
MV-CA142	SERVICE AIR TO CONT PEN TEST (MZ-10)	M212-1 / A-3	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	NTR	
CK-CA400	Instrument Air Containment Isolation Valve	M212-4 / E-2	A/C	ACT	2	2	CK	SA	O	C	N/A	LTJ	AppJ	RO-032-65	
												BDO	CM	CMJ-CAS-C-01	CMJ-CAS-C-01
												CVC	CM	CMJ-CAS-C-01	CMJ-CAS-C-01
MV-CA612	PENETRATION MZ-65 INSTRUMENT AIR TEST	M212-4 / E-2	B	PASS	2		GL	H	LC	C	N/A	NTR	NR	NTR	
MV-CA728	Service Air Containment Isolation Valve	M212-1 / A-3	A	PASS	2	2	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-10	
MV-CIS500	Penetration MZ-51 Equipment Hatch Test Tap	M232-2 / F-6	B	PASS	2	0.25	GA	H	LC	C	N/A	NTR	NR	NTR	

Valve Summary Listing

VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0910	Component Cooling Water Inlet Containment Isolation Valve	M209-1 / E-2	B	ACT	2	10	BF	AO	C	C	O	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
												FSO	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
												STC	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
CV-0911	Component Cooling Water Return Containment Isolation Valve	M209-1 / B-2	B	ACT	2	10	BF	AO	C	C	O	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
												FSO	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
												STC	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
CV-0913	ESS Pumps Seal Cooling Service Water Supply	M209-2 / F-3	B	PASS	3	4	GL	AO	O	O	O	RPI	2Y	QO-06	
CV-0915	Component Cooling Surge Tank T-3 Vent	M209-3 / H-4	B	ACT	3	2	3W	AO	O	C	C	RPI	2Y	CH-6.30	
												ETC	Q	CH-6.30	
												FSC	Q	CH-6.30	
RV-0915	Component Cooling Surge Tank T-3 Relief	M209-3 / G-3	C	ACT	3	2	RV	SA	C	C	N/A	RV	10Y	RT-116	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0937	Shutdown Cooling Heat Exchanger E-60A/B Inlet Valve	M209-3 / G-7	B	ACT	3	18	BF	AO	C	O	O	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STO	Q	QO-05	
CV-0938	Shutdown Cooling Heat Exchanger E-60A/B Inlet Valve	M209-3 / G-7	B	ACT	3	18	BF	AO	C	O	O	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STO	Q	QO-05	
CV-0940	Component Cooling Water Return Containment Isolation Valve	M209-1 / B-1	B	ACT	2	10	BF	AO	O	C	O	RPI	2Y	QO-06	
												CVC	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
												ETC	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
												FSO	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
												STC	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0944	Rad Waste Evaporator Cooling Water Supply	M209-3 / E-8	B	ACT	3	10	BF	AO	O	C	C	RPI	2Y	QO-01	
												STC	NR	QO-01	RR 5-3 Stroke Time Testing Component Cooling Water Valves
												ETC	Q	QO-01	
												FSC	Q	QO-01	
CV-0944A	Spent Fuel Pool and Rad Waste Evaporator Cooling Water Supply	M209-3 / E-7	B	ACT	3	14	BF	AO	O	C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-0945	Component Cooling Heat Exchanger E-54A Inlet Valve	M209-3 / E-5	B	PASS	3	16	BF	AO	O	O	O	RPI	2Y	QO-06	
CV-0946	Component Cooling Heat Exchanger E-54B Inlet Valve	M209-3 / F-5	B	PASS	3	16	BF	AO	O	O	O	RPI	2Y	QO-06	
CV-0947	ESG Pump Seal Cooling Water Isolation	M209-2 / E-4	B	PASS	3	3	GL	AO	ELO	O	O	RPI	2Y	QO-06	
CV-0948	ESG Pump Seal Cooling Water Isolation	M209-2 / B-4	B	PASS	3	3	GL	AO	ELO	O	O	RPI	2Y	QO-06	
CV-0949	ESG Pump Seal Cooling Water Isolation	M209-2 / D-3	B	PASS	3	4	GL	AO	ELO	O	O	RPI	2Y	QO-06	
CV-0950	ESG Pump Seal Cooling Water Outlet Isolation	M209-2 / D-7	B	PASS	3	4	GL	AO	O	O	O	RPI	2Y	QO-06	
CV-0951	ESG Pump Seal Cooling Service Water Isolation	M209-2 / C-7	B	PASS	3	4	GL	AO	C	C	C	RPI	2Y	QO-06	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0977B	Rad Waste Evaporator Cooling Water Return Isolation Valve	M209-3 / D-1	B	ACT	3	10	BF	AO	O	C	C	RPI	2Y	QO-01	
												STC	NR	QO-01	RR 5-3 Stroke Time Testing Component Cooling Water Valves
												ETC	Q	QO-01	
												FSC	Q	QO-01	
RV-2109	Spent Fuel Pool Heat Exchanger Relief Valve	M221-2 / D,E-8	C	ACT	3	1	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
MV-CC103	S/D CLG HX E-60A CCW OUT	M209-2 / H-7	B	PASS	3	12	BF	H	LT	O	N/A	NTR	NR	NTR	
MV-CC104	S/D CLG HX E-60B CCW OUT	M209-2 / G-7	B	PASS	3	12	BF	H	LT	O	N/A	NTR	NR	NTR	
MV-CC134	CCW SURGE TK T-3 CHEM ADD SUPPLY	M209-3 / E-4	B	PASS	3		GL	H	C	C	N/A	NTR	NR	NTR	
MV-CC137	CONT SPRAY PP P-54C SEAL HEAT EXCH OUTLET	M209-2 / D-5	B	PASS	3	1/2"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC138	CONT SPRAY PP P-54C BEARING CLG OUTLET	M209-2 / D-5	B	PASS	3	1"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC141	CONT SPRAY PP P-54B SEAL HEAT EXCH OUTLET	M209-2 / C-5	B	PASS	3	1/2"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC142	CONT SPRAY PP P-54B BEARING CLG OUTLET	M209-2 / C-5	B	PASS	3	1"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC148	CONT SPRAY PP P-54A SEAL HEAT EXCH OUTLET	M209-2 / B-5	B	PASS	3	1/2"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC149	CONT SPRAY PP P-54A BEARING CLG OUTLET	M209-2 / B-5	B	PASS	3	1"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC159	CHARGING PP P-55A CCW CLG OUTLET	M209-3 / D-2	B	PASS	3	1"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC162	CHARGING PP P-55B CCW CLG RETURN	M209-3 / D-2	B	PASS	3	1.5"	GL	H	LT	O	N/A	NTR	NR	NTR	

Valve Summary Listing

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-CC164	CHARGING PP P-55C CCW CLG RETURN	M209-3 / C-2	B	PASS	3	1.5"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC177	CCW SURGE TK T-3 CHEM ADD INLET	M209-3 / G-4	B	PASS	3		GL	H	C	C	N/A	NTR	NR	NTR	
MV-CC199	HPSI PP P-66A SEAL WATER FLOW CONTROL	M209-2 / A-6	B	PASS	3	1"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC200	HPSI PP P-66B SEAL WATER FLOW CONTROL	M209-2 / C-5	B	PASS	3	1"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC3278	LPSI PUMP P-67A COMP COOLING WATER OUTLET	M209-2 / B-6	B	PASS	3	3/4"	GL	H	LT	O	N/A	NTR	NR	NTR	
MV-CC3279	LPSI PUMP P-67B COMP COOLING WATER OUTLET	M209-2 / D-6	B	PASS	3	3/4"	GL	H	LT	O	N/A	NTR	NR	NTR	
CK-CC401	CCW Return Line From West Engineered Safeguards Pump Room	M209-2 / C-7	C	ACT	3	3	CK	SA	O	O/C	N/A	CVC CVO	CM CM	CMJ-CCW-S-03 CMJ-CCW-S-03	CMJ-CCW-S-03 CMJ-CCW-S-03
CK-CC402	CCW Return Line From East Engineered Safeguards Room	M209-2 / B-7	C	ACT	3	3	CK	SA	O	O/C	N/A	CVC CVO	CM CM	CMJ-CCW-S-03 CMJ-CCW-S-03	CMJ-CCW-S-03 CMJ-CCW-S-03
MV-CC507	CCW SUPP TO CONTAINMENT TEST ISOL (MZ-14)	M209-1 / E-2	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-CC910	Component Cooling Water Inlet Containment Isolation Valve	M209-1 / E-1	C	ACT	2	10	CK	SA	O	C	N/A	BDO	CM	CMJ-CCW-C-02	CMJ-CCW-C-02
												CVC	CM	CMJ-CCW-C-02	CMJ-CCW-C-02
												CVC	CS	QO-06	CSJ-17 CCS Water To and From CTMT Isol Vlvs
CK-CC941	Component Cooling Water Pump P-52A Discharge Check Valve	M209-3 / C-4	C	ACT	3	16	CK	SA	O/C	O/C	N/A	CVC	Q	QO-15	
												CVO	Q	QO-15	
CK-CC943	Component Cooling Water Pump P-52B Discharge Check Valve	M209-3 / B-4	C	ACT	3	16	CK	SA	O/C	O/C	N/A	CVC	Q	QO-15	
												CVO	Q	QO-15	
CK-CC944	Component Cooling Water Pump P-52C Discharge Check Valve	M209-3 / A-4	C	ACT	3	16	CK	SA	O/C	C	N/A	CVC	Q	QO-15	
												CVO	Q	QO-15	
MV-CD129	CONDENSATE REJECT CV-0731 BYPASS	M207-1B / C-3	B	PASS	3	3	GI	H	C	C	N/A	NTR	NR	NTR	
MV-CD130	Manual Isolation Valve Adjacent to CV-0731	M207-1B / C-3	B	ACT	3	6	GA	H	O	C	N/A	MS	2Y	PMID 50085512-01	
MV-CD132	Hotwell 3" Makeup CV-0732 Inlet	M207-1B / B,C-3	B	ACT	3	3	GA	H	O	C	N/A	MS	2Y	PMID 50085512-01	
MV-CD135	Hotwell 6" Make-up Inlet Valve	M207-1B / B-3	B	ACT	3	6	GA	H	O	C	N/A	MS	2Y	PMID 50085512-01	
MV-CD138	Manual Isolation Valve Adjacent to CV-0733	M207-1B / B-3	B	PASS	3	12	GA	H	O	C	N/A	NTR	NR	NTR	
MV-CD139	HOTWELL 12" MAKEUP CV-0733 BYPASS	M207-1B / B-3	B	PASS	3	8	GL	H	C	C	N/A	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-CD146	S/G Recirc Line to Condensate Storage Tank T-2	M220-1 / C-5	B	ACT	3	3	GA	H	O	C	N/A	MS	2Y	PMID 50085512-01	
MV-CD171	CONDENSATE TRANSFER PUMP P-11 DISCHARGE	M220-1 / B-7	B	PASS	3	4	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-CD177	CONDENSATE XFER PUMP P-11 DISCH LINE ISOL	M220-1 / B-7	B	PASS	3		GA	H	LC	C	N/A	NTR	NR	NTR	
CK-CD401	Penetration MZ-11 Shield Cooling Surge TK T-62 Inlet	M221-1 / D-2	A/C	ACT	2	1.5	CK	SA	O	C	N/A	LTJ	AppJ	RO-032-11	
												BDO	CM	CMJ-CIS-S-05	CMJ-CIS-S-05
												CVC	CM	CMJ-CIS-S-05	CMJ-CIS-S-05
MV-CD536	PEN MZ-11 SHIELD COOLING SURGE TK TEST TAP	M221-1 / D-2	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3217	A-CONT SPRAY RECIRCULATION ISOL (MZ-31)	M203-2 / C-2	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3227	B-CONT SPRAY RECIRCULATION ISOL (MZ-30)	M203-2 / D-2	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3237	SI RECIRCULATION ISOL	M204-1 / G-7	B	PASS	2		BA	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3344	B-CONT SPRAY HDR TEST CONN (MZ-30)	M203-2 / C-3	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3346	A-CONT SPRAY HDR TEST CONN (MZ-31)	M203-2 / B-3	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-SW101	NON-CRITICAL SW HDR ISOLATION CV-1359 B/P	M213 / G-5	B	PASS	3	24	BF	H	LC	C	N/A	NTR	NR	NTR	
MV-SW117	CR A/C CONDENSER VC-1A SW INLETT	M208-1A / E-4	B	PASS	3		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SW120	CR A/C CONDENSER VC-1A SW OUTLET	M208-1A / E-3	B	PASS	3		GA	H	LC	C	N/A	NTR	NR	NTR	

Valve Summary Listing

VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-SW125	CR A/C CONDENSER VC-1B SW INLET	M208-1A / E-3	B	PASS	3		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SW126	CR A/C CONDENSER VC-1B SW OUTLET	M208-1A / E-3	B	PASS	3		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SW206	S/G TEST CLRS E-71 SUPPLY	M208-1B / D-8	B	PASS	3		GL	H	LC	C	N/A	NTR	NR	NTR	
MV-SW207	S/G TEST CLRS E-71 RETURN	M208-1B / C-8	B	PASS	3		GL	H	LC	C	N/A	NTR	NR	NTR	
MV-SW278	D/G 1-1 SW OUTLET	M208-1A / H-3	B	PASS	3	6	GA	H	LT	O	N/A	NTR	NR	NTR	
MV-SW279	D/G 1/2 SW OUTLET	M208-1A / G-2	B	PASS	3	6	GA	H	LT	O	N/A	NTR	NR	NTR	
MV-SW340	SW RETURN FROM COOLING WATER ISOLATION	M208-1A / H-2	B	PASS	3		GA	H	C	C	N/A	NTR	NR	NTR	
MV-SW342	SW PUMP P-7A MINI-FLOW	M213 / E-4	B	PASS	3		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SW343	SW PUMP P-7B MINI-FLOW	M213 / E-3	B	PASS	3		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SW344	SW PUMP P-7C MINI-FLOW	M213 / E-2	B	PASS	3		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SW571	SW SUPPLY TO CONT VENT (MZ-12)	M208-1B / D-2	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SW572	SW RETURN FROM CONTAINMENT VENT (MZ-13)	M208-1B / D-3	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-2001	Regenerative Heat Exchanger E-56 Letdown Stop Valve	M202-1B / C-7	B	ACT	1	2	GL	AO	O	C	O	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												FSO	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												STC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
CV-2002	Letdown Orifice Bypass Valve	M202-1B / E-8	B	ACT	1	1.5	GL	AO	C	C	C	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												FSC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												STC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-2003	Letdown Orifice Stop Valve	M202-1B / E-7	B	ACT	1	1	GL	AO	O/C	C	C	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												FSC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												STC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
CV-2004	Letdown Orifice Stop Valve	M202-1B / E-7	B	ACT	1	1	GL	AO	O/C	C	C	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												FSC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												STC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-2005	Letdown Orifice Stop Valve	M202-1B / E-6	B	ACT	1	1	GL	AO	O/C	C	C	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												FSC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
												STC	CS	QO-06	CSJ-34 Letdown Orifice Bypass and Stop Valves
RV-2006	Letdown Heat Exch E-58 Inlet Safety Relief	M202-1B / G-7	C	ACT	3	2	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
CV-2009	Containment Letdown Isolation	M202-1 / E-8	A	ACT	2	2.0	GL	AO	O	C	C	RPI	2Y	QO-06	
												LTJ	AppJ	RO-032-36	
												ETC	CS	QO-06	CSJ-04 Containment Letdown Isolation
												FSC	CS	QO-06	CSJ-04 Containment Letdown Isolation
												STC	CS	QO-06	CSJ-04 Containment Letdown Isolation

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-2083	Primary Coolant Pumps Controlled Bleedoff Containment Isolation	M202-1 / G-4	A	ACT	2	0.75	GL	AO	O	C	C	RPI	2Y	QO-06	
												LTJ	AppJ	RO-032-44	
												ETC	CS	QO-06	CSJ-02 PCS Pumps Controlled Bleedoff
												FSC	CS	QO-06	CSJ-02 PCS Pumps Controlled Bleedoff
												STC	CS	QO-06	CSJ-02 PCS Pumps Controlled Bleedoff
CV-2099	PCP P-50A,B,C&D Controlled Bleedoff	M202-1 / G-4	A	ACT	2	0.75	GL	AO	O	C	C	RPI	2Y	QO-06	
												LTJ	AppJ	RO-032-44	
												ETC	CS	QO-06	CSJ-02 PCS Pumps Controlled Bleedoff
												FSC	CS	QO-06	CSJ-02 PCS Pumps Controlled Bleedoff
												STC	CS	QO-06	CSJ-02 PCS Pumps Controlled Bleedoff

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-2111	Charging Line Stop Valve	M202-1B / E-5	B	ACT	2	2	GL	AO	O	C	O	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-35 Charging Line Containment Isol Valve
												FSO	CS	QO-06	CSJ-35 Charging Line Containment Isol Valve
												STC	CS	QO-06	CSJ-35 Charging Line Containment Isol Valve
CV-2113	Charging Loop 1A Stop Valve	M202-1B / B-7	B	ACT	1	2	GL	AO	O	C	O	RPI	2Y	QO-06	
												ETC	Q	QO-05	
												FSO	Q	QO-05	
												STC	Q	QO-05	
CV-2115	Charging Loop 2A Stop Valve	M202-1B / B-7	B	ACT	1	2	GL	AO	O	C	O	RPI	2Y	QO-06	
												ETC	Q	QO-05	
												FSO	Q	QO-05	
												STC	Q	QO-05	
CV-2117	Pressurizer Auxiliary Spray Valve	M202-1B / A-7	B	ACT	1	2	ANG	AO	C	C	C	RPI	2Y	QO-06	
												ETC	Q	QO-06	
												FSC	Q	QO-06	
												STC	Q	QO-06	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MO-2160	SIRW Tank to Charging Pumps Isolation	M202-1A / D-6	B	ACT	2	3	GA	MO	C	C	FAI	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-36 SIRWT T-58 Outlet To Charging Pumps
												STC	CS	QO-06	CSJ-36 SIRWT T-58 Outlet To Charging Pumps
MV-CVC2083	PCP Controlled Bleedoff Penetration 44 Test Tap	M202-1 / G-4,5	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
CK-CVC2110	Charging Line Containment Isolation Check	M202-1B / E-5	C	ACT	2	2	CK	SA	O	C	N/A	CVC	CM	CMJ-CVC-S-02	CMJ-CVC-S-02
												CVO	CM	CMJ-CVC-S-02	CMJ-CVC-S-02
CK-CVC2112	Charging Line Loop-1A Relief Check Valve	M202-1B / C-7	C	ACT	1	2	CK	SA	C	O/C	N/A	CVC	CM	CMJ-CVC-S-01	CMJ-CVC-S-01
												CVO	CM	CMJ-CVC-S-01	CMJ-CVC-S-01
CK-CVC2114	Charging Line Loop 1A Check Valve	M202-1B / C-7	C	ACT	1	2	CK	SA	O	C	N/A	CVC	CM	CMJ-CVC-S-02	CMJ-CVC-S-02
												CVO	CM	CMJ-CVC-S-02	CMJ-CVC-S-02
CK-CVC2116	Charging Line Loop 2A Check Valve	M202-1B / B-7	C	ACT	1	2	CK	SA	O	C	N/A	CVC	CM	CMJ-CVC-S-02	CMJ-CVC-S-02
												CVO	CM	CMJ-CVC-S-02	CMJ-CVC-S-02
CK-CVC2118	Pressurizer Aux Spray Line Check	M202-1B / A-7	C	ACT	1	2	CK	SA	C	C	N/A	BDO	CM	CMJ-CVC-S-01	CMJ-CVC-S-01
												CVC	CM	CMJ-CVC-S-01	CMJ-CVC-S-01

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-CVC2157	Blended Boric Acid to SIRW Tank Stop Valve	M202-1A / D-6	B	PASS	2	3	GL	H	C	C	N/A	NTR	NR	NTR	
CV-2010	Demineralizers to CST T-2 Inlet Control	M220-1 / E-3	B	ACT	3	3	GL	AO	C	O/C	C	RPI	2Y	PMID 50083974	
MV-DMW138	Demineralizers to CST T-2 Inlet Control	M220-1 / E-3	B	PASS	3		GL	H	LC	C	N/A	NTR	NR	NTR	
CK-DMW400	Condensate Tank Inlet Check	M220-1 / D-3	C	ACT	3	4	CK	SA	O/C	O/C	N/A	CVC CVO	CM CM	CMJ-DMW-S-01 CMJ-DMW-S-01	CMJ-DMW-S-01 CMJ-DMW-S-01
RV-0401	Shutdown Cooling Relief	M204-1 / G-1	C	ACT	2	0.75	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-0402	Shutdown Cooling Heat Exch E-60A Tube Side	M204-1 / F-6	C	ACT	2	0.75	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-0403	Shutdown Cooling Heat Exch E-60B	M204-1 / B-6	C	ACT	2	0.75	RV	SA	C	O/C	N/A	RV	10Y	RT-116	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3001	Containment Spray Header Isolation Valve	M203-2 / C-3	B	ACT	2	6	GL	AO	C	O/C	O	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves
												ETO	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves
												FSO	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves
												STC	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves
												STO	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3002	Containment Spray Header Isolation Valve	M203-2 / B-3	B	ACT	2	6	GL	AO	C	O/C	O	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves
												ETO	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves
												FSO	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves
												STC	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves
												STO	CS	QO-06	CSJ-08 CTMT Spray Header Isolation Valves
CV-3003	Safety Injection Tank T-82D Fill And Drain	M203-1 / E-2	B	PASS	2	1	GL	AO	C	C	C	NTR	NR	NTR	
CV-3004	Safety Injection Tank T-82C Fill And Drain	M203-1 / E-4	B	PASS	2	1	GL	AO	C	C	C	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3006	LPSI Shutdown CLG Heat Exchangers Bypass	M204-1 / A-6	B	ACT	2	12	GL	AO	ELO	O/C	O	ETC	CS	QO-43	CSJ-31
												ETO	CS	QO-43	CSJ-31
												FSO	CS	QO-43	CSJ-31
												STC	CS	QO-43	CSJ-31
												STO	CS	QO-43	CSJ-31
MO-3007	HPSI To Reactor Coolant Loop 1A Train 1	M203-2 / G-8	B	ACT	2	2	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
MO-3008	LPSI To Reactor Coolant Loop 1A	M203-2 / F-7	B	ACT	2	6	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
MO-3009	HPSI To Reactor Coolant Loop 1B	M203-2 / F-7	B	ACT	2	2	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
MO-3010	LPSI To Reactor Coolant Loop 1B	M203-2 / D-7	B	ACT	2	6	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
MO-3011	HPSI To Reactor Coolant Loop 2A	M203-2 / D-7	B	ACT	2	2	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MO-3012	LPSI To Reactor Coolant Loop 2A	M203-2 / C-7	B	ACT	2	6	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
MO-3013	HPSI To Reactor Coolant Loop 2B	M203-2 / B-7	B	ACT	2	2	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
MO-3014	LPSI To Reactor Coolant Loop 2B	M203-2 / A-7	B	ACT	2	6	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
MO-3015	Shutdown Cooling From Reactor Coolant Loop 2	M204-1 / G-1	A	PASS	1	12	GA	MO	ELC	C	FAI	LT	2Y	QO-43	
												RPI	2Y	QO-43	
MO-3016	Shutdown CLG From Reactor Coolant Loop 2	M204-1 / G-1	A	PASS	1	12	GA	MO	ELC	C	FAI	LT	2Y	QO-43	
												RPI	2Y	QO-43	
CV-3018	HPSI train cross connnect isolation valve	M204-1A / G-7	B	PASS	2	4	GA	AO	ELC	C	C	RPI	2Y	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3025	Shutdown Cooling Heat Exchanger To LPSI isolation valve	M204-1 / B-7	B	ACT	2	10	GL	AO	ELC	O/C	C	ETC	Q	QO-42	
												ETO	Q	QO-42	
												FSC	Q	QO-42	
												STC	Q	QO-42	
												STO	Q	QO-42	
CV-3027	SIRW Tank T-58 Recirculation	M204-1B / G-7	A	ACT	2	6	GA	MO	O	O/C	FAI	LT	2Y	RO-119	
												RPI	2Y	QO-02	
												ETC	CS	QO-02	CSJ-10 SIRW Tank T-58 Recirculation Valves
												ETO	CS	QO-02	CSJ-10 SIRW Tank T-58 Recirculation Valves
												STC	CS	QO-02	CSJ-10 SIRW Tank T-58 Recirculation Valves
												STO	CS	QO-02	CSJ-10 SIRW Tank T-58 Recirculation Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3029	Containment Sump Isolation to East Engineered Safeguards Room	M204-1A / E-3	B	ACT	2	24	GA	AO	C	O/C	FAI	RPI	2Y	QO-02	
												ETC	CS	QO-02	CSJ-14 Containment Sump Isolation Valves
												ETO	CS	QO-02	CSJ-14 Containment Sump Isolation Valves
												STC	CS	QO-02	CSJ-14 Containment Sump Isolation Valves
												STO	CS	QO-02	CSJ-14 Containment Sump Isolation Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3030	Containment Sump Isolation to West Engineered Safeguards Room	M204-1A / D-3	B	ACT	2	24	GA	AO	C	O/C	FAI	RPI	2Y	QO-02	
												ETC	CS	QO-02	CSJ-14 Containment Sump Isolation Valves
												ETO	CS	QO-02	CSJ-14 Containment Sump Isolation Valves
												STC	CS	QO-02	CSJ-14 Containment Sump Isolation Valves
												STO	CS	QO-02	CSJ-14 Containment Sump Isolation Valves
CV-3031	SIRW Tank T-58 Outlet Isolation	M204-1B / D-6	B	ACT	2	18	GA	MO	O	O/C	FAI	RPI	2Y	QO-02	
												ETC	CS	QO-02	CSJ-13 SIRW Tank T-58 Outlet & Discharge Isol Vlvs
												ETO	CS	QO-02	CSJ-13 SIRW Tank T-58 Outlet & Discharge Isol Vlvs
												STC	CS	QO-02	CSJ-13 SIRW Tank T-58 Outlet & Discharge Isol Vlvs
												STO	CS	QO-02	CSJ-13 SIRW Tank T-58 Outlet & Discharge Isol Vlvs

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3036	P-66A to HPSI Train 2 Isolation Valve	M204-1A / C-6	B	PASS	2	3	GA	AO	ELO	O	O	RPI	2Y	QO-05	
CV-3037	P-66A to HPSI Train 1 Isolation Valve	M204-1A / C-6	B	PASS	2	3	GA	AO	ELC	C	C	RPI	2Y	QO-05	
CV-3038	Safety Inject Tank T-82D Pressure Control	M203-1 / D-2	A	ACT	1	1	GL	AO	O/C	C	C	LT	2Y	QO-06	
												RPI	2Y	QO-06	
												ETC	Q	QO-06	
												FSC	Q	QO-06	
												STC	Q	QO-06	
CV-3039	Safety Injection Tank T-82A Fill & Drain	M203-1 / E-7	B	PASS	2	1	GL	AO	C	C	C	NTR	NR	NTR	
CV-3040	Safety Injection Tank T-82A Nitrogen Fill	M203-1 / G-6	B	PASS	2	1	GL	AO	C	C	C	RPI	2Y	QO-06	
MO-3041	Safety Injection Tank T-82A Outlet Isolation Valve	M203-1 / E-6	B	PASS	2	12	GA	MO	ELO	O	FAI	RPI	2Y	RO-105	
CV-3042	Safety Injection Tank T-82A Pressure Control	M203-1 / D-7	A	ACT	1	1	GL	AO	O/C	C	C	LT	2Y	QO-06	
												RPI	2Y	QO-06	
												ETC	Q	QO-06	
												FSC	Q	QO-06	
												STC	Q	QO-06	
CV-3043	SI Tank T-82B Fill & Drain Isolation	M203-1 / E-6	B	PASS	2	1	GL	AO	C	C	C	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3044	Safety Injection Tank T-82B Nitrogen Fill	M203-1 / G-5	B	PASS	2	1	GL	AO	C	C	C	RPI	2Y	QO-06	
MO-3045	Safety Injection Tank T-82B Outlet Isolation Valve	M203-1 / E-5	B	PASS	2	12	GA	MO	ELO	O	FAI	RPI	2Y	RO-105	
CV-3046	Safety Inject Tank T-82B Pressure Control	M203-1 / D-5	A	ACT	1	1	GL	AO	O/C	C	C	LT	2Y	QO-06	
												RPI	2Y	QO-06	
												ETC	Q	QO-06	
												FSC	Q	QO-06	
												STC	Q	QO-06	
CV-3047	Safety Inject Tank T-T82C Pressure Control	M203-1 / D-4	A	ACT	1	1	GL	AO	O/C	C	C	LT	2Y	QO-06	
												RPI	2Y	QO-06	
												ETC	Q	QO-06	
												FSC	Q	QO-06	
												STC	Q	QO-06	
CV-3048	Safety Injection TK T-82C Nitrogen Supply	M203-1 / G-3	B	PASS	2	1	GL	AO	C	C	C	RPI	2Y	QO-06	
MO-3049	Safety Injection Tank T-82C Outlet Isolation Valve	M203-1 / E-4	B	PASS	2	12	GA	MO	ELO	O	FAI	RPI	2Y	RO-105	
CV-3050	Safety Injection Tank T-82D Nitrogen Fill	M203-1 / G-2	B	PASS	2	1	GL	AO	C	C	C	RPI	2Y	QO-06	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3051	Safety Injection Tank T-82D Vent Valve	M203-1 / F-2	B	PASS	2	1	GL	AO	C	C	C	RPI	2Y	QO-06	
MO-3052	Safety Injection Tank T-82D Discharge Isolation Valve	M203-1 / E-2	B	PASS	2	12	GA	MO	ELO	O	FAI	RPI	2Y	RO-105	
CV-3055	Shutdown Cooling Inlet To Shutdown HX	M204-1 / C-5	B	ACT	2	12	GA	AO	ELC	C	C	RPI	2Y	QO-42	
												ETC	Q	QO-42	
												FSC	Q	QO-42	
												STC	Q	QO-42	
CV-3056	SIRW Tank T-58 Recirculation Shutoff	M204-1B / G-7	A	ACT	2	6	GA	MO	O	O/C	FAI	LT	2Y	RO-119	
												RPI	2Y	QO-02	
												ETC	CS	QO-02	CSJ-10 SIRW Tank T-58 Recirculation Valves
												ETO	CS	QO-02	CSJ-10 SIRW Tank T-58 Recirculation Valves
												STC	CS	QO-02	CSJ-10 SIRW Tank T-58 Recirculation Valves
												STO	CS	QO-02	CSJ-10 SIRW Tank T-58 Recirculation Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3057	SIRW Tank T-58 Discharge Shutoff Valve	M204-1B / C-6	B	ACT	2	18	GA	MO	O	O/C	FAI	RPI	2Y	QO-02	
												ETC	CS	QO-02	CSJ-13 SIRW Tank T-58 Outlet & Discharge Isol Vlvs
												ETO	CS	QO-02	CSJ-13 SIRW Tank T-58 Outlet & Discharge Isol Vlvs
												STC	CS	QO-02	CSJ-13 SIRW Tank T-58 Outlet & Discharge Isol Vlvs
												STO	CS	QO-02	CSJ-13 SIRW Tank T-58 Outlet & Discharge Isol Vlvs
CV-3059	P-66B to HPSI Train 1 Isolation Valve	M204-1A / G-6	B	PASS	2	4	GA	AO	ELO	O	O	RPI	2Y	QO-05	
MO-3062	HPSI Train 2 to Reactor Coolent Loop 2B	M203-2 / B-7	B	ACT	2	2	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
CV-3063	Safety Injection Tank T-82C Vent Valve	M203-1 / F-4	B	PASS	2	1	GL	AO	C	C	C	RPI	2Y	QO-06	
MO-3064	HPSI Train 2 to Reactor Coolant Loop 2A	M203-2 / C-7	B	ACT	2	2	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
CV-3065	Safety Injection Tank T-82B Vent Valve	M203-1 / F-5	B	PASS	2	1	GL	AO	C	C	C	RPI	2Y	QO-06	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MO-3066	HPSI Train 2 to Reactor Coolant Loop 1B	M203-2 / E-7	B	ACT	2	2	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
CV-3067	Safety Injection Tank T-82A Vent Valve	M203-1 / F-7	B	PASS	2	1	GL	AO	C	C	C	RPI	2Y	QO-06	
MO-3068	HPSI Train 2 to Reactor Coolant Loop 1A	M203-2 / G-7	B	ACT	2	2	GL	MO	C	O	FAI	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												STO	Q	QO-05	
CV-3069	SI Tank Drain To Primary System Drain Tank	M203-1 / C-7	B	PASS	NC	2	GL	AO	O/C	C	C	RPI	2Y	QO-06	
CV-3070	HPSI Pump P-66B Subcooling Isolation Valve	M204-1 / H-6	B	ACT	2	4	GA	AO	C	O/C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3071	High Press Safety Inject P-66A Subcooling	M204-1A / B-4	B	ACT	2	4	GA	AO	C	O/C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
MO-3072	From Charging PP Line to SI Test Line Isol	M204-1A / C-8	B	ACT	2	2	GL	MO	ELC	C	FAI	RPI	2Y	QO-06	
												ETC	Q	QO-06	
												STC	Q	QO-06	
MO-3080	HPSI Hot Leg Injection Mode Select Valve	M203-2 / F-5	B	ACT	2	6	GA	MO	ELO	O/C	FAI	RPI	2Y	QO-06	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MO-3081	HPSI Hot Leg Injection Mode Select Valve	M203-2 / F-5	B	ACT	2	6	GA	MO	ELO	O/C	FAI	RPI	2Y	QO-06	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
MO-3082	HPSI Hot Leg Injection Mode Select Valve	M203-2 / F-5	B	ACT	2	2	GL	MO	ELC	O/C	FAI	RPI	2Y	QO-06	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
MO-3083	HPSI Hot Leg Injection Mode Select Valve	M203-2 / F-5	B	ACT	2	2	GL	MO	ELC	O/C	FAI	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-3084	HPSI Hot Leg Drain Isolation	M201-1 / B-3	B	ACT	1	1	GL	AO	C	C	C	RPI	2Y	QO-06	
												ETC	Q	QO-06	
												FSC	Q	QO-06	
												STC	Q	QO-06	
RV-3113	Safety Injection Tank T-82A Relief Valve	M203-1 / G-7	C	ACT	2	1	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-3128	Safety Injection Tank T-82B Relief Valve	M203-1 / G-5	C	ACT	2	1	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-3143	Safety Injection Tank T-82C Relief Valve	M203-1 / G-4	C	ACT	2	1	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-3158	Safety Injection Tank T-82D Relief Valve	M203-1 / G-2	C	ACT	2	1	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-3162	Low Pressure Injection Relief Valve	M203-2 / E-6	C	ACT	2	2	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-3164	Shutdown Cooling Relief	M204-1 / E-1	C	ACT	2	1.5	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-3165	High Press Safety Injection Relief Valve Train 1	M203-2 / H-6	C	ACT	2	0.5	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
MO-3189	LPSI Pump P-67B Inlet from SIRW Tank	M204-1A / F-4	B	PASS	2	14	GA	MO	ELO	O	FAI	RPI	2Y	QO-05	
MO-3190	LPSI pump P-67B Shutdown Cooling inlet	M204-1 / D-2	B	ACT	2	14	GA	MO	ELC	O/C	FAI	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
MO-3198	LPSI Pump P-67A Inlet from SIRW Tank	M204-1A / E-4	B	PASS	2	14	GA	MO	ELO	O	FAI	RPI	2Y	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MO-3199	LPSI Pump P-67A Inlet from Shutdown Cooling	M204-1A / F-4	B	ACT	2	14	GA	MO	ELC	O/C	FAI	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
CV-3212	Shutdown Cooling Heat Exchanger E-60B Inlet Valve	M204-1 / B-6	B	PASS	2	10	GA	MO	ELO	O	FAI	RPI	2Y	QO-42	
CV-3213	Shutdown Cooling Heat Exchanger E-60B Outlet Valve	M204-1 / D-6	B	PASS	2	10	GA	MO	ELO	O	FAI	RPI	2Y	QO-42	
CV-3223	Shutdown Cooling Heat Exchanger E-60A Inlet Valve	M204-1 / G-6	B	PASS	2	10	GA	MO	ELO	O	FAI	RPI	2Y	QO-42	
CV-3224	Shutdown Cooling Heat Exchanger E-60A Outlet Valve	M204-1 / E-6	B	PASS	2	10	GA	MO	ELO	O	FAI	RPI	2Y	QO-42	
RV-3264	HP Safety Injection Relief - Train 2	M203-2 / G-6	C	ACT	2	0.5	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-3266	HP Pumps Discharge Header Relief	M204-1A / H-6	C	ACT	2	0.5	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-3267	P-66A Discharge Relief	M204-1A / C-6	C	ACT	2	0.5	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
MV-ES113	CS TO CVC PCS CLEANUP HEADER ISOL VALVE	M203-2 / C-2	B	PASS	2	2	PLG	H	C	C	N/A	NTR	NR	NTR	
CK-ES3101	PCS Loop Check Valve (Loop 1A)	M203-1 / B-8	A/C	ACT	1	12	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	Q	DWO-1	
												CVO	R	RO-105	ROJ-07 ESS PCS Loop Check Valves (Loop 1A. 1B, 2A & 2B)

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3102	Safety Injection Tank T-82A Check Valve	M203-1 / D-7	A/C	ACT	1	12	CK	SA	C	O/C	N/A	LT	2Y	SHO-1	
												CVC	Q	SHO-1	
												CVO	R	RO-105	ROJ-06 ESS Safety Injection Tanks T-82A, B, C & D Check Valves
CK-ES3103	Low Pressure Injection Check Valve	M203-2 / F-8	A/C	ACT	1	6	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	CS	QO-32	CSJ-39 Low Pressure Injection Check Valves
												CVO	CS	QO-08B	CSJ-39 Low Pressure Injection Check Valves
CK-ES3104	High Pressure Injection Check Valve	M203-2 / G-8	A/C	ACT	1	2	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	R	SO-9	ROJ-02 High Pressure Injection Check Valves
												CVO	R	RO-65	ROJ-02 High Pressure Injection Check Valves
CK-ES3116	PCS Loop Check Valve (Loop 1B)	M203-1 / B-7	A/C	ACT	1	12	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	Q	DWO-1	
												CVO	R	RO-105	ROJ-07 ESS PCS Loop Check Valves (Loop 1A. 1B, 2A & 2B)

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3117	Safety Injection Tank T-82B Check Valve	M203-1 / D-5	A/C	ACT	1	12	CK	SA	C	O/C	N/A	LT	2Y	SHO-1	
												CVC	Q	SHO-1	
												CVO	R	RO-105	ROJ-06 ESS Safety Injection Tanks T-82A, B, C & D Check Valves
CK-ES3118	Low Pressure Injection Check Valve	M203-2 / D-8	A/C	ACT	1	6	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	CS	QO-32	CSJ-39 Low Pressure Injection Check Valves
												CVO	CS	QO-08B	CSJ-39 Low Pressure Injection Check Valves
CK-ES3119	High Press Injection Check Valve	M203-2 / F-8	A/C	ACT	1	2	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	R	SO-9	ROJ-02 High Pressure Injection Check Valves
												CVO	R	RO-65	ROJ-02 High Pressure Injection Check Valves
CK-ES3131	PCS Loop Check Valve (Loop 2A)	M203-1 / B-7	A/C	ACT	1	12	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	Q	DWO-1	
												CVO	R	RO-105	ROJ-07 ESS PCS Loop Check Valves (Loop 1A. 1B, 2A & 2B)

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3132	Safety Injection Tank T-82C Check Valve	M203-1 / D-3	A/C	ACT	1	12	CK	SA	C	O/C	N/A	LT	2Y	SHO-1	
												CVC	Q	SHO-1	
												CVO	R	RO-105	ROJ-06 ESS Safety Injection Tanks T-82A, B, C & D Check Valves
CK-ES3133	Low Pressure Injection Check Valve	M203-2 / C-8	A/C	ACT	1	6	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	CS	QO-32	CSJ-39 Low Pressure Injection Check Valves
												CVO	CS	QO-08B	CSJ-39 Low Pressure Injection Check Valves
CK-ES3134	High Pressure Injection Check Valve	M203-2 / D-8	A/C	ACT	1	2	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	R	SO-9	ROJ-02 High Pressure Injection Check Valves
												CVO	R	RO-65	ROJ-02 High Pressure Injection Check Valves
CK-ES3146	PCS Loop Check Valve (Loop 2B)	M203-1 / B-7	A/C	ACT	1	12	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	Q	DWO-1	
												CVO	R	RO-105	ROJ-07 ESS PCS Loop Check Valves (Loop 1A. 1B, 2A & 2B)

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3147	Safety Injection Tank T-82D Check Valve	M203-1 / D-2	A/C	ACT	1	12	CK	SA	C	O/C	N/A	LT	2Y	SHO-1	
												CVC	Q	SHO-1	
												CVO	R	RO-105	ROJ-06 ESS Safety Injection Tanks T-82A, B, C & D Check Valves
CK-ES3148	Low Pressure Injection Check Valve	M203-2 / A-8	A/C	ACT	1	6	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	CS	QO-32	CSJ-39 Low Pressure Injection Check Valves
												CVO	CS	QO-08B	CSJ-39 Low Pressure Injection Check Valves
CK-ES3149	High Pressure Injection Check Valve	M203-2 / B-8	A/C	ACT	1	2	CK	SA	C	O/C	N/A	LT	2Y	SO-9	
												CVC	R	SO-9	ROJ-02 High Pressure Injection Check Valves
												CVO	R	RO-65	ROJ-02 High Pressure Injection Check Valves
CK-ES3166	Containment Sump Outlet Check Valve West	M204-1A / D-3	C	ACT	2	24	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-C-19	CMJ-ESS-C-19
												CVO	CM	CMJ-ESS-C-19	CMJ-ESS-C-19
CK-ES3168	HPSI Pump P-66B Intake Check	M204-1B / C-7	C	ACT	2	8	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-03	CMJ-ESS-S-03
												CVO	CM	CMJ-ESS-S-03	CMJ-ESS-S-03

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3177	High Pressure Pump P-66B Discharge Check Valve	M204-1 / G-4	C	ACT	2	3	CK	SA	C	O	N/A	BDC	CM	CMJ-ESS-S-05	CMJ-ESS-S-05
												CVO	CM	CMJ-ESS-S-05	CMJ-ESS-S-05
CK-ES3181	Containment Sump Outlet Check Valve East	M204-1A / E-3	C	ACT	2	24	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-C-19	CMJ-ESS-C-19
												CVO	CM	CMJ-ESS-C-19	CMJ-ESS-C-19
CK-ES3183	HPSI Pump P-66A Intake Check Valve	M204-1A / C-4	C	ACT	2	6	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-03	CMJ-ESS-S-03
												CVO	CM	CMJ-ESS-S-03	CMJ-ESS-S-03
CK-ES3186	HPSI Pump P-66A Discharge Check Valve	M204-1A / C-6	C	ACT	2	3	CK	SA	C	O	N/A	BDC	CM	CMJ-ESS-S-05	CMJ-ESS-S-05
												CVO	CM	CMJ-ESS-S-05	CMJ-ESS-S-05
CK-ES3192	Low Press Pump P-67B Discharge Check Valve	M204-1 / E-4	C	ACT	2	10	CK	SA	C	O/C	N/A	CVC	CS	QO-08B	CSJ-38 Low Pressure Pump P-67A & B Discharge Check Valves
												CVO	CS	QO-08B	CSJ-38 Low Pressure Pump P-67A & B Discharge Check Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3201	LPSI Pump P-67A Discharge Check	M204-1A / E-6	C	ACT	2	10	CK	SA	C	O/C	N/A	CVC	CS	QO-08B	CSJ-38 Low Pressure Pump P-67A & B Discharge Check Valves
												CVO	CS	QO-08B	CSJ-38 Low Pressure Pump P-67A & B Discharge Check Valves
CK-ES3208	Containment Spray Pump P-54C Discharge Check Valve	M204-1 / D-4	C	ACT	2	8	CK	SA	C	O/C	N/A	CVC	R	RO-98	ROJ-08 ESS Containment Spray Pump P-54A, B & C DSCH CK VLVS
												CVO	R	RO-98	ROJ-08 ESS Containment Spray Pump P-54A, B & C DSCH CK VLVS
CK-ES3216	Containment Spray Check Valve	M203-2 / B-3	C	ACT	2	8	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-16	CMJ-ESS-S-16
												CVO	CM	CMJ-ESS-S-16	CMJ-ESS-S-16
CK-ES3220	Containment Spray Pump P-54B Discharge Check Valve	M204-1 / B-4	C	ACT	2	8	CK	SA	C	O/C	N/A	CVC	R	RO-98	ROJ-08 ESS Containment Spray Pump P-54A, B & C DSCH CK VLVS
												CVO	R	RO-98	ROJ-08 ESS Containment Spray Pump P-54A, B & C DSCH CK VLVS

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3226	Containment Spray Check Valve	M203-2 / C-3	C	ACT	2	8	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-16	CMJ-ESS-S-16
												CVO	CM	CMJ-ESS-S-16	CMJ-ESS-S-16
CK-ES3230	Containment Spray Pump P-54A Discharge Check Valve	M204-1A / D-5	C	ACT	2	8	CK	SA	C	O/C	N/A	CVC	R	RO-98	ROJ-08 ESS Containment Spray Pump P-54A, B & C DSCH CK VLVS
												CVO	R	RO-98	ROJ-08 ESS Containment Spray Pump P-54A, B & C DSCH CK VLVS
CK-ES3233	Pump P-67A Miniflow Check Valve	M204-1A / F-4	C	ACT	2	3	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-17	CMJ-ESS-S-17
												CVO	CM	CMJ-ESS-S-17	CMJ-ESS-S-17
MV-ES3234	Safety Injection Tank Drain Line Isolation Valve	M204-1 / H-8	A	PASS	2	2	GA	H	C	C	N/A	LTJ	AppJ	RO-032-33	
MV-ES3234A	Safety Injection Tank Drain Line Isolation Valve	M204-1 / H-8	A	PASS	2	2	GA	H	C	C	N/A	LTJ	AppJ	RO-032-33	
CK-ES3239	SIRW Tank T-58 Discharge Check (Train B)	M204-1B / D-6	C	ACT	2	18	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-01	CMJ-ESS-S-01
												CVO	CM	CMJ-ESS-S-01	CMJ-ESS-S-01
CK-ES3240	SIRW Tank T-58 Discharge Check (Train A)	M204-1B / D-6	C	ACT	2	18	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-01	CMJ-ESS-S-01
												CVO	CM	CMJ-ESS-S-01	CMJ-ESS-S-01

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3250	High Pressure Injection Check Valve	M203-2 / G-8	C	ACT	1	2	CK	SA	C	O/C	N/A	CVC	R	RO-65	ROJ-03 High Pressure Injection Check Valves
												CVO	R	RO-65	ROJ-03 High Pressure Injection Check Valves
CK-ES3251	High Pressure Injection Check Valve	M203-2 / E-8	C	ACT	1	2	CK	SA	C	O/C	N/A	CVC	R	RO-65	ROJ-03 High Pressure Injection Check Valves
												CVO	R	RO-65	ROJ-03 High Pressure Injection Check Valves
CK-ES3252	High Pressure Injection Check Valve	M203-2 / C-8	C	ACT	1	2	CK	SA	C	O/C	N/A	CVC	R	RO-65	ROJ-03 High Pressure Injection Check Valves
												CVO	R	RO-65	ROJ-03 High Pressure Injection Check Valves
CK-ES3253	High Pressure Injection Check Valve	M203-2 / B-8	C	ACT	1	2	CK	SA	C	O/C	N/A	CVC	R	RO-65	ROJ-03 High Pressure Injection Check Valves
												CVO	R	RO-65	ROJ-03 High Pressure Injection Check Valves
MV-ES3263	Spent Fuel Pool Makeup From SIRW Tank Manual Valve	M221-2 / B-4	B	ACT	2	6	GA	H	C	O/C	N/A	MS	2Y	SOP-27	
CK-ES3330	LPSI/CS Pump Miniflow Check Valve	M204-1 / G-2	C	ACT	2	3	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-17	CMJ-ESS-S-17
												CVO	CM	CMJ-ESS-S-17	CMJ-ESS-S-17

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3331	HPSI/LPSI Pump Miniflow Check Valve	M204-1 / H-2	C	ACT	2	4	CK	SA	C	O	N/A	BDC	CM	CMJ-ESS-S-18	CMJ-ESS-S-18
												CVO	CM	CMJ-ESS-S-18	CMJ-ESS-S-18
CK-ES3332	HPSI/LPSI/CS Pump Miniflow Check Valve	M204-1 / H-2	C	ACT	2	4	CK	SA	C	O	N/A	BDC	CM	CMJ-ESS-S-18	CMJ-ESS-S-18
												CVO	CM	CMJ-ESS-S-18	CMJ-ESS-S-18
CK-ES3339	HPSI Pump P-66B Miniflow Check	M204-1 / G-3	C	ACT	2	2	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-06	CMJ-ESS-S-06
												CVO	CM	CMJ-ESS-S-06	CMJ-ESS-S-06
CK-ES3340	Pump P-66A Miniflow Check Valve	M204-1A / C-4	C	ACT	2	2	CK	SA	C	O/C	N/A	CVC	CM	CMJ-ESS-S-06	CMJ-ESS-S-06
												CVO	CM	CMJ-ESS-S-06	CMJ-ESS-S-06
CK-ES3408	Hot Leg Injection Check Valve	M203-2 / E-5	C	ACT	1	2	CK	SA	C	O/C	N/A	CVC	R	RO-147	ROJ-04 ESS Hot Leg Injection Check Valves
												CVO	R	RO-147	ROJ-04 ESS Hot Leg Injection Check Valves
CK-ES3409	Hot Leg Injection Check Valve	M203-2 / E-5	C	ACT	1	2	CK	SA	C	O/C	N/A	CVC	R	RO-147	ROJ-04 ESS Hot Leg Injection Check Valves
												CVO	R	RO-147	ROJ-04 ESS Hot Leg Injection Check Valves
CK-ES3410	HPSI Hot Leg Injection Check Valve	M201-1 / C-3	C	ACT	1	2	CK	SA	C	O/C	N/A	CVC	Q	QO-19	
												CVO	R	RO-147	ROJ-01 HPSI Hot Leg Injection Check Valve

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-ES3411	HPSI P-66A Discharge Check Valve	M204-1A / C-6	C	ACT	2	3	CK	SA	C	O	N/A	BDC	CM	CMJ-ESS-S-07	CMJ-ESS-S-07
												CVO	CM	CMJ-ESS-S-07	CMJ-ESS-S-07
MV-FP130	Critical SW Header B & Fire SYS Crosstie	M213 / H-1	B	ACT	3	12	GA	H	C	O/C	N/A	MS	2Y	RO-52	
MV-FP131	Critical SW Header A & Fire SYS Crosstie	M213 / G-4	B	ACT	3	12	GA	H	C	O/C	N/A	MS	2Y	RO-52	
RV-0521A	Steam Supply To Auxiliary Feed Pump	M205-2 / E-2	C	ACT	3	4	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
RV-0521B	Steam Supply To Auxiliary Feed Pump	M205-2 / E-1	C	ACT	3	4	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
CV-0727	Auxiliary Feedwater Flow to Steam Generator E-50B from P-8A and P-8B	M207-2 / G-4	B	ACT	3	4	GL	AO	C	O/C	O	RPI	2Y	RO-127	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0736	Auxiliary Feedwater Flow Control Bypass to E-50B	M207-2 / C-4	B	ACT	3	1.5	GL	AO	C	C	C	RPI	2Y	RO-127	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-0736A	Auxiliary Feedwater Pump P-8C Flow Control to Steam Generator E-50B	M207-2 / C-4	B	ACT	3	4	GL	AO	C	O/C	O	RPI	2Y	RO-127	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
CV-0737	Auxiliary Feedwater Flow Control Bypass to E-50A	M207-2 / A-4	B	ACT	3	1.5	GL	AO	C	C	C	RPI	2Y	RO-127	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0737A	Auxiliary Feedwater Pump P-8C Flow Control to Steam Generator E-50A	M207-2 / A-4	B	ACT	3	4	GL	AO	C	O/C	O	RPI	2Y	RO-127	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
MO-0743	Auxiliary Feedwater to Steam Generator E-50B Isolation	M207-2 / G-3	B	PASS	3	4	GA	MO	ELO	O	FAI	NTR	NR	NTR	
MO-0748	Auxiliary Feedwater to Steam Generator E-50B Isolation	M207-2 / C-4	B	PASS	3	4	GA	MO	ELO	O	FAI	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0749	Auxiliary Feedwater Flow to Steam Generator E-50A from P-8A and P-8B	M207-2 / E-4	B	ACT	3	4	GL	AO	C	O/C	O	RPI	2Y	RO-127	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
MO-0753	Auxiliary Feedwater to Steam Generator E-50A Isolation	M207-2 / E-3	B	PASS	3	4	GA	MO	ELO	O	FAI	NTR	NR	NTR	
MO-0754	Auxiliary Feedwater to Steam Generator E-50A Isolation	M207-2 / A-4	B	PASS	3	4	GA	MO	ELO	O	FAI	NTR	NR	NTR	
MO-0755	Auxiliary Feedwater to Steam Generator E-50B Isolation	M207-2 / C-3	B	PASS	3	4	GA	MO	ELO	O	FAI	NTR	NR	NTR	
MO-0759	Auxiliary Feedwater to Steam Generator E-50A Isolation	M207-2 / A-3	B	PASS	3	4	GA	MO	ELO	O	FAI	NTR	NR	NTR	
MO-0760	Auxiliary Feedwater to Steam Generator E-50A Isolation	M207-2 / E-3	B	PASS	3	4	GA	MO	ELO	O	FAI	NTR	NR	NTR	
RV-0783	Auxiliary Feedwater Pumps P-8A/B Discharge	M207-2 / F-5	C	ACT	3	2.5	RV	SA	C	O/C	N/A	RV	10Y	RT-116	
MO-0798	Auxiliary Feedwater to Steam Generator E-50B Isolation	M207-2 / G-3	B	PASS	3	4	GA	MO	ELO	O	FAI	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-FW211	Auxiliary Feedwater Pump Turbine Cooling Water Outlet 3-Way Valve	M205-2 / C-8	B	ACT	3	1.5	3W	H	N	O/C	N/A	MS	2Y	PMID 50084033-01	
MV-FW218	CHEM ADD SUPPLY TO P-8A/B SUCTION	M220-2 / A-7	B	PASS	3	1	GA	H	C	C	N/A	NTR	NR	NTR	
CK-FW411	Auxiliary Feedwater Line From P-8B to T-2	M207-2 / G-6	C	ACT	3	2	CK	SA	C	O	N/A	BDC	CM	CMJ-AFW-C-01	CMJ-AFW-C-01
												CVO	CM	CMJ-AFW-C-01	CMJ-AFW-C-01
CK-FW412	Auxiliary Feedwater Line From P-8A to T-2	M207-2 / E-6	C	ACT	3	2	CK	SA	C	O	N/A	BDC	CM	CMJ-AFW-C-01	CMJ-AFW-C-01
												CVO	CM	CMJ-AFW-C-01	CMJ-AFW-C-01
CK-FW420	CHEMICAL ADDITION LINE TO AFW P-8C	M220-1 / C-6	C	ACT	3	1	CK	SA	O/C	C	N/A	BDO	CM	CMJ-AFW-C-06	CMJ-AFW-C-06
												CVC	CM	CMJ-AFW-C-06	CMJ-AFW-C-06
CK-FW701	Feedwater Containment Isolation Valve Loop B	M207-1A / G-5	C	ACT	2	18	CK	SA	O	C	N/A	CVC	CS	QO-24	CSJ-37 MFW Supply to S/G E-50B Check Valves
												CVO	CS	QO-24	CSJ-37 MFW Supply to S/G E-50B Check Valves
CK-FW702	Feedwater Containment Isolation Valve Loop A	M207-1A / G-6	C	ACT	2	18	CK	SA	O	C	N/A	CVC	CS	QO-24	CSJ-37 MFW Supply to S/G E-50B Check Valves
												CVO	CS	QO-24	CSJ-37 MFW Supply to S/G E-50B Check Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-FW703	Auxiliary Feedwater Line From P-8C to E-50B	M207-2 / C-3	C	ACT	2	6	CK	SA	C	O/C	N/A	CVC	CM	CMJ-FWS-S-01	CMJ-FWS-S-01
												CVO	CM	CMJ-FWS-S-01	CMJ-FWS-S-01
CK-FW704	Auxiliary Feedwater Line From P-8C to E-50A	M207-2 / A-3	C	ACT	2	6	CK	SA	C	O/C	N/A	CVC	CM	CMJ-FWS-S-01	CMJ-FWS-S-01
												CVO	CM	CMJ-FWS-S-01	CMJ-FWS-S-01
CK-FW725	Auxiliary Feedwater P-8C Suction From Cond Storage Tank	M207-2 / B-7	C	ACT	3	6	CK	SA	C	O	N/A	BDC	CM	CMJ-AFW-C-02	CMJ-AFW-C-02
												CVO	CM	CMJ-AFW-C-02	CMJ-AFW-C-02
CK-FW726	Auxiliary Feedwater Pump P-8C Discharge Check	M207-2 / B-5	C	ACT	3	6	CK	SA	C	O	N/A	BDC	CM	CMJ-AFW-C-03	CMJ-AFW-C-03
												CVO	CM	CMJ-AFW-C-03	CMJ-AFW-C-03
CK-FW727	Recirc Line From P-8C To Cond Storage Tank	M207-2 / C-5	C	ACT	3	2	CK	SA	C	O	N/A	BDC	CM	CMJ-AFW-C-04	CMJ-AFW-C-04
												CVO	CM	CMJ-AFW-C-04	CMJ-AFW-C-04
CK-FW728	Auxiliary Feedwater Line From P-8A, P-8B to E-50B	M207-2 / E-2	C	ACT	2	4	CK	SA	C	O/C	N/A	CVC	CM	CMJ-FWS-S-02	
												CVO	CM	CMJ-FWS-S-02	
CK-FW729	Auxiliary Feedwater Line From P-8A, P-8B to E-50A	M207-2 / D-3	C	ACT	2	4	CK	SA	C	O/C	N/A	CVC	CM	CMJ-FWS-S-02	
												CVO	CM	CMJ-FWS-S-02	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-FW741	Auxiliary Feedwater Pump P-8A Discharge	M207-2 / E-6	C	ACT	3	6	CK	SA	C	O/C	N/A	CVC	CM	CMJ-AFW-C-07	CMJ-AFW-C-07
												CVO	CM	CMJ-AFW-C-07	CMJ-AFW-C-07
CK-FW743	Auxiliary Feedwater Pump P-8B Discharge	M207-2 / H-6	C	ACT	3	6	CK	SA	C	O/C	N/A	CVC	CM	CMJ-AFW-C-07	CMJ-AFW-C-07
												CVO	CM	CMJ-AFW-C-07	CMJ-AFW-C-07
MV-FW746	MAIN FW TO S/G E-50A TEST CONN (MZ-7)	M207-1A / H-7	B	PASS	2	0.75	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-FW747	MAIN FW TO S/G E-50B TEST CONN (MZ-8)	M207-1A / H-5	B	PASS	2	0.75	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-FW750	Service Water to Auxiliary Feedwater Pump P-8C Isolation	M207-2 / A-7	B	ACT	3	4	GA	H	LC	O/C	N/A	MS	2Y	PMID 50083972-01	
MV-FW750A	Service Water to Auxiliary Feedwater Pump P-8C Isolation	M207-2 / B-7	B	ACT	3	4	GA	H	LC	O/C	N/A	MS	2Y	PMID 50083972-01	
MV-FW759	Service Water to Auxiliary Feedwater Pump P-8C Vent	M207-2 / B-7	B	ACT	3	1	GL	H	O	C	N/A	MS	2Y	PMID 50083972-01	
MV-FW774	Auxiliary Feedwater Pumps P-8A/B Fire Water Supply Downstream Isolation	M207-2 / H-7	B	ACT	3	4	GA	H	LC	O/C	N/A	MS	2Y	PMID 50083972-01	
MV-ES116	FLEX HPSI CONNECTION ISO VALVE	M204-1A / H-5	B	PASS	2	4	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-ES117	FLEX HPSI CONNECTION ISO VALVE	M204-1A / H-5	B	PASS	2	4	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3007A	CK-3104 TEST TAP	M203-2 / G-8	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3009A	CK-3119 TEST TAP	M203-2 / E-7	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3011A	CK-3134 TEST TAP	M203-2 / D-8	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3013A	CK-3149 TEST TAP	M203-2 / B-7	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-ES3008	CK-3103 TEST TAP ROOT	M203-2 / F-8	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3010	TEST TAP TO CK-ES3118	M203-2 / D-8	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3012	CK-3133 TEST TAP ROOT	M203-2 / C-8	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3014	CK-3148 TEST TAP ROOT	M203-2 / A-8	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
CV-1358	Nitrogen Supply Containment Isolation Valve	M222-1 / D-3	A	ACT	2	1	GL	AO	O/C	O/C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-26	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
SV-2412A	Containment Hydrogen Monitoring Suction CIV (Right Channel)	M224-2 / C-8	A	ACT	2	0.5	GL	SO	C	O/C	C	RPI	2Y	RO-11	
												LTJ	AppJ	RO-032-40B	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
SV-2412B	Containment Hydrogen Monitoring Suction CIV (Right Channel)	M224-2 / C-7	A	ACT	2	0.5	GL	SO	C	O/C	C	RPI	2Y	RO-11	
												LTJ	AppJ	RO-032-40B	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
SV-2413A	Containment Hydrogen Monitoring Suction CIV (Left Channel)	M224-2 / F-8	A	ACT	2	0.5	GL	SO	C	O/C	C	RPI	2Y	RO-11	
												LTJ	AppJ	RO-032-21A	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
SV-2413B	Containment Hydrogen Monitoring Suction CIV (Left Channel)	M224-2 / F-7	A	ACT	2	0.5	GL	SO	C	O/C	C	RPI	2Y	RO-11	
												LTJ	AppJ	RO-032-21A	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
SV-2414A	Containment Hydrogen Monitoring Discharge CIV (Right Channel)	M224-2 / D-8	A	ACT	2	0.5	GL	SO	C	O/C	C	RPI	2Y	RO-11	
												LTJ	AppJ	RO-032-40A	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
SV-2414B	Containment Hydrogen Monitoring Discharge CIV (Right Channel)	M224-2 / D-7	A	ACT	2	0.5	GL	SO	C	O/C	C	RPI	2Y	RO-11	
												LTJ	AppJ	RO-032-40A	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
SV-2415A	Containment Hydrogen Monitoring Discharge CIV (Left Channel)	M224-2 / G-8	A	ACT	2	0.5	GL	SO	C	O/C	C	RPI	2Y	RO-11	
												LTJ	AppJ	RO-032-21	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
SV-2415B	Containment Hydrogen Monitoring Discharge CIV (Left Channel)	M224-2 / G-7	A	ACT	2	0.5	GL	SO	C	O/C	C	RPI	2Y	RO-11	
												LTJ	AppJ	RO-032-21	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	
MV-N2/312	ISOL FOR WEST UPPER PENETRATIONS NORTH	M222-3 / F-4	B	PASS	2		GA	H	O	O	N/A	NTR	NR	NTR	
MV-N2/313	ISOL FOR EAST UPPER PENETRATIONS NORTH	M222-3 / F-4	B	PASS	2		GA	H	O	O	N/A	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-N2/314	ISOLATION FOR LOWER PENETRATIONS NORTH	M222-3 / F-4	B	PASS	2		GA	H	O	O	N/A	NTR	NR	NTR	
MV-N2/331	N2 STATION 7 UPPER PENETRATIONS ISOL	M222-3 / G-6	B	PASS	2		GA	H	O	O	N/A	NTR	NR	NTR	
MV-N2/332	N2 STATION 7 MIDDLE PENETRATIONS ISOL	M222-3 / G-6	B	PASS	2		GA	H	O	O	N/A	NTR	NR	NTR	
MV-N2/333	N2 STATION 7 LOWER PENETRATIONS ISOL	M222-3 / G-6	B	PASS	2		GA	H	O	O	N/A	NTR	NR	NTR	
MV-N2/335	N2 STATION 7 PI-2286 / EZ-0144 ISOL	M222-3 / G-5	B	PASS	2		GA	H	O	O	N/A	NTR	NR	NTR	
MV-N2/337	NITROGEN ISOLATION FOR EZ-0249	M222-3 / F-3	B	PASS	2		GA	H	O	O	N/A	NTR	NR	NTR	
CK-N2/400	Nitrogen Supply Containment Isolation Valve	M222-1 / D-3	A/C	ACT	2	1	CK	SA	O/C	C	N/A	LTJ	AppJ	RO-032-26	
												BDO	CM	CMJ-CIS-S-04	CMJ-CIS-S-04
												CVC	CM	CMJ-CIS-S-04	CMJ-CIS-S-04
CK-N2/462	North Electrical Penetration N2 Supply Check	M222-3 / E-4	A/C	ACT	2	0.5	CK	SA	O/C	O/C	N/A	LTJ	AppJ	RO-032-North	
												CVC	CM	CMJ-CIS-C-06	CMJ-CIS-C-06
												CVO	CM	CMJ-CIS-C-06	CMJ-CIS-C-06
CK-N2/465	South Electrical Penetration N2 Supply Check	M222-3 / G-7	A/C	ACT	2	0.375	CK	SA	O/C	O/C	N/A	LTJ	AppJ	RO-032-South	
												CVC	CM	CMJ-CIS-C-06	CMJ-CIS-C-06
												CVO	CM	CMJ-CIS-C-06	CMJ-CIS-C-06
MV-N2/581	CONTAINMENT PENETRATION TEST TAP ISOLATION	M222-1 / D-3	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-N2/585	N2 STATION 6 TEST CONN (NORTH)	M222-3 / F-4	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-N2/588	N2 STATION 7 TEST CONN (SOUTH)	M222-3 / F-6	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	NTR	
CV-0501	Main Steam Isolation Valve SG E-50B to HP Turbine	M205-1 / G-8	B/C	ACT	2	30	CK	AO	O	C	C	RPI	2Y	QO-37	
												CVC	CS	QO-37	CSJ-15 Main Steam Isolation Valves to HP Turbine
												ETC	CS	QO-37	CSJ-15 Main Steam Isolation Valves to HP Turbine
												FSC	CS	QO-37	CSJ-15 Main Steam Isolation Valves to HP Turbine
												STC	CS	QO-37	CSJ-15 Main Steam Isolation Valves to HP Turbine
MO-0501	Steam Generator E-50B MSIV Bypass Valve	M205-1 / G-7	B	PASS	2	3	GA	MO	C	C	FAI	RPI	2Y	QO-37	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0510	Main Steam Isolation Valve SG E-50A to HP Turbine	M205-1 / G-7	B/C	ACT	2	30	CK	AO	O	C	C	RPI	2Y	QO-37	
												CVC	CS	QO-37	CSJ-15 Main Steam Isolation Valves to HP Turbine
												ETC	CS	QO-37	CSJ-15 Main Steam Isolation Valves to HP Turbine
												FSC	CS	QO-37	CSJ-15 Main Steam Isolation Valves to HP Turbine
												STC	CS	QO-37	CSJ-15 Main Steam Isolation Valves to HP Turbine
MO-0510	Steam Generator E-50A MSIV Bypass Valve	M205-1 / G-7	B	PASS	2	3	GA	MO	C	C	FAI	RPI	2Y	QO-37	
CV-0522B	Steam Supply From E-50A To Auxiliary Feed Pump Turbine	M205-2 / F-7	B	ACT	2	4	GL	AO	C	O/C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												ETO	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0738	Steam Generator B Blowdown Valve	M226-1 / C-7	B	ACT	2	2	ANG	AO	O/C	C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-0739	Steam Generator A Blowdown Valve	M226-1 / D-7	B	ACT	2	2	ANG	AO	O/C	C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-0767	Steam Generator E-50A Bottom Blowdown Valve	M226-1 / F-8	B	ACT	2	2	ANG	AO	O/C	C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-0768	Steam Generator E-50B Bottom Blowdown Valve	M226-1 / E-8	B	ACT	2	2	ANG	AO	O/C	C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-0779	Steam Generator E-50B Atmospheric Dump	M207-1 / F-4	B	PASS	2	8	GL	AO	C	C	C	RPI	2Y	QO-06	
CV-0780	Steam Generator E-50B Atmospheric Dump	M207-1 / F-4	B	PASS	2	8	GL	AO	C	C	C	RPI	2Y	QO-06	
CV-0781	Steam Generator E-50A Atmospheric Dump	M207-1 / F-5	B	PASS	2	8	GL	AO	C	C	C	RPI	2Y	QO-06	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0782	Steam Generator E-50A Atmospheric Dump	M207-1 / F-5	B	PASS	2	8	GL	AO	C	C	C	RPI	2Y	QO-06	
CK-MS402	Steam Supply from E-50A to Auxiliary Feedwater Pump P-8B Check Valve	M205-2 / F-7	C	ACT	3	4	CK	SA	C	O	N/A	BDC	CM	CMJ-MSS-S-01	CMJ-MSS-S-01
												CVO	CM	CMJ-MSS-S-01	CMJ-MSS-S-01
MV-MS500	MAIN STEAM TO CV-0522B BLEED (MZ-2)	M205-2 / F-6	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-MS515	CV-0782 STEAM TRAP ST-0792 INLET (MZ-2)	M207-1 / F-6	B	PASS	2	0.75	GA	H	O	O	N/A	NTR	NR	NTR	
MV-MS517	CV-0781 STEAM TRAP ST-0791 BYPASS (MZ-2)	M207-1 / F-6	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-MS518	E-50A ASDV CV-0781 INLET DRAIN (MZ-2)	M207-1 / F-6	B	PASS	2	0.75	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-MS519	CV-0781 STEAM TRAP ST-0791 INLET (MZ-2)	M207-1 / F-6	B	PASS	2	0.75	GA	H	O	O	N/A	NTR	NR	NTR	
MV-MS521	CV-0782 STEAM TRAP ST-0792 BYPASS (MZ-2)	M207-1 / F-6	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-MS522	E-50A ASDV CV-0782 INLET DRAIN (MZ-2)	M207-1 / E-6	B	PASS	2	0.75	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-MS523	CV-0779 STEAM TRAP ST-0789 INLET (MZ-3)	M207-1 / F-4	B	PASS	2	0.75	GA	H	O	O	N/A	NTR	NR	NTR	
MV-MS525	CV-0779 STEAM TRAP ST-0789 BYPASS (MZ-3)	M207-1 / F-4	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-MS526	E-50B ASDV CV-0779 INLET DRAIN (MZ-3)	M207-1 / E-4	B	PASS	2	0.75	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-MS527	CV-0780 STEAM TRAP ST-0790 INLET (MZ-3)	M207-1 / F-4	B	PASS	2	0.75	GA	H	O	O	N/A	NTR	NR	NTR	
MV-MS529	CV-0780 STEAM TRAP ST-0790 BYPASS (MZ-3)	M207-1 / F-4	B	PASS	2	0.75	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-MS530	E-50B ASDV CV-0780 INLET DRAIN (MZ-3)	M207-1 / F-3	B	PASS	2	0.75	GA	H	LC	C	N/A	NTR	NR	NTR	
CV-0101	Flange Leak Drain	M201-1 / G-5	B	PASS	2	0.5	GL	AO	C	C	C	RPI	2Y	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0155	Quench Tank T-73 Makeup Water Isolation Valve	M201-2 / G-7	A	ACT	2	2	GL	AO	O/C	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-42	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
MO-1042A	Power Relief Valve Isolation Valve	M201-2 / D-6	B	ACT	1	4	GA	MO	C	O/C	FAI	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-24 PORV Block Valves
												ETO	CS	QO-06	CSJ-24 PORV Block Valves
												STC	CS	QO-06	CSJ-24 PORV Block Valves
												STO	CS	QO-06	CSJ-24 PORV Block Valves
PRV-1042B	Power Operated Relief Valve	M201-2 / E-6	B	ACT	1	4	PORV	SO	C	O/C	C	ETC	18M	RI-115	
												ETO	18M	RI-115	
												FSC	18M	RI-115	
												STO	18M	RI-115	
												RPI	2Y	RI-115	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MO-1043A	Power Relief Valve Isolation Valve	M201-2 / D-7	B	ACT	1	4	GA	MO	C	O/C	FAI	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-24 PORV Block Valves
												ETO	CS	QO-06	CSJ-24 PORV Block Valves
												STC	CS	QO-06	CSJ-24 PORV Block Valves
												STO	CS	QO-06	CSJ-24 PORV Block Valves
PRV-1043B	Power Operated Relief Valve	M201-2 / E-7	B	ACT	1	4	PORV	SO	C	O/C	C	ETC	18M	RI-115	
												ETO	18M	RI-115	
												FSC	18M	RI-115	
												STO	18M	RI-115	
												RPI	2Y	RI-115	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
PRV-1067	Reactor Head Vent Valve	M201-2 / A-6	B	ACT	1	1	GL	SO	C	O/C	C	RPI	2Y	RO-112	
												ETC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												ETO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												FSC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
PRV-1068	Reactor Head Vent Valve	M201-2 / A-6	B	ACT	1	1	GL	SO	C	O/C	C	RPI	2Y	RO-112	
												ETC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												ETO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												FSC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
PRV-1069	Pressurizer Head Vent Valve	M201-2 / A-7	B	ACT	1	1	GL	SO	C	O/C	C	RPI	2Y	RO-112	
												ETC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												ETO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												FSC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
PRV-1070	Pressurizer Head Vent Valve	M201-2 / A-7	B	ACT	1	1	GL	SO	C	O/C	C	RPI	2Y	RO-112	
												ETC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												ETO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												FSC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
PRV-1071	Reactor Head and Pressurizer Head Combined Vent Valve	M201-2 / B-8	B	ACT	1	1	GL	SO	C	O/C	C	RPI	2Y	RO-112	
												ETC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												ETO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												FSC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
PRV-1072	Reactor Head and Pressurizer Head Combined Vent Valve	M201-2 / B-7	B	ACT	1	1	GL	SO	C	O/C	C	RPI	2Y	RO-112	
												ETC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												ETO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												FSC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STC	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
												STO	CS	QO-06	CSJ-01 Reactor Head and Pressurizer Head Vent Valves
CV-1910	Primary System Sampling Isolation Valve	M219-1B / C-8	A	ACT	1	0.5	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-40	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-1911	Primary System Sampling Isolation Valve	M219-1B / B-8	A	ACT	2	0.5	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-40	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
MV-PC1033A	Loop Drain Isolation Valve	M201-1 / F-8	B	PASS	1	2	GL	H	C	C	N/A	NTR	NR	NTR	
MV-PC1033B	Loop Drain Isolation Valve	M201-1 / F-8	B	PASS	1	2	GL	H	C	C	N/A	NTR	NR	NTR	
MV-PC1060A	RX N-50 HEAD VENT	M201-1 / F-4	B	PASS	1	3/4	GA	H	LO	O	N/A	NTR	NR	NTR	
MV-PC1060B	RX N-50 HEAD VENT	M201-1 / G-4	B	PASS	1	3/4	GA	H	C	C	N/A	NTR	NR	NTR	
MV-PC1060C	RX N-50 HEAD VENT	M201-1 / H-4	B	PASS	1		GA	H	C	C	N/A	NTR	NR	NTR	
MV-PC1060D	RX N-50 HEAD VENT	M201-1 / H-4	B	PASS	1		GA	H	C	C	N/A	NTR	NR	NTR	
MV-PC1094A	PCS LOOP 1 HOT LEG DRAIN / HOT LEG INJ	M201-1 / C-3	B	PASS	1		GA	H	LO	O	N/A	NTR	NR	NTR	
MV-PC1094B	Loop Drain Isolation Valve	M201-1 / B,C-3,4	B	PASS	1	2	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-PC1094C	Loop Drain Isolation Valve	M201-1 / B,C-3,4	B	PASS	1	2	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-PC1126	QUENCH TANK ISOLATION VALVE TEST	M201-2 / G-7	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-PC1170A	PEN MZ-40 PRIMARY COOLANT SYS SAMPLE TEST	M219-1B / B-8	B	PASS	2	0.5	NDL	H	LC	C	N/A	NTR	NR	NTR	
CK-PC155B	Quench Tank T-73 Makeup Water Isolation Valve	M201-2 / G-7	A/C	ACT	2	2	CK	SA	C	C	N/A	LTJ	AppJ	RO-032-42	
												BDO	CM	CMJ-CIS-S-02	CMJ-CIS-S-02
												CVC	CM	CMJ-CIS-S-02	CMJ-CIS-S-02

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-PC437	Quench Tank Sample Isolation Check Valve	M219-1B / E/F-7	C	ACT	1	0.5	CK	SA	O/C	C	N/A	CVC	CM	CMJ-PCS-C-01	
												BDO	Q	CMJ-PCS-C-01	
MV-PC514	PZR T-72 VENT	M201-2 / D-6	B	PASS	1	2	GL	H	C	C	N/A	NTR	NR	NTR	
MV-PC515	PZR T-72 VENT	M201-2 / D-6	B	PASS	1	2	GL	H	C	C	N/A	NTR	NR	NTR	
MV-PC516	PZR T-72 TEST TAP	M201-2 / D-7	B	PASS	1	2	GL	H	C	C	N/A	NTR	NR	NTR	
MV-PC517	PZR T-72 TEST TAP	M201-2 / D-7	B	PASS	1	2	GL	H	C	C	N/A	NTR	NR	NTR	
CV-1001	Primary System Drain Tank Recirculation Valve	M210-2 / E-5, 6	A	ACT	2	1.5	GL	AO	O/C	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-37	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1002	Primary System Drain Tank Outlet Isolation Valve	M210-2 / C-7	A	ACT	2	4	GL	AO	O/C	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-47	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-1004	Degasifier Pump Discharge Valve	M210-1A / H-8	A	ACT	2	3	GL	AO	O/C	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-41	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1007	Primary System Drain Tank Outlet Isolation Valve	M210-2 / B-7	A	ACT	2	4	GL	AO	O/C	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-47	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1036	Pump P-70 Inlet Valve	M210-1A / B-6	A	ACT	2	6	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-49	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1037	Clean Waste Tank Recirculation	M210-1A / B-4	A	ACT	2	3	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-67	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-1038	Pump P-70 Inlet Isolation Valve	M210-1A / B-7	A	ACT	2	6	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-49	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1044	Pump P-69A/B Suction Valve	M210-1B / F-1	A	ACT	2	4	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-69	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1045	Pump P-69A/B Suction Valve	M210-1B / G-1	A	ACT	2	4	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-69	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1064	Clean Waste Tank Vent Isolation Valve	M210-1A / F-1	A	ACT	2	2	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-25	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-1065	Clean Waste Tank Vent Isolation Valve	M210-1A / F-1	A	ACT	2	2	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-25	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1103	Containment Sump Drain Isolation	M211-1 / F-7	A	ACT	2	4	BA	AO	O/C	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-52	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1104	Containment Sump Drain Isolation	M211-1 / F-7	A	ACT	2	4	BA	AO	O/C	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-52	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
MV-CRW175	RADWASTE DEMINERALIZERS TO SIRWT T-58	M210-1C / G-7	B	PASS	2	3	GA	H	C	C	N/A	NTR	NR	NTR	
CK-CRW403	Primary System Drain Tank Recirculation Valve	M210-2 / E-5	A/C	ACT	2	1.5	CK	SA	O	C	N/A	LTJ	AppJ	RO-032-37	
												BDO	CM	CMJ-CIS-S-03	CMJ-CIS-S-03
												CVC	CM	CMJ-CIS-S-03	CMJ-CIS-S-03

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-CRW407	Degasifier Pump Discharge Check Valve	M210-1A / H-8	A/C	ACT	2	3	CK	SA	O/C	C	N/A	LTJ	AppJ	RO-032-41	
												BDO	CM	CMJ-CIS-S-01	CMJ-CIS-S-01
												CVC	CM	CMJ-CIS-S-01	CMJ-CIS-S-01
CK-CRW408	Clean Waste Receiver Tanks Recirculation Valve	M210-1A / B-5	A/C	ACT	2	3	CK	SA	O/C	C	N/A	LTJ	AppJ	RO-032-67	
												BDO	CM	CMJ-CIS-S-01	CMJ-CIS-S-01
												CVC	CM	CMJ-CIS-S-01	CMJ-CIS-S-01
MV-CRW502	PRI SYS DRN TK T-74 DISCH PENET MZ-47 TEST	M210-2 / C-7	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-CRW503	PRI SYS DRAIN TK PPS P-71A/B RECIRC TEST	M210-2 / E-5	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-CRW506	VACUUM DEGASIFIER TANK T-57 ISOLATION TEST	M210-1A / H-8	B	PASS	2		GL	H	LC	C	N/A	NTR	NR	NTR	
MV-CRW512	CWRT VENT HEADER ISOL (MZ-25) TEST TAP	M210-1A / F-1	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-CRW513	CLEAN WASTE RECIRC PP INLET ISOLATION TEST	M210-1A / B-7	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-CRW515	CLEAN WASTE RECIRC PUMP OUTLET ISOL TEST	M210-1A / B-5	B	PASS	2		GL	H	LC	C	N/A	NTR	NR	NTR	
MV-CRW518	CLEAN TANK ISOLATION VALVE TEST	M210-1B / G-2	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-DRW500	Containment Sump Drain Test Conn (MZ-52)	M211-1 / F-7	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-DRW618	Sensing Line to LT-0382 Isolation Valve	M232-2A / C-1	B	PASS	2	1	GL	H	LO	O	N/A	NTR	NR	RO-032-52A	
MV-DRW618A	Sensing Line To LT-0382 Isolation Valve	M232-2A / B-2	B	PASS	2	0.375	GL	H	LO	O	N/A	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-DRW618B	LT-0382 Equalizing Valve	M232-2A / B-1	B	PASS	2	0.375	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-DRW618C	Test Connection To LT-0382	M232-2A / B-1	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52A	
MV-DRW618D	Test Connection To LT-0382	M232-2A / B-1	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52A	
MV-DRW618E	Seal Pot To LT-0382	M232-2A / C-1	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52A	
MV-DRW618F	Seal Pot To LT-0382	M232-2A / C-1	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52A	
MV-DRW618G	Seal Pot To LT-0382	M232-2A / C-1	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52A	
MV-DRW618H	Seal Pot To LT-0382	M232-2A / C-1	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52A	
MV-DRW619	LT-0383 Sensing Line	M232-2A / C-2	B	PASS	2	1	GL	H	LO	O	N/A	NTR	NR	RO-032-52B	
MV-DRW619A	Sensing Line To LT-0383	M232-2A / B-2	B	PASS	2	0.375	GL	H	O	O	N/A	NTR	NR	NTR	
MV-DRW619B	LT-0383 Equalizing Valve	M232-2A / B-2	B	PASS	2	0.375	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-DRW619C	Test Connection To LT-0383	M232-2A / B-2	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52B	
MV-DRW619D	Test Connection To LT-0383	M232-2A / B-2	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52B	
MV-DRW619E	Seal Pot To LT-0383	M232-2A / C-2	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52B	
MV-DRW619F	Seal Pot To LT-0383	M232-2A / C-2	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52B	
MV-DRW619G	Seal Pot To LT-0383	M232-2A / C-2	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52B	
MV-DRW619H	Seal Pot To LT-0383	M232-2A / C-3	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52B	
MV-VA1814E	Sensing Line To LT-0382 Isolation Valve	M232-2A / B-2	B	PASS	2	0.375	GL	H	LO	O	N/A	NTR	NR	RO-032-52A	
MV-VA606A	Sensing Line To LT-0383	M232-2A / B-2	B	PASS	2	0.375	GL	H	LO	O	N/A	NTR	NR	RO-032-52B	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0939	MZ-11 Shield Cooling Surge TK T-62 Inlet Isolation	M221-1 / D-2	A	ACT	2	1.5	GL	AO	O	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-11	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
MV-ES3163	SHUTDOWN COOLING CROSSOVER FROM LP INJECT	M204-1 / E-1	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3205	TEMPORARY CONNECTION FOR SFP COOLING	M204-1 / C-2	B	PASS	2	8	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3214	SHUTDOWN COOLING TO SPENT FUEL POOL	M204-1 / E-7	B	PASS	2	8	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP105	RECIRC BSTR PP P-82 SUCT FROM SFP SKIMMERS	M221-2 / B-4	B	PASS	3	4	GA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP109	SFP FILTER F-50 INLET	M221-2 / F-4	B	PASS	3	3	GA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP110	SFP FILTER F-50 OUTLET	M221-2 / E-4	B	PASS	3	3	GL	H	C	C	N/A	NTR	NR	NTR	
MV-SFP117	MZ-72 Reactor Cavity Drain & Recirc Inlet	M221-2 / C-2	A	PASS	2	8	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-72	
MV-SFP118	MZ-72 Reactor Cavity Drain & Recirc Outlet	M221-2 / C-4	A	PASS	2	8	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-72	
MV-SFP119	Spent Fuel Pool Supply to Reactor Cavity Isolation Valve	M221-2 / E-6	B	PASS	3	6	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP120	MZ-64 Reactor Cavity Fill & Recirc Inlet	M221-2 / D-2	A	PASS	2	6	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-64	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-SFP121	MZ-64 Reactor Cavity Fill & Recirc Outet	M221-2 / D-2	A	PASS	2	6	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-64	
MV-SFP122	SFP DEMIN T-50 OUTLET TO REACTOR CAVITY	M221-2 / D-6	B	PASS	3	3	BA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP123	SIRW Tank Supply to Fuel Tilt Mechanism Pit Isolation Valve	M221-2 / C-5	B	PASS	3	6	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP124	Spent Fuel Pool Supply To Fuel Tilt Mechanism Pit Manual Valve	M221-2 / C-4	B	PASS	3	4	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP126	Spent Fuel Pool Return To SIRW Tank Manual Valve	M221-2 / C-6	B	PASS	2	6	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP127	SFP DEMIN T-50 OUTLET TO SIRWT T-58	M221-2 / C-7	B	PASS	2	3	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP129	Spent Fuel Pool Supply To Fuel Storage North Pit Manual Valve	M221-2 / C-4	B	PASS	3	4	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP130	Spent Fuel Pool Heat Exchanger Bypass Manual Valve	M221-2 / C-4	B	PASS	3	4	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP131	Spent Fuel Pool/Shutdown Cooling System Suction Isolation Valve	M221-2 / A-4	B	PASS	3	8	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP132	Spent Fuel Pool/Shutdown Cooling System Return Isolation Valve	M221-2 / F-6	B	PASS	3	8	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP133	Fire Protection Supply to Spent Fuel Pool Isolation Valve	M221-2 / F-6	B	PASS	3	6	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP135	SFP DEMIN T-50 OUTLET TO REACTOR CAVITY	M221-2 / E-2	B	PASS	3	3	BA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP136	SFP DEMIN T-50 RESIN INLET	M221-2 / F-2	B	PASS	3	3	BA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP140	SIRWT T-58 TO T-90 TRANSFER HOSE CONN ISOL	M221-2 / E-5	B	PASS	3	2	GL	H	C	C	N/A	NTR	NR	NTR	
CK-SFP403	SERVICE AIR TO FUEL POOL DEMIN T-50	M221-2 / E-2	C	ACT	3	1	CK	SA	O/C	C	N/A	DIS	CM	CMJ-SFP-C-01	CMJ-SFP-C-01

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-SFP514	CONTAINMENT PENETRATION MZ-64 TEST TAP	M221-2 / D-2	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP515	CONTAINMENT PENETRATION MZ-72 TEST TAP	M221-2 / C-2	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-SFP516	SFP DEMINERALIZER T-50 DRAIN	M221-2 / E-2	B	PASS	3	2	GL	H	C	C	N/A	NTR	NR	NTR	
MV-SFP517	SFP DEMINERALIZER T-50 VENT	M221-2 / F-3	B	PASS	3	1.5	GL	H	C	C	N/A	NTR	NR	NTR	
MV-SFP518	T-50 OUTLET WYE STRAINER YS-2101 DRAIN	M221-2 / E-3	B	PASS	3		BA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP532	SFP RECIRC BOOSTER PP P-82 SUCTION VENT	M221-2 / F-5	B	PASS	3	0.5	GA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP533	SIRWT TO SFP SPOOL PIECE RSP-SFP2100 DRAIN	M221-2 / C-5	B	PASS	3	2	GA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP601	P-51A DISCH PRESS TAP PX-2120 ISOLATION	M221-2 / B-5	B	PASS	3	0.75	BA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP602	P-51B DISCH PRESS TAP PX-2121 ISOLATION	M221-2 / B-5	B	PASS	3	0.75	BA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP606	P-51B DISCHARGE SAMPLE SX-2121 ISOLATION	M221-2 / C-6	B	PASS	3	0.75	BA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP613	F-50 OUTLET SAMPLE SX-2102 ISOLATION	M221-2 / D-4	B	PASS	3		GA	H	C	C	N/A	NTR	NR	NTR	
MV-SFP617	T-50 OUTLET SAMPLE SX-2103 ROOT	M221-2 / D-3	B	PASS	3		GL	H	C	C	N/A	NTR	NR	NTR	
MV-ES3348A	SIT DRAIN LINE TEST CONN (MZ-33)	M204-1 / G-8	B	PASS	NC	1	BA	H	LC	C	N/A	NTR	NR	NTR	
MV-ES3271	T-58 RECIRC PUMP P-74 DISCH TO RADWASTE	M204-1B / D-2	B	PASS	2	3	GA	H	LC	C	N/A	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0821	CCW Heat Exchanger E-54A Temperature Control Valve	M208-1A / B-7	B	ACT	3	4	GL	AO	O	C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-0822	CCW Heat Exchanger E-54B Temperature Control Valve	M208-1A / A-7	B	ACT	3	4	GL	AO	O	C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-0823	CCW Heat Exchanger E-54A Service Water Outlet	M208-1A / B-7	B	ACT	3	16	BF	AO	C	O	O	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0824	Containment Air Coolers Service WTR Return	M208-1B / D-3,4	A	ACT	2	16	BF	AO	ELO	O/C	O	RPI	2Y	QO-06	
												ETC	Q	QO-06	
												ETO	Q	QO-06	
												FSO	Q	QO-06	
												STC	Q	QO-06	
												STO	Q	QO-06	
CV-0825	East ESG Room Cooler Service Water Inlet (VHX-27A)	M208-1A / E-6	B	PASS	3	3	GA	AO	ELO	O	O	RPI	2Y	QO-06	
CV-0826	CCW Heat Exchanger E-54B Service Water Outlet	M208-1A / A-7	B	ACT	3	16	BF	AO	C	O	O	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STO	Q	QO-05	
CV-0844	Critical Header B Isolation	M208-1A / G-4	B	PASS	3	24	BF	AO	O	O	O	RPI	2Y	QO-06	
CV-0845	Critical Header A Isolation	M208-1A / F-5	B	PASS	3	24	BF	AO	O	O	O	RPI	2Y	QO-06	
CV-0846	Critical Header A & B Cross-Tie	M208-1A / A-5	B	PASS	3	24	BF	AO	O	O	O	RPI	2Y	QO-06	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0847	Containment Air Coolers Service Water Supply	M208-1B / C-2	A	ACT	2	16	BF	AO	ELO	O/C	O	RPI	2Y	QO-06	
												ETC	Q	QO-06	
												ETO	Q	QO-06	
												FSO	Q	QO-06	
												STC	Q	QO-06	
												STO	Q	QO-06	
CV-0857	Critical Header A & B Cross-Tie	M208-1A / A,B-4,5	B	PASS	3	24	BF	AO	O	O	O	RPI	2Y	QO-06	
CV-0861	Containment Air Cooler VHX-1 Service Water Outlet	M208-1B / F-5	B	ACT	3	8	BF	AO	O/C	O	O	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STO	Q	QO-05	
CV-0862	Containment Air Cooler VHX-1 Service Water Inlet	M208-1B / E-6	B	PASS	3	8	BF	AO	ELO	O	O	RPI	2Y	QO-05	
CV-0864	Containment Air Cooler VHX-2 Service Water Outlet	M208-1B / A-5	B	ACT	3	8	BF	AO	O/C	O	O	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STO	Q	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0865	Containment Air Cooler VHX-2 Service Water Inlet	M208-1B / C-6	B	PASS	3	8	BF	AO	ELO	O	O	RPI	2Y	QO-05	
CV-0867	Containment Air Cooler VHX-4 Service Water Outlet	M208-1B / F-7	B	ACT	3	8	BF	AO	O/C	O	O	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STO	Q	QO-05	
CV-0869	Containment Air Cooler VHX-4 Service Water Inlet	M208-1B / D-7	B	ACT	3	8	BF	AO	O	C	C	RPI	2Y	QO-05	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-0870	Containment Air Cooler VHX-3 Service Water Inlet	M208-1B / D-7	B	PASS	3	8	BF	AO	ELO	O	O	RPI	2Y	QO-05	
CV-0873	Containment Air Cooler VHX-3 Service Water Outlet	M208-1B / B-7	B	ACT	3	8	BF	AO	O/C	O	O	RPI	2Y	QO-05	
												ETO	Q	QO-05	
												FSO	Q	QO-05	
												STO	Q	QO-05	
CV-0876	Diesel Generator 1 & 2 and VC-10 Cooling Supply	M208-1A / F-4	B	PASS	3	6	BF	AO	O	O	O	RPI	2Y	QO-05	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-0877	Diesel Generator 1 & 2 and VC-11 Cooling Supply	M208-1A / F-4	B	PASS	3	6	BF	AO	O	O	O	RPI	2Y	QO-05	
CV-0878	West ESG Room Cooler Service Water Inlet (VHX-27B)	M208-1A / C-5	B	PASS	3	3	GA	AO	ELO	O	O	RPI	2Y	QO-06	
CV-0879	ESS Pump Seal Cooling Alternate Service Water Supply	M208-1A / E-4	B	PASS	3	4	GL	AO	C	C	C	RPI	2Y	QO-06	
CV-0880	ESS Pump Seal Cooling Alternate Service Water Supply	M208-1A / D-6	B	PASS	3	4	GL	AO	C	C	C	RPI	2Y	QO-06	
CV-1318	Service Water Header Isolation Valve	M213 / G-4	B	PASS	3	24	BF	AO	ELO	O	O	RPI	2Y	QO-06	
CV-1319	Service Water Header Isolation Valve	M213 / G-3	B	PASS	3	24	BF	AO	ELO	O	O	RPI	2Y	QO-06	
CV-1359	Non-Critical Service Water Isolation	M213 / G-5	B	ACT	3	24	BF	AO	O	C	C	RPI	2Y	QO-06	
												ETC	CS	QO-06	CSJ-33 Non-Critical Service Water Isolation Valve
												FSC	CS	QO-06	CSJ-33 Non-Critical Service Water Isolation Valve
												STC	CS	QO-06	CSJ-33 Non-Critical Service Water Isolation Valve
MV-SW118	SPARE TAP	M208-1A / D-4	B	PASS	3	2	GA	H	C	C	N/A	NTR	NR	NTR	
MV-SW385	CONTAINMENT SW RETURN CV-0824 TEST (MZ-13)	M208-1B / D-3	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	NTR	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CK-SW401	Service Water Pump P-7A Discharge Check	M213 / F-4	C	ACT	3	16	CK	SA	O/C	O/C	N/A	CVC	Q	QO-14	
												CVO	R	RO-144	ROJ-05 Service Water Pmps P-7A,B & C Discharge Checks
CK-SW402	Service Water Pump P-7B Discharge Check	M213 / F-3	C	ACT	3	16	CK	SA	O/C	O/C	N/A	CVC	Q	QO-14	
												CVO	R	RO-144	ROJ-05 Service Water Pmps P-7A,B & C Discharge Checks
CK-SW403	Service Water Pump P-7C Discharge Check	M213 / F-2	C	ACT	3	16	CK	SA	O/C	O/C	N/A	CVC	Q	QO-14	
												CVO	R	RO-144	ROJ-05 Service Water Pmps P-7A,B & C Discharge Checks
CK-SW410	Containment Air Cooler VHX-4 Outlet	M208-1B / F-7	C	ACT	3	8	CK	SA	O	O/C	N/A	CVC	CM	CMJ-SWS-S-02	CMJ-SWS-S-02
												CVO	CM	CMJ-SWS-S-02	CMJ-SWS-S-02
CV-1805	Containment Purge Air Exhaust Valve	M218-2 / D-6	A	PASS	2	8	BF	AO	ELC/O	C	C	RPI	2Y	QO-06	
												LTJ	AppJ	RO-032-01A	
CV-1806	Containment Purge Air Exhaust Valve	M218-2 / D-6	A	PASS	2	8	BF	AO	ELC/O	C	C	RPI	2Y	QO-06	
												LTJ	AppJ	RO-032-01A	
CV-1807	Containment Purge Air Exhaust Valve	M218-2 / D-6	A	PASS	2	8	BF	AO	ELC/O	C	C	RPI	2Y	QO-06	
												LTJ	AppJ	RO-032-01C	
CV-1808	Containment Purge Air Exhaust Valve	M218-2 / D-6	A	PASS	2	8	BF	AO	ELC/O	C	C	RPI	2Y	QO-06	
												LTJ	AppJ	RO-032-01C	

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
CV-1813	Air Space Purge Supply Fan V-46 Discharge Isolation Valve	M218-2 / C-3	A	PASS	2	12	BF	AO	ELC/O	C	C	RPI LTJ	2Y AppJ	QO-06 RO-032-68	
CV-1814	Air Space Purge Supply Fan V-46 Discharge Isolation Valve	M218-2 / B-3	A	PASS	2	12	BF	AO	ELC/O	C	C	RPI LTJ	2Y AppJ	QO-06 RO-032-68	
MV-VA-L-6	ILRT Instrument Line Isolation Valve	M218-2 / F-1	A	PASS	2	1	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-66	
MO-P1	ILRT Fill Line Test Header Isolation	M218-2 / E-1	A	PASS	2	6	BF	MO	ELC	C	FAI	LTJ	AppJ	RO-032-27	
MV-VA-P6	PENETRATION MZ-50 ESCAPE LOCK TEST TAP	M232-2 / E-6	B	PASS	2	1	BA	H	LC	C	N/A	NTR	NR	NTR	
MV-VA603	PENET MZ-66 ILRT INSTRUMENT LINE TEST	M218-2 / F-1	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	RO-032-66	
MV-VA100	Purge Air Exhaust Isolation Valve	M218-2 / D-5	A	PASS	2	4	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-01B	
MV-VA101	Purge Air Exhaust Isolation Valve	M218-2 / D-5	A	PASS	2	4	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-01B	
MV-VA1801B	PS-1801 Test & Calibration Valve	M218-2 / E-4	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-48	
MV-VA1801C	PS-1801A Test & Calibration Valve	M218-2 / F-4	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-48	
MV-VA1802B	PS-1802 Test & Calibration Valve	M218-2 / G-5	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-17	
MV-VA1802C	PS-1802A Test & Calibration Valve	M218-2 / G-4	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-17	
MV-VA1803B	PS-1803 Test & Calibration Valve	M218-2 / E-5	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-48	
MV-VA1803C	PS-1803A Test & Calibration Valve	M218-2 / F-4	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-48	
MV-VA1804B	PS-1804 Test & Calibration Valve	M218-2 / G-4	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-17	
MV-VA1804C	PS-1804A Test & Calibration Valve	M218-2 / G-4	A	PASS	2	0.5	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-17	

Valve Summary Listing

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-VA1805A	PT-1805 Test & Calibration Valve	M218-2 / E-4	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-48	
MV-VA1805C	PT-1805A Test & Calibration Valve	M218-2 / E-4	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-48	
MV-VA1812A	PT-1812 Test & Calibration Valve	M218-2 / G-5	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-17	
MV-VA1812C	PT-1812 Test & Calibration Valve	M218-2 / G-4	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-17	
MV-VA1814A	PT-1814 Test & Calibration Valve	M218-2 / F-4	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-17	
MV-VA1814B	Test & Calibration Tap Isolation Valve	M218-2 / H-5	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-17	
MV-VA1814F	Test Connection to LT-0382	M232-2A / B-1	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52A	
MV-VA1814G	Test Connection to LT-0382	M232-2A / B-1	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52A	
MV-VA1815A	PS-1815 Test & Calibration Valve	M218-2 / F-5	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-48	
MV-VA1815B	Test & Calibration Tap Isolation Valve	M218-2 / F-5	A	PASS	2	0.5	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-48	
MV-VA505	CONT PURGE SUPPLY TEST CONN (MZ-68)	M218-2 / C-2	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-VA506	CONT PURGE EXHAUST TEST CONN (MZ-1A)	M218-2 / D-6	B	PASS	2	1	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-VA507	PENETRATION MZ-1B PURGE AIR EXHAUST TEST	M218-2 / D-5	B	PASS	2	0.5	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-VA508	CONT PURGE EXHAUST TEST CONN (MZ-1C)	M218-2 / D-6	B	PASS	2	1	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-VA532	PERSONNEL AIRLOCK MZ-19 INNER DOOR TEST	M232-1 / G-2	B	PASS	2	0.25	BA	H	LC	C	N/A	NTR	NR	NTR	
MV-VA533	Personnel Airlock MZ-19 Test Valve	M232-1 / G-2	B	PASS	2	0.75	GA	H	LC	C	N/A	NTR	NR	NTR	
MV-VA601	ILRT Instrument Line Isolation Inside Containment	M218-2 / F-2	A	PASS	2	1.5	GA	H	LC	C	N/A	LTJ	AppJ	RO-032-66	
MV-VA602	PENET MZ-66 ILRT INSTRUMENT LINE TEST	M218-2 / F-1	B	PASS	2	1.5	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-VA603	ILRT Instrument Line Test Valve	M218-2 / F-1	B	PASS	2	1.5	GA	H	LC	C	N/A	NTR	NR	RO-032-66	

Valve Summary Listing

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-VA604	PEN MZ-27 TEST VALVE (LOCKED CLOSED)	M218-2 / E-1	B	PASS	2		GA	H	LC	C	N/A	NTR	NR	NTR	
MV-VA606B	Test Connection to LT-0383	M232-2A / B-2	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52B	
MV-VA606C	Test Connection to LT-0383	M232-2A / B-2	A	PASS	2	0.375	GL	H	LC	C	N/A	LTJ	AppJ	RO-032-52B	
CV-1101	Waste Gas Surge Tank Inlet Vent Header Valve	M211-2 / G-7	A	ACT	2	4	GL	AO	O/C	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-46	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
CV-1102	Waste Gas Surge Tank Inlet Vent Header Valve	M211-2 / G-6	A	ACT	2	4	GL	AO	O/C	C	C	RPI	2Y	QO-05	
												LTJ	AppJ	RO-032-46	
												ETC	Q	QO-05	
												FSC	Q	QO-05	
												STC	Q	QO-05	
MV-WG511	Waste Surge Tank Inlet Vent Header Manual Test Valve	M211-2 / F-6	B	PASS	2	1	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-WG530A	CONT H2 MONITOR SUPPLY PENETR MZ-40B TEST	M224-2 / C-7	B	PASS	2	0.5	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-WG530B	CONT H2 MONITOR RETURN PENETR MZ-40A TEST	M224-2 / D-7	B	PASS	2	0.5	GL	H	LC	C	N/A	NTR	NR	NTR	

Valve Summary Listing

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VALVE ID	FUNCTION	DRAWING/COOR	CAT	ACT/ PASS	CLASS	SIZE	TYPE	ACT	POSITION			TEST REQ	FREQ	PROCEDURE	NOTES
									NORM	SAFE	FAIL				
MV-WG531A	CONT H2 MONITOR SUPPLY PENETR MZ-21A TEST	M224-2 / F-7	B	PASS	2	0.5	GL	H	LC	C	N/A	NTR	NR	NTR	
MV-WG531B	CONT H2 MONITOR RETURN PENETR MZ-21 TEST	M224-2 / G-7	B	PASS	2	0.5	GL	H	LC	C	N/A	NTR	NR	NTR	

Palisades Nuclear Plant
Inservice Testing (IST) Program Plan

Fifth Ten-Year Interval

Section 3.0

SEP-CV-PLP-002

Check Valve Condition Monitoring
And
Inservice Testing Program

(45 pages follow)

CHECK VALVE CONDITION MONITORING AND INSERVICE TESTING PROGRAM

ENGINEERING NUCLEAR ENGINEERING PROGRAMS

APPLICABLE SITES

All Sites: ☐

Specific Sites: ANO ☐ GGNS ☐ IPEC ☐ JAF ☐ PLP ☒ PNPS ☐ RBS ☐ VY ☐ W3 ☐ HQN ☐

Safety Related: ☒ **Yes** ☐ **No**

Program Section Revision Summary	
Current Revision	**Description of Change**
3	Revised the Program Section to reflect the 10 year code update from The ASME OM Code 2001 Edition through 2003 Addenda to the 2004 Edition through the 2006 Addenda.
1	Current: Revision 2 issued in order to reflect the cancellation of RT-122. Previous: Revision 1 issued in order to reflect INPO's change from the EPIX and the Nuclear Network to INPO Consolidated Event System (ICES). Revision 0 Transitioned from Palisades Engineering Manual EM-09-18, Revision 7, "CHECK VALVE CONDITION MONITORING AND INSERVICE TESTING PROGRAM".

REFERENCE USE
• **Procedure and Procedure Precautions and Limitations are at the work location for reference.** • **Review and understand segments before performing any steps.** • **Signoff steps are completed, when included, before starting the next step.** • **Place keep in accordance with EN-HU-102, "Human Performance Tools."** • **Review the Procedure to verify segments have been completed.**

Program Section Title: CHECK VALVE CONDITION MONITORING AND INSERVICE TESTING PROGRAM	
Prepared By: G Katt G a Katt	**Date:** 3/15/16
Checked By: R White Robert A White	**Date:** 3-15-16
Reviewed By: (Optional)	**Date:**
ANII: N/A **(Reviewed By or N/A)**	**Date:** N/A
Concurred: JM Jerz **Responsible Supervisor**	**Date:** 3/15/16

SECTION	PAGE NO.	REVISION
Main Body	All	3
Attachment 1	All	3
Attachment 2	All	3
Attachment 3	All	3
Attachment 4	All	3
Attachment 5	All	3
Attachment 6	All	3

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ATTACHMENTS

1.0 PURPOSE

1.1 To describe how the Palisades Check Valve Condition Monitoring (CM) Program satisfies the regulatory requirements of Title 10 of the Code of Federal Regulations, Part 50, Section 55a (10 CFR 50.55a, "Codes and Standards") and Technical Specifications ADMIN 5.5.7.

1.2 This procedure establishes the requirements for implementing and maintaining a Check Valve Condition Monitoring Program per the Code for Operations and Maintenance of Nuclear Power Plants, 2004 Edition with Addenda through 2006, Appendix II, "Check Valve Condition Monitoring Program."

1.3 This procedure identifies regulatory, code, and guidance documents that provide specific requirements (including scope, categorization, type and methods of testing, acceptance criteria, corrective actions, and documentation) and guidance (including grouping valves, nonintrusive testing techniques, and requests for regulatory relief) for the CM Program.

1.4 To outline the process of scheduling tests, testing valves, evaluating test results, taking corrective actions, trending test results, and documenting valve information pertinent to the Palisades CM Program.

2.0 SCOPE

2.1 This procedure is developed to the requirements (with exception of the relief requests) of 10 CFR 50.55a which incorporates by reference the Code for Operations and Maintenance of Nuclear Power Plants, 2004 Edition with Addenda through 2006, otherwise identified in this procedure as the Code.

The requirements of these regulations and codes became effective on March 24, 2016, which is the beginning date of the 5th Inservice Test Interval. They will remain in effect through Palisades' fifth 120-month interval ending March 23, 2026.

2.2 This procedure applies to ASME Class 1, 2, and 3 check valves as specified in 10 CFR 50.55a and in Technical Specifications ADMIN 5.5.7. The Code of Federal Regulation (10 CFR 50.55a(f)(4)) requires valves that are classified as ASME Code Class 1, 2, and 3 to be tested in accordance with the Code.

2.3 This procedure may be applicable to Non-Class valves, including:

a. Certain check valves that are outside the scope of the Code but have Technical Specifications Surveillance Testing Requirements.

b. Certain check valves that are outside the scope of the Code but have a specific function in shutting down the reactor to Technical Specification Mode 5 or in mitigating the consequences of an accident.

c. Certain check valves that are outside the scope of the Code, but are deemed important to test.

d. Certain check valves that are outside of the Code, but are tested in accordance with commitments Palisades has made with the NRC.

2.4 The test requirements for all other ASME Class 1, 2, or 3 valves are described in SEP-PLP-IST-101, "Inservice Test of Plant Valves." Reference SEP-PLP-IST-101 for a description of the relationships between codes and standards, the code of federal regulation, technical specification, condition monitoring, inservice testing and plant implementing procedures.

2.5 When requirements of the Code and Technical Specifications conflict, either the Technical Specifications shall be changed, or the provisions of the more stringent program shall be followed.

2.6 Program Section SEP-ISI-PLP-002, "ASME Code Boundaries for ASME Section XI Inservice Inspection Program", provides the ASME boundary classifications for valves, and references the Color Coded P&IDs as a visible means of identifying what we have committed to as the plant Code Boundaries.

2.7 Plant check valves that are in scope are identified in the Iddeal Concepts Software Suite®.

2.8 Per Subsection ISTC-1200 of the OM Code, the following are excluded from the IST Program requirements provided that they are not required to perform a specific safety function:

a. Valves used only for operating convenience, such as vent, drain, and instrument and test valves.

b. Valves used only for system control, such as, pressure regulating, temperature control and flow control and without a safety related fail safe function.

c. Valves used only for system or component maintenance.

d. Skid mounted equipment adequately tested during testing of the larger skid components.

3.0 REFERENCES

3.1 SOURCE DOCUMENTS

3.1.1 Technical Specifications SR 3.0.1, SR 3.0.2, SR 3.0.3, SR 3.0.4, SR 3.3.7.2

3.1.2 Technical Specifications ADMIN 5.5.7

3.1.3 Technical Specifications Bases Table B 3.4.14-1

3.1.4 Final Safety Analysis Report - 6.9.2.2

3.1.5 Entergy Quality Assurance Program Manual (QAPM)

3.1.6 Code of Federal Regulations Title 10, Part 50, Section 55a (10 CFR 50.55a), "Codes and Standards"

3.1.7 Code of Federal Regulations Title 10, Part 50 (10 CFR 50), Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Reactors"

3.1.8 ASME OM Code 2004 Edition with Addenda Through 2006, Operations and Maintenance of Nuclear Power Plants, Subsection ISTA, ISTC and Appendix II, "Check Valve Condition Monitoring"

3.1.9 USNRC NUREGs, Generic Letters, Information Notices, and IE Bulletins

a. Generic Letter 87-06, "Periodic Verification of Leak Tight Integrity of Pressure Isolation Valves" (3621/1538)

b. Information Notice 88-70, "Check Valve Inservice Testing Program Deficiencies" (C/F - 3758/1494)

c. Nuclear Energy Institute (NEI) White Paper entitled, "Standard Format for Requests from Commercial Reactor Licensees Pursuant to 10 CFR 50.55a, Revision 1," dated June 7, 2004 (ADAMS Accession No. ML070100400)

d. Information Notice 2000-21, "Detached Check Valve Disc Not Detected By Use of Acoustic and Magnetic Nonintrusive Test Techniques"

e. Memorandum: Summary of Public Workshops Held in NRC Regions on Inspection Procedure 73756, "Inservice Testing of Pumps and Valves," and Answers to Panel Questions on Inservice Testing Issues, Joseph Colaccino, July 18, 1997

3.1.10 Miscellaneous Correspondence

a. NRC Order dated April 20, 1981 regarding Event V PIVs (C/F - 9018/1126)

3.1.11 Other Codes, Standards, and Guides

a. ANSI/ANSI 51.1, 1983, "American National Standard Nuclear Safety Criteria for the Design of Stationary Pressurized Water Reactor Plants"

b. Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water, Steam and Radioactive Waste Containing Components of Nuclear Power Plants"

c. ANSI N45.2.6, 1978, "Qualifications of Inspection, Examination and Testing Personnel for Nuclear Power Plants"

d. ANSI N18.7, "Administrative Controls and Quality Assurance for Operational Phase of Nuclear Power Plants"

3.1.12 Plant Equipment Data Base (EDB)

3.1.13 Plant Piping and Instrument Diagrams (P&IDs)

3.2 REFERENCE DOCUMENTS

3.2.1 Final Safety Analysis Report - 5.1.6.6 and 6.9.2.2

3.2.2 Palisades Administrative Procedures:

a. 3.19, "Technical Specifications Programs"

b. 5.19, "Post Maintenance Testing"

c. 9.20, "Technical Specification Surveillance and Special Test Program"

d. 10.51, "Writer's Guideline for Site Procedures"

3.2.3 Engineering Procedures

a. SEP-PLP-IST-101, "Inservice Testing of Plant Valves"

b. SEP-ISI-PLP-001, "Inservice Inspection"

c. SEP-CV-PLP-001, "Check Valve Program"

d. EN-DC-334, "Primary Containment Leakage Rate Testing (Appendix J)"

e. SEP-ISI-PLP-002, "ASME Code Boundaries for ASME Section XI Inservice Inspection Program"

3.2.4 Permanent Maintenance Procedures

a. MSI-I-14, "Nonintrusive Diagnostic Check Valve Test Procedure"

b. MSI-I-16, "Nonintrusive Diagnostic Valve Test Procedure (Using Viper/UDS Platform)"

3.2.5 Technical Specification Surveillance Procedures

a. QO-6, "Cold Shutdown Valve Test Procedure (Includes Containment Isolation Valves)"

b. QO-8B, "LPSI Check Valve Operability Test and LPSI Motor Operated Valve Open Stop Verification Test (Modes 5 and 6)"

c. XO-11, "Containment Isolation Check Valve Test"

d. QO-14, "Inservice Test Procedure - Service Water Pumps"

e. QO-15, "Inservice Test Procedure - Component Cooling Water Pumps"

f. QO-16, "Inservice Test Procedure - Containment Spray Pumps"

g. QO-19, "Inservice Test Procedure - HPSI Pumps and ESS Check Valve Operability Test"

h. QO-20, "Inservice Test Procedure - Low Pressure Safety Injection Pumps"

i. QO-21, "Inservice Test Procedure, Auxiliary Feedwater Pumps"

j. QO-24, "Verify Closure of Main Feedwater Check Valves"

k. QO-32, "Closure Verification of HPSI Train 2 and LPSI Injection Check Valves"

l. QO-37, "Main Steam Isolation and Bypass Valve Testing"

m. RI-17, "Main Steam Isolation Valve Circuits Test and Valve Closure Testing"

n. RO-32, "LLRT - Local Leak Rate Test Main Procedure"

o. RO-65, "High Pressure Safety Injection (HPSI) Trains 1 and 2, and Hot Leg Injection (HLI) Check Valve Test and Cold Leg/Hot Leg Flow Balance Test"

p. RO-98, "LPSI and Containment Spray Comprehensive Pump Test and Check Valves Test"

q. RO-105, "Full Flow Test For SIT Check Valves and PCS Loop Check Valves"

r. RO-141, "Containment Sump Check Valves Inservice Test"

s. RO-143, "Nonintrusive Testing of Charging Header Check Valves"

t. RO-144, "Comprehensive Pump Test Procedure Service Water Pumps P-7A, P-7B and P-7C"

u. RO-145, "Comprehensive Pump Test Procedure Auxiliary Feedwater Pumps P-8A, P-8B and P-8C"

v. RO-146, "Comprehensive Pump Test Procedure - Component Cooling Water Pumps P-52A, P-52B and P-52C"

w. RO-147, "Comprehensive Pump Test Procedure - HPSI Pumps P-66A and P-66B and ESS Check Valve Operability Test"

x. RT-71L, "Technical Specification ADMIN 5.5.2 Pressure Test of ESS Pump Suction Piping"

y. SHO-1, "Operator's Shift Items Modes 1, 2, 3, and 4"

z. SO-9, "Primary Coolant System Pressure Isolation Check Valves"

3.2.6 Entergy Procedures

a. EN-DC-131, "Check Valve Maintenance and Monitoring Program"

b. EN-PL-155, "Change Management Policy" (History)

c. EN-OP-104, "Operability Determination Process"

d. EN-WM-100, "Work Request (WR) Generation, Screening and Classification"

e. EN-WM-105, "Planning"

f. EN-DC-324, "Preventive Maintenance Program"

g. EN-AD-103, "Document Control and Records Management Programs"

h. EN-HU-102, "Human Performance Tools"

i. EN-DC-334, "Primary Containment Leakage Rate Testing (Appendix J)"

3.2.7 Other Procedures

a. Preoperational Test Procedure #12, "Engineered Safeguards System and Shutdown Cooling System"

b. Entergy Procedure EN-LI-102, "Corrective Action Process"

3.2.8 Periodic Activities

a. PMID 50083261, "CK-CD407, Nonintrusive Check Valve Test"

b. PMID 50083415, "CK-DMW400, Nonintrusive Check Valve Test"

c. PMID 50080969, "CK-ES3340, Disassemble, Inspect and Repair Check Valve"

d. PMID 50081298, "Exercise CK-SW410 VHX-4 Outlet Check Valve"

3.2.9 Miscellaneous References

a. Facility Change FC-441, Hot Leg Injection (0869/0536 and 9126/0004)

b. Entergy Procedure EN-WM-101, "On-Line Work Management Process"

c. Iddeal Concepts Software Suite®

d. Check Valve Program, "Check Valves at Palisades," (Condition Monitoring database)

e. Nuclear Industry Check (NIC) Valve Group Web Page, www.checkvalve.org

4.0 DEFINITIONS AND RESPONSIBILITIES

4.1 DEFINITIONS

4.1 Additional definitions applicable to valve inservice testing are found in the Code.

4.2 Baseline Test - The initial test of a check valve's safety function, using nonintrusive testing (NIT) techniques that subsequent tests will be assessed against. A Baseline Test shall only be established when/after the check valve is known to be operating acceptably.

4.3 Condition Monitoring Analysis (CMA) – The CMA establishes the basis for specifying inservice testing, examination and preventive maintenance activities for a specific check valve component or check valve group.

4.4 Condition Monitoring Program – The Condition Monitoring Program is an alternative to the check valve inservice testing program described in Subsection ISTC of the OM Code. The purpose of this program is both to improve valve performance and to optimize testing, examination, and preventive maintenance activities in order to maintain the continued acceptable performance of a selected group of check valves.

4.5 Condition Monitoring Program Test Plan – The Condition Monitoring Program Test Plan conforms to the requirements of the OM Code, Appendix II, Paragraph II 6000, "Documentation" and includes the following elements:

a. A list of valves in the program.

b. A list of valves in each valve group.

c. Dates valves were added to or deleted from the program and the reason for their addition or deletion.

d. Analyses forming the basis of the program.

e. Identified failure or maintenance history patterns for each check valve.

f. Condition monitoring program activities, including the trended attributes and the bases for the associated intervals for each valve or valve group.

4.6 IST Coordinator

a. Develops and administers the IST program for Plant valves.

b. Review and trend check valve IST results, notifying the Check Valve Program Engineer of any abnormal or erratic trends with check valves within the scope of SEP-CV-PLP-002, "Check Valve Condition Monitoring and Inservice Testing Program."

c. Ensures the necessary condition monitoring analyses (CMA) reviews and changes are properly performed, approved, and documented.

d. Tracks action plans and activities to completion for the condition monitoring program.

e. Provides Code and regulatory expertise for CMAs performed per this procedure.

4.7 System Engineer

a. Acts as the service manager for assigned system(s).

b. Responsible for the maintenance and operating aspects of tested equipment.

c. Coordinates system activities including maintenance, testing, Appendix J requirements, and monitoring for the CM program.

d. Provides system expertise for CMAs performed, when requested.

4.8 Component Engineer (Check Valves)

a. Reviews the results of inspections, non-intrusive testing and corrective maintenance actions for check valves in the condition monitoring program.

b. Provides technical direction and condition monitoring feedback for the CMAs performed.

c. Provides component expertise for CMAs performed per this procedure.

4.9 CMA Reviews and Approvals

4.9.1 CMA Review Panel generally consists of combination of the following individuals:

a. IST Program Engineer

b. Check Valve Program Engineer

c. System Engineer

d. Operations Representative

e. PSA Group Representative

f. Others at the discretion of the IST Program Engineer

4.9.2 Approvers ensure that an acceptable basis exists to justify the selected testing strategy and that the tests, examinations, and preventive maintenance activities are in keeping with ALARA and industrial safety practices, and that cost savings are optimal.

4.9.3 Approvers ensure that the selected trend parameters or data analysis techniques are adequate to monitor valve condition.

4.10 Technical Specification Surveillance Program Administrator (TSSPA) - responsible to oversee scheduling and administrative performance of the required Technical Specification Surveillance Test.

4.11 Operable Status - For purposes of applying the rules of the Code, during shutdown periods, Palisades has determined "operable status" to mean the following:

a. Per Technical Specifications Section 1.0 Definitions, "a system, subsystem, train, component, or device shall be OPERABLE, or have OPERABILITY, when it is capable of performing its specified functions, and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication, or other auxiliary equipment that are required for system, subsystem, train, component, or device to perform its specified functions are also capable of performing their related support functions."

b. In addition the following requirements apply:

1. Simple valve isolations performed by shutdown checklists do not in themselves cause a system to be inoperable.

2. Where there are requirements for operability, such as the Operating Requirements Manual or Technical Specifications, the system/component shall meet those requirements in order to be considered operable.

3. If it is discovered that a surveillance activity was not performed within its specified frequency, then the requirements of Technical Specifications SR 3.0.3 shall be met.

4. If, during an extended outage, surveillance testing has been suspended, then the requirements of Technical Specifications SR 3.0.4 shall be met.

4.12 Relief Requests - Specific documents requesting exemption from code testing requirement, submitted to the US Nuclear Regulatory Commission (NRC). Upon identification of need, the initial request shall be submitted to the Nuclear Licensing Department who shall review the requests, ensure all questions or comments are adequately resolved, and submit the request for relief for submittal to the NRC. Identification of need is defined as the point in time a corrective action document is initiated or a revision to this procedure is begun. Reference instructions for preparing relief requests contained in SEP-PLP-IST-101, "Inservice Testing of Plant Valves."

4.13 Safety Classification - The classification of a valve as dependent upon its related system and safety-related function. The classifications are determined in accordance with Reg Guide 1.26 and are indicated in Engineering Guideline EGAD-ISI-01, "ASME Code Boundaries for ASME Section XI, Inservice Inspection Program (History)."

4.14 Valve Is Known To Be Operating Acceptably - It is the owner's responsibility to verify that a check valve is operating acceptably before reference values are established, and before or concurrent with Baseline testing. Also, the method(s) used for this verification is the owner's responsibility.

If a check valve is being assigned a new safety function and only NIT technologies are being used for verification of that function, a minimum of two NIT technologies shall be used to verify that a valve is operating acceptably. Based on NRC Information Notice 2000-21, Palisades has determined that it is NOT acceptable to solely use acoustic NIT to establish that "the valve is known to be operating acceptably." One or a combination of the methods shall be used to provide "positive proof" (vs, "reasonable assuredness") that the check valve internals are intact (eg, leak testing, differential pressure, reverse flow, radiography, ultrasonics).

4.15 Abbreviations
CM – Condition Monitoring
PSA – Probabilistic Safety Assessment
CMA – Condition Monitoring Analysis
OCMA – Optimization of Condition Monitoring Activities
PIA – Performance Improvement Activities

4.16 CM Program – Attachment 6, "Appendix II Program Flow Chart," provides a process flow diagram for the CM program (adapted from the OM Part 22 Working Group's attempt at diagramming Appendix II). The CM Program is a process driven by Appendix II, which integrates predictive and preventive maintenance practices, and the current prescriptive test requirements, to monitor check valve condition and improve valve performance and reliability.

5.0 PROCEDURE

5.1 PROGRAM DESCRIPTION

The Palisades Check Valve Condition Monitoring Program is designed to satisfy the requirements of the Code of Federal Regulations 10 CFR 50.55a, "Codes and Standards" and Technical Specifications ADMIN 5.5.7. The requirements for implementing and maintaining a Check Valve Condition Monitoring Program per the OM Code 2004 Edition with Addenda through 2006, Appendix II, "Check Valve Condition Monitoring Program" are contained in this section.

SEP-CV-PLP-002 does not apply to other valves in the IST Program such as power operated, relief, and etcetera.

5.2 REGULATIONS AND CODES

5.2.1 10 CFR 50.55a, "Codes and Standards"

This procedure applies to ASME Class 1, 2, and 3 check valves as specified in 10 CFR 50.55a and in Technical Specifications ADMIN 5.5.7. The Code of Federal Regulation (10 CFR 50.55a(f)(4)) requires valves that are classified as ASME Code Class 1, 2, and 3 to be tested in accordance with the Code.

The Code of Federal Regulations (CFR) is a "living document" that is revised on a periodic basis. The current Palisades Check Valve Condition Monitoring Program is established based on the edition in place as of March 2015. Title 10 of the Code of Federal Regulations, Part 50, Section 55a, requires that each licensee of a nuclear power facility have a program as described in paragraph (f), (ie, 10 CFR 50.55a(f)).

5.2.2 Code of Federal Regulation 10CFR50.55a(b)(3)(iv) Modifications to Appendix II, "Check Valve Condition Monitoring Program"

None

5.2.3 ASME/ANSI Code for Operation and Maintenance of Nuclear Power Plants

The ASME/ANSI OM Code is also a "living document" that is revised on a periodic basis. The OM Code also has addenda that are approved on a more frequent interval and editions that incorporate desired addenda, updated on a less frequent interval.

The current Palisades Check Condition Monitoring Program is established based on ASME OM Code 2004 Edition with Addenda through 2006, Operations and Maintenance of Nuclear Power Plants, Subsection ISTC, "Inservice Testing of Valves in Light Water Reactor Power Plants." Subsection ISTC, allows as an alternative, a check valve test program in accordance with Appendix II, "Check Valve Condition Monitoring Program."

5.2.4 ASME OM Code Interpretations

Presently, there are no ASME OM Code interpretations used in the valve inservice test program. In the case where interpretations are incorporated, they will be discussed in the applicable section of this procedure.

In some cases ASME has issued interpretations to clarify the requirements or the intent of Code specifications. Interpretations provide valuable direction for implementation of an inspection program.

5.2.5 Technical Position Statements

In some cases, items such as Code rules and interpretations, 10 CFR 50 rules and industry standards are subject to interpretation and, therefore, require further clarification on their implementation and use. Position statements and clarifications developed for the program will be included in the applicable sections.

5.2.6 Regulation and Code Updates

Requirements within the Code of Federal Regulations change as revisions occur. However, the new requirements may not be effective immediately upon the revision date; certain amounts of time are usually allowed to implement new requirements.

10 CFR 50.55a(f)(4) requires licensees to update their CM testing program every 120 months. The program is to be updated to include the requirements of the *latest* test Code, approved for incorporation by reference by the Director of the Federal Register, in 10 CFR 50.55a(b)(3), including limitations and modifications. The *latest* test Code is the Code that is referenced in 10 CFR 50.55a(b)(3) twelve (12) months before the start of the licensees next 120 month interval (reference 10 CFR 50.55a(f)(4)(ii)).

The Palisades Plant CM Program Code of record will be in effect through the fifth 120-month interval (March 2016 through March 2026) and will be updated in accordance with 10 CFR 50.55a (f).

5.2.7 Relief Requests

If Code requirements cannot be met, then a Relief Request shall be submitted for approval to the NRC in accordance with SEP-PLP-IST-101, "Inservice Testing of Plant Valves." NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives" and Nuclear Energy Institute (NEI) White Paper entitled, "Standard Format for Requests from Commercial Reactor Licensees Pursuant to 10 CFR 50.55a, Revision 1," dated June 7, 2004 (ADAMS Accession No. ML070100400)

5.3 PLANT PROCEDURES

5.3.1 Related Procedures and Specifications

The following documents require a check valve test program:

a. Technical Specifications, ADMIN 5.5.7, "Inservice Testing Program"

b. Palisades Administrative Procedure 3.19, "Technical Specifications Programs"

5.3.2 Procedure Development

There are numerous plant procedures used to administer and implement the CM program. These procedures are developed and revised in accordance with the following:

a. Palisades Administrative Procedure 10.41, "Site Procedure and Policy Processes"

b. Palisades Administrative Procedure 10.51, "Writer's Guideline for Site Procedures"

c. Palisades Administrative Procedure 9.20, "Technical Specification Surveillance and Special Test Program"

5.3.3 Check Valve Testing Program Procedures

a. The primary procedure governing the valve IST program is:

- SEP-PLP-IST-101, "Inservice Testing of Plant Valves"

b. The primary procedure governing the condition monitoring and inservice testing of check valves is:

- SEP-CV-PLP-002, "Check Valve Condition Monitoring and Inservice Testing Program"

c. The primary tool used to hold relevant information, trend data and provide reports on an as needed basis, is the Iddeal Concepts Software Suite®.

5.3.4 Check Valve Implementing Procedures and Processes

Valves in the scope of the inservice testing program are tested under one of the following:

a. Technical Specification Surveillance Procedure

b. Departmental Procedure (eg, Operations, Maintenance, etc)

c. Maintenance Work Order

d. PM Activities

e. Operations Log

5.4 CATEGORIZATION OF CHECK VALVES

In accordance with the ASME Code for Operation and Maintenance of Nuclear Power Plants (ASME OM, Subsection ISTC-1300), check valves within the scope shall be placed in one or both of the following categories. When more than one distinguishing category characteristic is applicable, all requirements of each of the individual categories are applicable, although duplication or repetition of common testing requirements is not necessary.

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

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

The categorization of each check valve in scope to the CM program is contained in the Iddeal Concepts Software Suite®.

5.5 APPENDIX II, CONDITION MONITORING (CM) REQUIREMENTS

5.5.1 CM Check Valve Groupings

a. The technical justification for each check valve grouping will be maintained as part of the Check Valve Program. The following requirements apply and must be documented for each grouping. Use the guidance from Attachment 4, "Condition Monitoring Analysis Form," and enter the data into the Check Valve Program Microsoft Access database.

1. Type of activity of the condition monitoring program in regards to performance improvement or optimization of testing, examination, and preventive maintenance activities.

2. Stated reason for analysis.

3. List of applicable references used in the analysis.

4. Analysis of test, maintenance and modification activities.

5. Valve manufacturer, size, materials, orientation, design, application and service conditions of the group.

6. Any other bases for the grouping, such as, potential flow instabilities, degree of required disassembly and the need for tolerance or critical dimension checks.

b. See Section 5.6.2 for related criteria for check valve grouping.

5.5.2 Analysis of CM Test and Maintenance Activities

An evaluation of test and maintenance histories of a valve or group of valves to establish the basis for specifying the inservice testing, examination, and preventive maintenance activities will be performed. Use the format and guidance of Attachment 4, "Condition Monitoring Analysis Form," and enter the data into the Check Valve Program Microsoft Access database. The analysis shall include the following as a minimum:

a. Identification of any common failure or maintenance patterns using available plant and industry data sources such as Nuclear Industry Check Valve Group's failure data templates of specific valve vendors, INPO's general database of reported failures, work order history, previous corrective actions, etc.

b. Evaluation of these patterns to determine their significance and potential failure mechanisms. This analysis will include the following, as a minimum:

1. A determination and justification if preventive maintenance activities would mitigate the identified failure mechanism(s) or pattern(s).

2. A determination and justification if condition monitoring tests which are feasible and that would effectively detect and monitor the identified failure mechanism(s).

3. A decision and justification on whether or not periodic disassembly and examination activities would be effective in monitoring for the identified failure mechanism(s).

4. A decision and justification on whether or not changes in the valve groupings are needed; this is required for both the initial group selection, and for the established group continuation.

c. If this analysis is sufficient (data and justification exists to establish the initial IST intervals for condition monitoring activities), then the activities of Step 5.5.3a must be performed. If this analysis is not sufficient (data and justification are not currently available to complete this analysis), or is inconclusive, or if the basis lacks technical justification, then Step 5.5.3b must be preformed for CM program check valves.

5.5.3 CM Activities

a. Optimization of CM Activities

1. Identify the applicable preventive maintenance activities including their associated intervals that are required to maintain the continued acceptable performance of the check valve or group of check valves.

2. Identify the applicable examination activities including their associated intervals that will be used to periodically assess the condition of each check valve or group of check valves.

3. Identify the applicable test activities including their associated intervals that will be used to periodically assess the condition of each check valve or group of check valves.

4. Identify which of these activities will be performed and the interval for each activity selected for each valve in the group.

5. Based on the guidance contained in Table II-4000-1, of Appendix II, the base interval for any single, regardless of group size, shall not exceed 10 years, except to accommodate schedule extension allowed by subparagraph 6 below.

6. The maximum examination / test interval is dependent upon the number of check valves in the specific CM Group. The maximum interval is provided in Table II-4000-1 of Appendix II. Table II-4000-1 specifies a maximum interval of 10 years regardless of Group size.

Table II-4000-1, Maximum Intervals for Use When Applying Interval Extensions

Group Size	Maximum Interval (Note [1]), Years
≥ 4	16
3	12
2	12
1	10

Note
(1) The maximum interval was determined by how many interval extensions could be obtained based on an 18-month or 24-month fuel cycle. All of the valves had to be tested or examined within the maximum interval to be considered a valid extension.

7. CMA changes based on optimization of condition monitoring activities should be documented in the "Test / Monitoring Activities Review" section of Attachment 4, "Condition Monitoring Analysis Form."

Complete or revise the test plan to document the optimized condition monitoring program activities and the associated intervals of each activity.

8. Perform these activities at their associated intervals.

b. Performance Improvement Activities

1. Identify interim tests to assess the performance of the valve or the group of valves, such as nonintrusives.

2. Identify interim examinations to evaluate potential degradation mechanisms.

3. Identify other types of analysis that will be performed to assess check valve condition.

4. Identify which of these activities will be performed, and their interval on each valve in the group.

5. The selected activities must be performed at sufficient intervals, over an interim period of the next five (5) years or two (2) refueling outages, whichever is less, to determine the cause of the failure or the maintenance pattern(s).

6. CMA changes based on performance improvement activities should be documented in the "Test / Monitoring Activities Review" section of Attachment 4, "Condition Monitoring Analysis Form." Complete or revise the test plan to document the performance improvement activities and their associated frequencies.

7. Perform these activities at their associated intervals until:

(a) Sufficient information is obtained to complete an adequate evaluation of the specific application; or

(b) Until the end of the interim period.

5.5.4 Condition Monitoring Analysis (CMA)

a. Each approved CMA will be signed and dated by the IST Program Engineer and Check Valve Program Engineer. Others may review and sign the CMA on an as needed basis. The CMA review and approval constitutes the CMA Review Panel.

b. When conducting and documenting the analysis, use the guidance that is provided on Attachment 4, "Condition Monitoring Analysis Form."

c. Use Attachment 5, "Folder Checklist," to assemble and organize the information needed to assist the Panel Reviewer's in assuring a complete and accurate picture of the group's performance.

5.5.5 Implementation and Review of CM Activities

a. Tests, examinations, and preventive maintenance activities must be scheduled and documented per the IST Program requirements of SEP-PLP-IST-101, "Inservice Testing of Plant Valves."

b. Actions plans developed for condition monitoring activities must be in accordance with the CMA.

c. CMA changes based on test activities or corrective maintenance reviews should be documented in the "Test / Monitoring Activities Review" section of Attachment 4, "Condition Monitoring Analysis Form."

d. Extensions of CM intervals shall be supported and justified by the items described in the following statements to provide assurance that the valves in each group are capable of performing their intended functions over the selected interval.

   1. Plant safety impacts described in the site's FSAR, technical specifications and design bases documents.

   2. Industry generic experience and failure trends.

   3. Plant specific experience and failure trends.

   4. Plant specific inservice testing performance trends.

e. Review the results of these CM activities after their performance to determine if any changes to the CM analysis are warranted. If significant changes are needed, the CM analysis should be revised prior to the next CM activity interval.

   1. Test Activities that are completed acceptably do not need further action or review.

   2. Failure of a check valve test shall be reviewed for changes to CMA interval or group size.

5.5.6 CM Corrective Maintenance

If corrective maintenance is performed on a check valve, the analysis used to formulate the basis of the Condition Monitoring activities for that valve and its associated valve group must be reviewed to determine if any changes are needed. If significant changes are needed, Attachment 4 for the valve group must be revised and the applicable requirements of this procedure repeated.

5.5.7 Required Records for CM

The condition monitoring program must be documented and include the following information, as a minimum:

a. Check valves in the condition monitoring program and their associated group number must be identified in the IST Program.

b. The basis for the condition monitoring program, identified failure mechanisms and maintenance history patterns for each check valve, and condition monitoring activities and their associated intervals for each valve group. The Condition Monitoring Analysis Form, Attachment 4, is generated from the Check Valve Database. All data must be entered into this Microsoft Access database prior to generating the applicable CMA report.

c. The reason(s) and associated date for check valve inclusions or deletions are to be documented in the check valve database, as a minimum.

d. The Attachment 4, "Condition Monitoring Analysis Form," must be reviewed and revised if significant corrective maintenance is performed on a check valve, or group of valves in the CM program.

e. When the CMA is completed (all approval signatures obtained), the hard copy is sent to Engineering Records per Entergy Procedure EN-AD-103, "Document Control and Records Management Programs." The Check Valve Engineer updates the check valve database to reflect the current approved CMA.

5.6 SUBSECTION ISTC, CHECK VALVE INSERVICE TESTING (IST) REQUIREMENTS

5.6.1 Type of Testing Required for Check Valve Categories

The types of testing required for the categories of check valves are described in OM Code 2004 Edition with Addenda through 2006, Subsections ISTC-3520, ISTC-3550 and ISTC 5221.

a. Valve Test Type Identification/Reference

The type of tests required for each check valve, and Relief Requests associated with Code testing exceptions, are contained in the Iddeal Concepts Software Suite®.

5.6.2 Grouping Check Valves for Testing

a. Check Valves - Disassembly And Inspection

In accordance with OM Code, Subsection ISTC-5221(c), grouping of check valves for the sample disassembly examination program shall be technically justified and shall consider, as a minimum, valve manufacturer, design, service, size, materials of construction and orientation. Other items to consider when technically justifying check valve groupings include:

1. Maintenance and modification history
2. Potential flow instabilities
3. Required degree of disassembly
4. Need for tolerance or critical dimension checks

b. Check Valves - Nonintrusive Tests

In accordance with OM Code, Appendix II, groupings shall be technically justified and based on:

1. The intended purpose of the condition monitoring program, such as, improve performance or optimize testing, examination, and preventive maintenance activities;
2. Analysis of test results and maintenance history; and
3. Design characteristics, application and service conditions.

The grouping details of Section 5.6.2a should be considered, also.

5.6.3 Intervals for Testing Valves

The frequency required for performing each test type is identified in OM Code, Subsections ISTC-3510 for check valves exercised solely by the Subsection ISTC requirements. For check valves with leakage requirements, Subsection ISTC-3600 establishes the required test frequencies. For check valves subject to the Appendix II requirements, the maximum frequency is provided by Table II-4000-1.

Unless otherwise specified, each check valve test surveillance requirement (SR) shall be performed within the specified time interval in accordance with the ASME OM Code or as allowed by Relief Request RR 5-2 which incorporates the requirements of ASME OM code case OMN-20 "IST Frequencies for Pumps and Valves"

Test frequencies for valve tests are identified in the Iddeal Concepts Software Suite®.

a. Quarterly Testing Intervals

Ensuring valves can perform their open or close safety function is generally done on a quarterly basis (ie, every 92 days).

b. 18 Month/2 Year Testing Intervals

Valves that have close safety functions where seat leakage is limited and not based on Appendix J shall be tested at least once every 2 years.

c. Appendix J Testing - Valves With Containment Isolation Function Only

Valves whose only safety function is to isolate containment are tested on an interval as specified in 10 CFR 50, Appendix J, which is implemented in accordance with EN-DC-334, "Primary Containment Leakage Rate Testing (Appendix J)."

d. Cold Shutdown Testing Intervals

1. Valve exercising during cold shutdowns shall commence within 48 hours of achieving cold shutdown, and continue until all testing is complete or the plant is ready to return to power.

   (a) For extended outages, testing need not be commenced in 48 hours provided all valves required to be tested during cold shutdown will be tested prior to plant startup.

   (b) It is not required to keep the plant in cold shutdown (Technical Specification Mode 5) in order to complete cold shutdown testing. If cold shutdown testing is not completed,

then a justification shall be written documenting why the testing was not completed, per Palisades Administrative Procedure 9.20, "Technical Specification Surveillance and Special Test Program."

2. Cold Shutdown Justifications are contained in the Iddeal Concepts Software Suite®. An index of these justifications is provided in Attachment 1, "Cold Shutdown Justification Index."

e. Refueling Outage Testing Intervals

1. All valve testing required to be performed during a refueling outage shall be completed prior to returning the plant to operation.

2. Refueling Outage Justifications are contained in the Iddeal Concepts Software Suite®. An index of these justifications is provided in Attachment 2, "Refueling Outage Justification Index."

f. Changes to Testing Intervals

It is the responsibility of the IST Coordinator to notify the Technical Specification Surveillance Procedure Program Administrator (TSSPA) of any change in the testing frequency for a particular piece of equipment. This change shall be documented in the test record.

g. Testing Interval Identification/Reference

Check Valve testing intervals are contained in the Iddeal Concepts Software Suite®.

5.6.4 Scheduling Valve Inservice Tests

a. Technical Specification Surveillance Procedures

Most valve inservice tests are documented in Technical Specification Surveillance Procedures. These procedures are written to be conducted during specific plant mode(s) and are scheduled to be conducted in accordance with Palisades Administrative Procedure 9.20, "Technical Specification Surveillance and Special Test Program."

b. Departmental Procedures

Other valve inservice tests are documented in operating procedures such as General Operating Procedures (GOPs) and department procedures such as Chemistry (CH) procedures. These procedures are scheduled in accordance with the Palisades Work Control Process, 13 Week Schedule Program Planning and Scheduling Guidelines 2.0.

c. Periodic and Predetermined Activities

Several valve inservice tests are a part of the Periodic and Predetermined Activity Control (PPAC) program. PPACs are a way of implementing and controlling repetitive plant activities. PPACS are scheduled in accordance with Entergy Procedure EN-DC-324, "Preventive Maintenance Program."

d. Work Orders

Valve inservice testing may also be accomplished with Work Orders. Work Orders are scheduled in accordance with Entergy Procedure EN-WM-100," Work Request (WR) Generation, Screening and Classification," and Entergy Procedure EN-WM-105, "Planning."

e. Operations Logs

Various operational occurrences may verify that a valve is performing its safety function. These operational occurrences may be used as inservice tests if they are performed within required frequencies and when acceptable results are documented in accordance with OM Code, Paragraph ISTC-3550.

5.6.5 Criteria for Accepting Test Results

Acceptance criteria for check valve testing is contained in OM Code, Subsections ISTC-3530, ISTC-3550, ISTC-3620, ISTC-3630, ISTC-5221, ISTC-5222 and Appendix II.

a. Open and Close Tests - Check Valves

Verification of obturator movement of check valves shall be in accordance with OM Code, Paragraph ISTC-5221 or Appendix II. Refer to that section of the Code when determining acceptance criteria for verifying open or close safety functions of check valves. In general, obturator movement may be verified by:

1. Observing a direct indicator such as a position-indicating device.

2. Other indicator(s) such as changes in system pressure, flow rate, level, temperature, seat leakage testing, observation of pumps for reverse rotation, or other positive means.

3. Other positive means includes nonintrusive testing (NIT) techniques. Permanent Maintenance Procedure MSI-I-14, "Nonintrusive Diagnostic Check Valve Test Procedure," and Permanent Maintenance Procedure MSI-I-16, "Nonintrusive Diagnostic Valve Test Procedure

(Using Viper/UDS Platform)," are used to implement and analyze nonintrusive testing.

4. Disassembly and inspection.

b. Check Valve Non-intrusive Testing Reference Values

Valve disc movement tests (open and closed) do not require the use of reference values. However, acceptance criteria shall be established. Consequently, when using NIT to fulfill Code check valve testing, a baseline test demonstrating disc movement should be conducted to establish acceptance criteria. The baseline test shall be performed when the valve is known to be operating acceptably. Future test results shall be compared to the baseline test to evaluate check valve performance.

c. Leak Rate Tests

1. Acceptance criteria for Leak Rate tests for containment isolation valves shall be in accordance with 10 CFR 50, Appendix J. EN-DC-334, "Primary Containment Leakage Rate Testing (Appendix J)," provides the acceptance criteria that shall be satisfied for containment isolation valves.

2. For valves with safety functions (in addition to), or other than, containment isolation, acceptance criteria shall (also) be in accordance with OM Code, Paragraph ISTC-3630 for check valve.

d. Acceptance Criteria Identification/Reference

The acceptance criterion for each valve test is maintained in the document used to perform the test (ie, the implementing procedures).

5.6.6 Acceptance Criteria Outside of Code Allowed

a. If acceptance criteria used are outside Code allowed acceptance criteria, then a Relief Request shall be submitted for approval to the NRC in accordance with SEP-PLP-IST-101, "Inservice Testing of Plant Valves." NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives" and Nuclear Energy Institute (NEI) White Paper entitled, "Standard Format for Requests from Commercial Reactor Licensees Pursuant to 10 CFR 50.55a, Revision 1," dated June 7, 2004 (ADAMS Accession No. ML070100400).

b. Relief Requests are contained in the Iddeal Concepts Software Suite®. An index of the Relief Requests is provided in Attachment 3, "Relief Request Justification Index."

5.6.7 Valve Failure and Corrective Action

a. Processing Test Discrepancies

If a check valve fails to meet acceptance criteria during nonintrusive testing or disassembly and inspection the following actions shall be taken:

1. An Condition Report (CR) shall be initiated in accordance with Entergy Procedure EN-LI-102, "Corrective Action Process."

2. Operability shall be determined in accordance with Entergy Procedure EN-OP-104, "Operability Determinations."

b. Check valve corrective actions are stated in OM Code, Paragraph ISTC-3630(f) and ISTC-5224 and as follows:

1. Category AC Check Valve – Seat Leakage Testing

Valves or valve combinations with leakage rates in excess of those specified in the appropriate test procedure shall be declared inoperable and either repaired or replaced.

A successful retest shall be performed prior to declaring the valve operable.

2. Category C Check Valves - Obturator Movement

If a check valve fails to exhibit the required change of obturator position, it shall be declared inoperable. A retest showing acceptable performance shall be run following any required corrective action before the valve is returned to service.

Series valve pairs tested as a unit that fail to prevent reverse flow shall be declared inoperable, and both valves shall be either repaired or replaced.

3. Category C Check Valves – Sample Disassembly Examination

Check valves that are not capable of full-stroke movement or have failed or have unacceptably degraded internals, shall have the cause of failure analyzed and the condition corrected.

Other check valves in the sample group that may be affected by this failure mechanism shall be examined or tested during the same outage (or surveillance period) to determine the condition of internal components and their ability to function.

If an evaluation, in accordance with the Entergy Procedure EN-LI-102, "Corrective Action Process," determines that there are valves outside of the sampling group that could be directly affected by the failure mechanism, affected check valves should be examined or tested, in accordance with approved corrective action recommendations.

4. Category C Check Valves - Nonintrusive Tests

When a test using nonintrusive testing techniques is inconclusive, or when the results indicate unacceptable functioning of the check valve, actions are determined by the licensee. Actions may include additional testing, or disassembly and inspection. Permanent Maintenance Procedure MSI-I-14, "Nonintrusive Diagnostic Check Valve Test Procedure," and MSI-I-16, "Nonintrusive Diagnostic Check Valve Test Procedure (Using Viper/UDS Platform)," provide additional guidance.

If the "sampling" indicates problems with repeatability of the test conditions, or other problems that might affect the testing of the other valves, the nonintrusive techniques must be used for the other valves during the same outage to comply with the sampling criteria.

5.7 TRENDING

The IST Coordinator is responsible to record and trend test data in order to predict when check valve degradation will exceed limits. The goal of this trending is to identify when a valve's ability to perform its function is degrading, allowing performance of needed repairs during convenient times prior to the valve becoming inoperable. Trending is typically accomplished with the Iddeal Concepts Software Suite®.

The IST Coordinator may issue a Program Heath Assessment rating the health of the IST Valve program, and summarizing Corrective Actions. This periodic summary should be available for review by auditors and Plant personnel.

6.0 ATTACHMENTS AND RECORDS

6.1 ATTACHMENTS

6.1.1 Attachment 1, "Cold Shutdown Justification Index"

6.1.2 Attachment 2, "Refueling Outage Justification Index"

6.1.3 Attachment 3, "Relief Request Justification Index"

6.1.4 Attachment 4, "Condition Monitoring Analysis Form"

6.1.5 Attachment 5, "Folder Checklist"

6.1.6 Attachment 6, "Appendix II Program Flow Chart"

6.2 RECORDS

Valve records shall be maintained as lifetime plant records. These records should be processed in accordance with EN-AD-103, "Document Control and Records Management Programs."

In accordance with the OM Code, Paragraph 9000, "Records and Reports," valve records shall consist of the following documents, as applicable:

a. Valve Records

b. Test Plans

c. Record of Tests

d. Record of Corrective Action

Records required by the Inservice Testing (IST) Program Code may be summarized in the Iddeal Concepts Software Suite®., but are placed in the permanent record through other programs, such as, the Technical Specification Surveillance Program, Design Drawing Control (Color-Coded P&IDs), FSAR control, etc.

7.0 SPECIAL REVIEWS

None

COLD SHUTDOWN JUSTIFICATION INDEX

CSJ-17: Cold Shutdown Exercise Testing of CCS Check Valve

- CK-CC910

REFUELING OUTAGE JUSTIFICATION INDEX

ROJ-01 Refueling Outage Testing of HPSI Hot Leg Injection Check Valve
- CK-ES3410

ROJ-02 Refueling Outage Testing of High Pressure Safety Injection Check Valves
- CK-ES3104
- CK-ES3119
- CK-ES3134
- CK-ES3149

ROJ-03 Refueling Outage Testing of High Pressure Safety Injection Check Valves
- CK-ES3250
- CK-ES3251
- CK-ES3252
- CK-ES3253

ROJ-04 Refueling Outage Testing of Hot Leg Injection Check Valves
- CK-ES3408
- CK-ES3409

ROJ-05 Refueling Outage Testing of Service Water Pump Discharge Check Valves
- CK-SW401
- CK-SW402
- CK-SW403

ROJ-06 Refueling Outage Testing of Safety Injection Tank Check Valves
- CK-ES3102
- CK-ES3117
- CK-ES3132
- CK-ES3147

ROJ-07 Refueling Outage Testing of PCS Loop Check Valves
- CK-ES3101
- CK-ES3116
- CK-ES3131
- CK-ES3146

ROJ-08 Refueling Outage Testing of Containment Spray Pump Discharge Check Valves
- CK-ES3208
- CK-ES3220
- CK-ES3230

RELIEF REQUEST JUSTIFICATION INDEX

RR No	Description
5-2	Use of OMN-20 IST Frequencies for Pumps and Valves

CONDITION MONITORING ANALYSIS FORM

Grouping Information

CM Grouping: _____ **Revision:** _____ **Revision Date:** _____
Equip ID(s) in Group: _____

Activity Type:

- ☐ Performance Improvement
- ☐ Optimization of Condition Monitoring
- ☐ Other: _____

Analysis Reason:

- ☐ Establish Initial Grouping and Analysis
- ☐ Revision due to Corrective Maintenance
- ☐ Change in Test Strategy
- ☐ Change in Grouping Scope or Basis
- ☐ Removal from Condition Monitoring Program
- ☐ Other: _____

References:

No	Title / Description (examples given)	Remarks
1.	SEP-CV-PLP-001 "Check Valve Program"	
2.	SEP-PLP-IST-101 "Inservice Testing of Plant Valves"	
3.	IST Pump and Valve Database	
4.	Etc	

Grouping Bases

Evaluation of Group:

DESIGN - Identify pertinent valve design characteristics, features, and manufacturing data. Per Nureg 1482 Revision 2, "The check valves in this group are all of the same design (eg, type, size, manufacturer, model, and materials of construction)." Any differences should be identified and technically justified.

- Consider tolerances and critical dimension checks required for the group.
- Consider degree of disassembly required for check valves in the group.
- This information can be found in vendor catalogues, vendor drawings and engineering documents such as FESs and SCs.

CONDITION MONITORING ANALYSIS FORM

APPLICATION - Describe value application in the system / train (orientation, location, and turbulent sources). The check valves in this group all have the same application (eg, orientation, flow stabilities, upstream turbulence sources, and system function).

- This information can be found by looking at stress isometric drawings (SISO) and Piping and Instrument Diagrams (P&IDs). Useful information can also be found in Phase III of the Palisades Check Valve Final Report supplied by ABB Combustion Engineering.
- In situ orientation (horizontal, vertical, or skewed).
- Flow characteristics.
- Upstream turbulence sources? (Pumps / CVs within10 pipe diameters, Tees / Reducers / Elbows within 5 pipe diameters.

SERVICE – Identify any service conditions (dirt, erosion, corrosion, duty cycles and duration of service, and any other pertinent aging effects) that could effect valve operation.

The check valves in this group all have the same service conditions (eg, usage, environment and history).

- This information can be found in Maintenance Rule Availability information, System health reports and by consulting system engineers. Much of this analysis is dependent on knowledge gained by experience, and is therefore often best gained through individuals rather than documents and databases. Some useful information can also be found in Phases I, III and IV of the Palisades Check Valve Final Report supplied by ABB Combustion Engineering.
- Usage: describe service conditions and indicate approximate number of weeks with flow (continuous operation, event driven / cyclic operations, accident or infrequent operation).
- Environment (harsh, high temperature, radiological).
- Corrosive, basic or chemical fluid?
- Is system free of dirt, corrosion, and other contaminants?
- Work order and modification related work order history and corrective action history commonalties.

CONDITION MONITORING ANALYSIS FORM

MAINTENANCE RULE (MR) – Identify applicable support function(s).

PROBABILISTIC SAFETY ASSESSMENT (PSA) – Identify ranking / significance used in PSA model.

PM PROGRAM – EPRI PM Template classification.
Additional Bases:

PROGRAM - Document any other program basis information or additional justification for the group.

NOTES:	List any applicable component information such as AOV or MOV Engineering Analyses.

REFERENCES - List any additional references specific to this valve grouping.

Initial Program Assessment

Test / Exam / PM Activity	Title	Failure Cause Monitored	Monitored By	Freq	Performance Assessment

Identify all known current activities (tests, examinations, system monitoring activities, and preventive maintenance tasks) that are being performed and that can be used to determine valve condition or capability. These activities should then be assessed for their effectiveness.

- There are many databases on the network where this information can be obtained.
- *Failure Cause Monitored* are those failure causes established by NIC.
- *Monitored By* describe if they are directly or indirectly measured or observed and a brief description of what or how the monitoring is accomplished?
- *Performance Assessment* Rate the activity's effectiveness and why?

CONDITION MONITORING ANALYSIS FORM

Performance Issues

Work Order History Review: Identify any problems and summarize the results for the group.

- The Microsoft Access check valve database is used to find this information. The database accesses Palisades' work order history database. The summary of each work order can then be read and evaluated as to their applicability towards CM activities.

- Modification related work orders (WOs) should be listed by *EquipID, WO#, and Date Completed.*

- Maintenance related WOs should be listed by *EquipID, WO#, and Date Completed.*

Corrective Action Record Review: Identify applicable Action Requests (ARs), Condition Evaluations (CEs) and Corrective Actions (CA) and summarize the results for the group.

- The Microsoft Access check valve database can be used to find this information. The database accesses a Palisades' database that contains archived Corrective Actions (CA). The summaries of each corrective action can then be read and evaluated as to their applicability towards CM activities.

- AR/CE/CA documents should be listed by their *Initiated Dates.*

Identified Maintenance Failure Patterns: Review previous tests, examinations, maintenance activities, and corrective actions to identify any common failure or maintenance patterns. Evaluate these patterns for their significance and failure mechanisms.

Industry Operating Experience Review: Use industry data sources and identify pertinent valve performance issues, any common failure and maintenance patterns, or other pertinent information relating to valve performance.

- List any other industry data sources or documents reviewed as part of this assessment (Operating Experience, IE Notices and Bulletins, Generic Letters, Vendor input, NIC Performance Templates and Failure Database, INPO Databases like ICES). Provide a short summary of how each was dispositioned for this analysis.

- This information can be found by using the INPO and NRC web sites.

CONDITION MONITORING ANALYSIS FORM

INPO's web site contains the INPO Consolidated Event System databases (ICES). This database is to be used to search for failure reports based on selected valve criteria. The INPO web site also contains the Nuclear Network. This database allows searches of numerous documents pertaining to equipment reliability issues. NRC's web site contains Part 21, LER, NUREGs, IENs, IE Bulletins, Generic Letters, all of which are searchable.

- This information can also be found in the Nuclear Industry Check Valve Group (NIC) failure data database.

Identified Industry Failure Patterns:

- Use the NIC maintenance / failure templates, if available.

- Operating experience is a broad scope and can involve many hours of searching through the various databases. The OE Coordinator and MR Rule Engineer can be used as a resource in determining appropriate search criteria.

Failure Modes and Causes

For each of the following Significant Failure Modes, identify the possible failure cause(s) to this grouping of check valves, as applicable.

Failure to Open
Restricted Motion
Broken or Detached Parts
Failure to Close
Gross Internal Leakage

- These failure modes are considered broad enough to capture all significant failures.

- Identify if the failure mode is possible, or valid, and then rate it as likely or unlike to occur in the valve grouping. Specify the reasons why for validity and rating.

Failure Modes Evaluation: Provide both PLANT and INDUSTRY information and evaluation of failure modes and causes to support selection of appropriate activities to be performed.

CONDITION MONITORING ANALYSIS FORM

Optimized Performance Strategy

These activities must be sufficient to detect or mitigate the identified patterns or mechanisms.

Test / Exam / PM Activity	Freq	Cause Monitored	How Monitored	Expected Results

- List only those activities (*Test / Exam / PM*) that will be used to monitor the group and provide a short description of the activity.
- Specify the *Frequency* at which the activity will be performed.
- Identify failure causes / modes which will be monitored and the capability of this activity to detect it.
- Explain how the activity is monitored or accomplished; if it is directly or indirectly observed or measured. The expected results should state the effectiveness of the activity to determine the condition being monitored.
- Expected Results should include the effectiveness of the activity.

Proposed Monitoring Activities:

The condition monitoring strategy developed for this grouping must address all the possible failure modes. Provide additional information and description of proposed activities here.

Implementation Plan:

The implementation plan should provide mutual agreement as to how to change / revise the existing program plan to achieve the optimized plan (how to get there).

Test / Monitoring Activities Review:

This section should capture and document the reviews done for this grouping. Reviews include corrective maintenance, operating experience, and periodic assessments.

CONDITION MONITORING ANALYSIS FORM

Panel Review

Review Remarks / Comments: Include any pertinent comments from the review and approval process.

Reviews and Approvals: (signature and date)
Check Valve Program Engineer (*): _____

IST Program Engineer (*): _____

(*) Indicates the minimum approvals required for IST grouping evaluations.

Others (as needed)

System Engineer: _____

Operations Dept Rep: _____

PSA Group Rep: _____

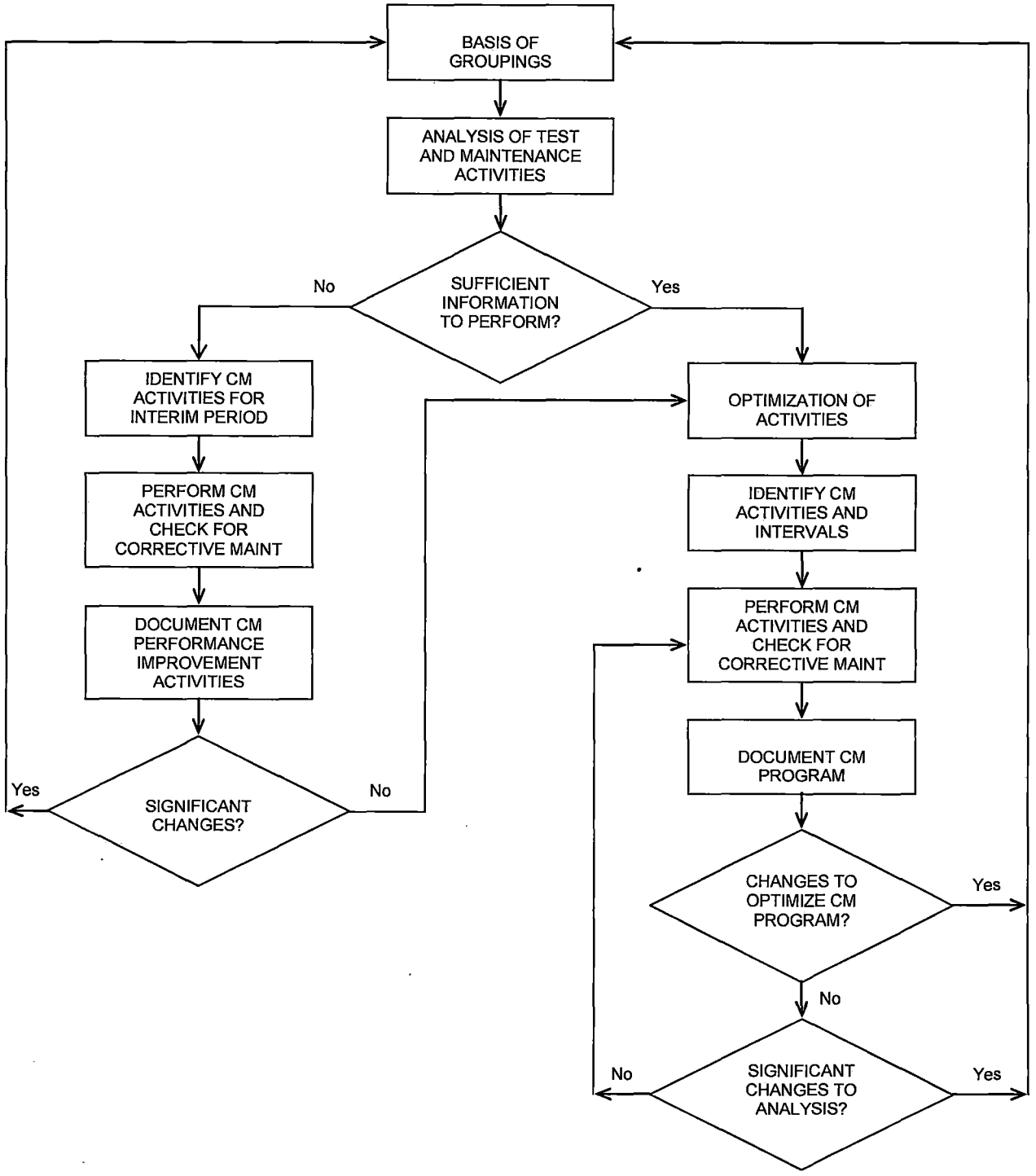
Other _____: _____

FOLDER CHECKLIST

The Component Engineer and CMA Review Panel intend this information file for ready access, on-hand, and information-only copy type items. All original documents are on file per the normal document retention process.

	CHECK LIST FOR GROUPING NO: _____	✓ THOSE THAT ARE INCLUDED
1	**Check Valve Assessment / CMA (printed from database)**	
2	**IST REPORTS (IF APPLICABLE FROM PV-PLUS)**	
	• Component Information and Basis	
	• Code Deviations (ROJ/RR)	
3	**Vendor Manual Pages / Valve Drawing(s)**	
4	**Isometric and P&ID drawings**	
5	**Piping Class Summary Sheet**	
6	**MAINTENANCE AND MODIFICATION RELATED WO HISTORY SUMMARY**	
	• Retrack printout of equipment number(s) (search using old and new EquipID—eg, '*CK*ES3166*' or '*CK*3166*' with System 'ES*')	
	• Copy of WO History Report with pertinent pages from microfilming that support technical justification of basis (eg, inspection form with dimensional data, modification design information, etc.)	
7	**CORRECTIVE ACTION (CA) HISTORY**	
	• Corrective Action Listing	
	• CA Docs Associated with Equipment	
	• Copies of pertinent ARs/ CEs/ CAs that support technical justification of basis	
8	**OPERATING / INDUSTRY EXPERIENCE**	
	• Valve failure information from ICES or NIC Failure database	
	• ICES (SOER, SER, OE)	
	• Valve failure and template information from NIC	
	• NRC documents (IE Notices, PART 21, IE Bulletins, Generic Letters)	
	• Vendor technical bulletins, memos, etc.	
9	**Maintenance Rule (MR) Function(s) per EGAD-EP-10 Attachment 2**	
10	**PSA Risk Ranking Results**	
11	**MISCELLANEOUS**	
	• Other misc. information relating to the valve(s) (eg, control valve engineering analysis in-line with CK).	
	• PPAC information	
	• Other:	
12	**VALVE SPECIFIC INFORMATION / DATA**	
	• CK Basis / Design Report Pages	
	• Q-List Equipment Listing (screen prints from AMMS)	
	• Valve Survey Sheet	

APPENDIX II PROGRAM FLOW CHART



Palisades Nuclear Plant
Inservice Testing (IST) Program Plan

Fifth Ten-Year Interval

Section 4.0

SEP-PLP-IST-102

Inservice Testing of Selected Safety Related Pumps

(50 pages follow)

INSERVICE TESTING OF SELECTED SAFETY-RELATED PUMPS

ENGINEERING NUCLEAR ENGINEERING PROGRAMS

APPLICABLE SITES

All Sites: ☐

Specific Sites: ANO ☐ GGNS ☐ IPEC ☐ JAF ☐ PLP ☒ PNPS ☐ RBS ☐ VY ☐ W3 ☐ HQN ☐

Safety Related: ☒ **Yes** ☐ **No**

Program Section Revision Summary	
Current Revision	**Description of Change**
2	Revised the Program Section to reflect the 10 year code update from The ASME OM Code 2001 Edition through 2003 Addenda to the 2004 Edition through the 2006 Addenda.
1	Added references 3.28 and 3.29 for Program Section SEP-ISI-PLP-003, "Palisades Inservice Inspection Master Plan Fourth Interval, ASME Section XI, Division 1" and Program Section CEP-RR-001, "ASME Section XI Repair/Replacement Program" per WT-PLP-2012-00427 CA-44. Added section 5.4.5 under the Corrective Action section of the Program Section to reference the requirements of ISTB-6300 as it relates to the requirement to rerun the test if instrument inaccuracies are identified which resulted in the test to be outside of its acceptance criteria. This section was added per CR-PLP-2014-04881 CA-6. Revised the approval section of Attachment 5 to require the Preparer of the IST Pump Reference Value(s)/Range(s) Change Form to be a qualified IST Engineer instead of the approver. A non IST qualified individual should not be preparing the change form. This requires the preparer to be qualified and allows approval by a supervisor or another knowledgeable person. Added reference 3.30 for Program Section SEP-ISI-PLP-002, "ASME Code Boundaries for ASME Section XI Inservice Inspection Program" per WT-PLP-2012-00427 CA-37.
0	Transitioned from Palisades Engineering Manual EM-09-04, Revision 24, "Inservice Testing of Selected Safety Related Pumps". The transition also performed the following: Incorporated the following Document Revision Notices:

	PCR01088174 PCR01089833 PCR01090331 DRN-11-01125 Added Attachment 5, "Inservice Testing Program Pump Reference Value/Ranges Change Form" Revised Section 2.0 to more clearly define the scope of the procedure Updated references 3.3, 3.4, 3.7 and 3.9 Added references 3.25 and 3.26 Revised section 4.0 to update the definitions to align with the ASME OM Code 2001 with Addenda through 2003, Operation and Maintenance of Nuclear Power Plants, Subsections ISTA and ISTB Revised section 5.4 to include additional corrective action requirements specified by the ASME OM Code 2001 with Addenda through 2003, Operation and Maintenance of Nuclear Power Plants, Subsections ISTA and ISTB. Revised Attachment 4 to include the latest reference values for the pumps. Revised various procedure sections for clarification and editorial changes

REVIEW AND CONCURRENCE SHEET

Program Section Title: INSERVICE TESTING OF SELECTED SAFETY RELATED PUMPS	
Prepared By: G Katt	**Date:** 3-22-16
Checked By: R White	**Date:** 3-22-16
Reviewed By: (Optional) N/A	**Date:**
ANII: N/A **(Reviewed By or N/A)**	**Date:**
Concurred: JM Jerz **Responsible Supervisor**	**Date:** 3-22-16

REVISION STATUS SHEET

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ATTACHMENTS

1.0 PURPOSE

1.1 This procedure provides general requirements for the performance and administration of the Inservice Testing Program for selected pumps.

1.2 This procedure establishes the requirements for the implementing procedures for inservice testing and evaluation of selected pumps.

1.3 This document contains one or more steps or sections that implement a Nuclear Regulatory Commission requirement and/or commitment to manage the effects of aging on systems, structures, and components within the scope of license renewal as described in Palisades Administrative Procedure 3.26, "Implementation of Palisades Renewed License Requirements," and Site Engineering Program SEP-RLP-PLP-001, "Renewed License Program." Renewed License requirements are designated "[RLR]," and Renewed License commitments are designated "[RLC]."

FSAR Section 1.9.1.6 and renewed license tracking document LR-LAR-2009-00244-53 provide the description of the Renewed License Aging Management Program that credits this procedure for implementation of the aging management program requirements. [RLR]

2.0 SCOPE

2.1 This document outlines Fifth Ten-Year Interval Program Plan for In-service Testing (IST) of Pumps at the Palisades (PLP) Nuclear Power Plant. This Program Plan was prepared in accordance with the rules of the ASME Code for Operation and Maintenance of Nuclear Power Plants, ASME OM Code-2004, through the ASME OMb Code-2006 Addenda (OM-2004 through OMb-2006).

2.2 The Palisades Plant Inservice Pump Testing Program Plan will be in effect through the Fifth 120-month interval (2016 through 2026) and will be updated in accordance with 10CFR50.55a(f).

2.3 The NRC has indicated in Generic Letter 89-04 that the intent of 10 CFR 50. Appendix A, GDC-1, and Appendix B, Criteria XI, is that all safety-related pumps and valves should be tested to demonstrate they will perform satisfactorily in service. 10 CFR 50.55a delineates testing requirements only for ASME Code Class 1, 2 and 3 components required for reactor shutdown or accident mitigation. In addition to those ASME Code Class components subject to testing under 10 CFR 50.55a, this Procedure may include safety related non-ASME Code Class (augmented) components which perform specific safety related functions as defined in ASME OM scope statements.

2.4 The requirements of this procedure apply to certain centrifugal and positive displacement pumps that have an emergency power source.

2.5 The following are excluded from this procedure:

(a) Drivers, except where the pump and driver form an integral unit and the pump bearings are in the driver;

(b) Pumps that are supplied with emergency power solely for operating convenience; and

(c) Skid-mounted pumps that are tested as part of the major component and are justified by the Owner to be adequately tested.

2.6 Attachment 1 provides a complete listing of those pumps included in this program per the requirements of the ASME OM Code, Subsections ISTB-1100 through ISTB-1400.

2.7 Attachment 3 provides the Pump Testing Plan.

3.0 REFERENCES

3.1 ASME OM Code 2004 with Addenda through 2006, Operation and Maintenance of Nuclear Power Plants, Subsections ISTA and ISTB

3.2 Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"

3.3 NUREG-1482, Rev. 2, "Guidelines for Inservice Testing at Nuclear Power Plants"

3.4 Code of Federal Regulations, Title 10, Part 50 (10 CFR 50)

3.5 Technical Specifications ADMIN 5.5.7

3.6 Technical Specifications SR 3.0.2, SR 3.5.2.4, SR 3.6.6.5, SR 3.7.5.2

3.7 FSAR 6.9.2.1, "Pump Testing Program"

3.8 Entergy Quality Assurance Program Manual

3.9 Entergy Procedure EN-DC-310, "Plant Predictive Maintenance Program"

3.10 Palisades Administrative Procedure 9.20, "Technical Specification Surveillance and Special Test Program"

3.11 Palisades Administrative Procedure 10.41, "Site Procedure and Policy Processes"

3.12 Palisades Administrative Procedure 10.51, "Writer's Guideline for Site Procedures"

3.13 Entergy Procedure EN-AD-102, "Procedure Adherence and Level of Use"

3.14 Technical Specification Surveillance Procedure MO-7A-1, "Emergency Diesel Generator 1-1"

3.15 Technical Specification Surveillance Procedure MO-7A-2, "Emergency Diesel Generator 1-2"

3.16 Comprehensive Pump Test Procedures

a. Technical Specification Surveillance Procedure RO-98, "LPSI and Containment Spray Comprehensive Pump Test and Check Valves Test"

b. Technical Specification Surveillance Procedure RO-144, "Comprehensive Pump Test - Service Water Pumps P-7A, P-7B and P-7C"

c. Technical Specification Surveillance Procedure RO-145, "Comprehensive Pump Test - Auxiliary Feedwater Pumps P-8A, P-8B and P-8C"

d Technical Specification Surveillance Procedure RO-146, "Comprehensive Pump Test - Component Cooling Water Pumps P-52A, P-52B and P-52C"

e. Technical Specification Surveillance Procedure RO-147, "Comprehensive Pump Test - High Pressure Safety Injection Pump P-66A and P-66B"

3.17 Group A and Group B, Quarterly Pump Tests

a. Technical Specification Surveillance Procedure QO-14, "Inservice Test Procedure - Service Water Pumps"

b. Technical Specification Surveillance Procedure QO-15, "Inservice Test Procedure - Component Cooling Water Pumps"

c. Technical Specification Surveillance Procedure QO-16, "Inservice Test Procedure - Containment Spray Pumps"

d. Technical Specification Surveillance Procedure QO-19, "Inservice Test Procedure - HPSI Pumps and ESS Check Valve Operability Test"

e. Technical Specification Surveillance Procedure QO-20, "Inservice Test Procedure - Low Pressure Safety Injection Pumps"

f. Technical Specification Surveillance Procedure QO-21, "Inservice Test Procedure - Auxiliary Feedwater Pumps"

3.18 Entergy Procedure EN-AD-103, "Document Control and Records Management Programs"

3.19 Engineering Assistance Request EAR-99-0081, "CVCS Declassification"

3.20 Palisades Administrative Procedure 3.26, "Implementation of Palisades Renewed License Requirements"

3.21 Site Engineering Program SEP-RLP-PLP-001, "Renewed License Program - Aging Management Activities"

3.22 FSAR 1.9.1.6, "Closed Cycle Cooling Water Program"

3.23 LO-LAR-2009-00244-53, "Implement a Closed Cycle Cooling Water Program as described in FSAR Section 1.9.1.6"

3.24 Entergy Procedure EN-HU-102, "Human Performance Tools"

3.25 Entergy Procedure EN-DC-332, "Inservice Testing"

3.26 Entergy Program Section No. CEP-IST-4, "Standard on Inservice Testing"

3.27 Entergy Procedure EN-LI-102, "Corrective Action Process"

3.28 Program Section SEP-ISI-PLP-003, "Palisades Inservice Inspection Master Plan Fifth Interval, ASME Section XI, Division 1"

3.29 Program Section CEP-RR-001, "ASME Section XI Repair/Replacement Program"

3.30 Program Section SEP-ISI-PLP-002, "ASME Code Boundaries for ASME Section XI Inservice Inspection Program"

4.0 DEFINITIONS AND RESPONSIBILITIES

4.1 DEFINITIONS

4.1.1 Alert Range - That range (Attachment 2) for a given pump parameter outside the normal operating range in which an increased testing frequency is specified.

4.1.2 Group A Pump - A pump that is operated continuously or routinely during normal operation, cold shutdown, or refueling operations.

4.1.3 Group B Pump - A pump that is in standby systems that are not operated routinely except for testing.

4.1.4 Inservice Test – A test to assess the operational readiness of a system, structure, or component after first electrical generation by nuclear heat.

4.1.5 Instrument Loop - Two or more instruments or components working together to provide a single output.

4.1.6 Instrument Loop Accuracy – The accuracy of an instrument loop based on the square root of the sum of the squares of the inaccuracies of each instrument or component in the loop when considered separately. Alternatively, the allowable inaccuracy of the instrument loop may be based on the output for a known input into the instrument loop.

4.1.7 Maintenance – The replacement of parts, adjustments, and similar actions that do not change the design (configuration and material) of an item.

4.1.8 Modification – The alteration in the design of a system, structure, or component.

4.1.9 Monitoring – The continuous or periodic observation or measurement to ascertain the performance or obtain characteristics of a system, structure, or component.

4.1.10 Owner: - An organization owning or operating a facility where items are installed or used.

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

4.1.12 Preservice Test – A test performed after completion of construction activities related to the component and before first electrical generation by nuclear heat, or in an operating plant, before the component is initially placed in service.

4.1.13 Preservice Test Period - The period of time following completion of construction activities related to the component and before first electrical generation by nuclear heat, in which component and system testing takes place, or in an operating plant prior to the component being initially placed in service.

4.1.14 Reference Point - A point of operation at which reference values are established and inservice test parameters are measured for comparison with applicable acceptance criteria.

4.1.15 Reference Values - One or more values of parameters as measured or determined when the equipment is known to be operating acceptably. Reference values provide baseline values for comparison in subsequent IST for detecting pump or valve degradation. Reference values are determined from the results of a baseline preoperational or inservice test. They shall be at points of operation which are readily duplicated during subsequent inservice testing, the results of which are compared to these reference values.

4.1.16 Relief Request - A written request to the NRC seeking relief from certain Code requirements when those requirements are impractical, cause unreasonable hardship without a compensating increase in safety or when a proposed alternative provides an acceptable level of quality and safety.

4.1.17 Repair - The process of restoring a degraded item to its original design requirements.

4.1.18 Required Action Range - That region (Attachment 2) outside the upper and lower limits of the alert range, as applicable, in which the pump is considered inoperable until the cause of the deviation has been determined and the condition corrected.

4.1.19 Routine Servicing – The performance of planned, preventive maintenance.

4.1.20 Skid-mounted Pumps and Valves - Pumps and valves integral to or that support operation of major components, even though these pumps and valves may not be located directly on the skid. In general, these pumps and valves are supplied by the manufacturer of the major component.

4.1.21 Substitute Examination or Test - An examination or test which replaces a Code-required examination or test when the Code requirements are considered to be impractical.

4.1.22 System Resistance – The hydraulic resistance to flow.

4.1.23 Trending - A comparison of current data to previous data obtained under similar conditions for the same equipment.

4.1.24 Vertical Line Shaft Pump - A vertically suspended pump where the pump driver and pump element are connected by a line shaft within an enclosed column.

4.2 RESPONSIBILITIES

4.2.1 Procedure EN-DC-332, "Inservice Testing," identifies division of responsibilities at the Department level for each Entergy site.

4.2.2 IST Coordinator - That individual assigned to oversee performance of the pump testing program. The IST Coordinator performs the following:

- Develops and implements the IST Program and Plan.
- Reviews and records IST test results and informs applicable department head(s) of recommended corrective actions or new IST values.
- Reviews inservice and pre-service test results and determines appropriate reference values, when required.
- Notifies appropriate plant departments of the need for special inservice testing.
- Reviews surveillance procedures used to implement the IST Program with respect to applicability and compliance with the IST Program.
- Reviews plant modifications and other information provided by the Design Engineering Manager with respect to activities that have a potential impact on the scope of the IST Program.
- Provides assistance to the Operations Manager in determining the post-work test requirements including the testing required for establishing revised IST values and limits.
- Ensures all tests and test parameter measurements are properly documented and in compliance with the requirements of the IST Program for Pumps and Valves.
- Provides a copy of the IST Program Plan, including subsequent revisions, to the Licensing Manager for submittal to the NRC as necessary.

4.2.3 Technical Specification Surveillance Program Administrator (TSSPA) - The individual responsible for the administration of the Technical Specification Surveillance Program.

4.2.4 System Engineer - Service manager for the system in question.

5.0 PROCEDURES

5.1 FREQUENCY AND SCHEDULING OF TESTS

5.1.1 Inservice tests shall be run on each Group A or B pump in the program nominally every 3 months during normal Plant operation. Additionally, each Group A or B pump shall be subject to a comprehensive pump test on a biennial basis (every 2 years). Group B pumps that do not have the required fluid inventory (eg, pumps in dry sumps) shall only be subject to a biennial comprehensive pump test. This test frequency should be maintained during shutdown periods if this can be reasonably accomplished, although this is not mandatory. ASME OM Code, ISTB-3420 requires that pumps in systems declared inoperable or not required to be operable (eg, during Plant shutdown periods) need not be tested on the required frequency;

however, they shall be tested within 3 months prior to placing the system in an operable status. Pumps which can only be tested during Plant operation shall be tested within 1 week (7 days) of startup.

5.1.2 If a pump is operated more frequently than once per quarter or is operated for other reasons such as a special test, it need not be started or stopped specifically for the surveillance test. In order to take credit for these operations, however, the pump must be run at least once every 3 months at the reference conditions and all required test data must be recorded. The IST Coordinator must then evaluate and trend the data and complete a "Surveillance Not Done Justification" form (Admin 9.20 - Attachment 9). [RLR]

5.1.3 Unless otherwise specified, each inservice test surveillance requirement shall be performed within the specified time interval specified by the ASME OM Code or as allowed by Relief Request RR 5-2 which incorporates the requirements of ASME OM code case OMN-20 "IST Frequencies for Pumps and Valves".

5.1.4 If a pump is replaced or a repair is made which may have affected any of the pump reference values as determined by the IST Coordinator, a new reference value or set of reference values shall be determined or the previous value reconfirmed by an inservice test in accordance with ASME OM Code, Subsection ISTB-3310.

5.1.5 If pump parameters determined during a quarterly inservice test fall within the alert range, the test frequency shall be doubled. The IST Coordinator and TSSPA shall ensure inservice testing is performed at the increased test frequency until the cause of the deviation is determined and the condition corrected.

5.1.6 Each test procedure shall include the pump reference values and corresponding alert and required action ranges. These shall be presented in such a manner that the shift individual(s) responsible for conducting the test (ie, Shift Manager, Reactor Operator) is able to make a timely determination as to whether or not the data meets operability requirements.

5.1.7 All Technical Specification Surveillance Procedures associated with the Palisades pump inservice testing program shall be developed in accordance with Palisades Administrative Procedures 9.20, "Technical Specification Surveillance and Special Test Program," 10.51, "Writer's Guideline for Site Procedures," Palisades Administrative Procedure 10.41, "Site Procedure and Policy Processes and Entergy Procedure EN-AD-102, "Procedure Adherence and Level of Use."

5.2 PUMP REFERENCE VALUES

5.2.1 Pump reference values will be established per ASME OM Code, Subsection ISTB-3300. The reference values for pump operating parameters are determined from the initial inservice test performed when the pump is known to be operating acceptably. Reference values shall be at points of operation readily duplicated during subsequent tests. If the particular parameter being measured or determined can be significantly influenced by other related conditions, then these conditions shall be analyzed. Additional sets of reference values may be established in order to facilitate pump testing under different Plant conditions or equipment operating modes. These additional reference values will be determined when the pump is known to be operating acceptably and will not conflict with the original reference data.

When determining an additional set of reference values, an inservice test shall first be run at the conditions of an existing set of reference values and the results analyzed. If operation is acceptable, a second test run at the new reference conditions shall follow as soon as practicable. The reason for establishing the new reference values shall be documented in the record of test.

5.2.2 As specified in Step 5.1.4, when a reference value or set of values may have been affected by repair or routine servicing of the pump, a new reference value or set of values shall be determined or the previous values reconfirmed by an inservice test run prior to declaring the pump operable.

Deviations between the previous and new set of reference values shall be identified, and verification that the new values represent acceptable pump operation shall be performed. In general, this is accomplished by making the Technical Specification test a retest requirement on the Work Order used to take the pump out of service. New reference values shall be incorporated into the test procedure as described in Step 5.3.5. Attachment 5, "Inservice Testing Program Pump Reference Value/Ranges Change Form" (or equivalent) should be used as the engineering evaluation to establish, calculate, and evaluate any new reference values and acceptance limits.

5.2.3 When the required action limits for pump parameters change, the IST Coordinator must ensure that the specified test procedure limits are also changed to appropriate new values. Since the first level Shift Manager review provides immediate verification of pump operability, these limits shall be kept current. The IST Coordinator shall notify the TSSPA of any revisions to pump tests, which must be completed by the next inservice test interval. Attachment 5, "Inservice Testing Program Pump Reference Value/Ranges Change Form" (or equivalent) should be used as the engineering evaluation to establish, calculate, and evaluate any new reference values and acceptance limits.

5.2.4 Required instrument accuracies are given are stipulated in ASME OM Code, Table ISTB-3510-1; further interpretation of these requirements is contained in NUREG-1482 Revision 2. If the accuracies of the station's instruments are not acceptable, temporary instruments meeting those requirements in Table ISTB-3510-1 may be used, or a relief request may be submitted to justify using existing instrumentation if it can be shown that any degraded pump condition can be recognized before an unsafe condition arises.

5.2.5 Calculations are to be rounded as follows:

a. Values less than 5 are rounded down
b. Values greater than 5 are rounded up
c. Values equal to 5 are rounded to the even integer
d. Calculations developing acceptance criteria are rounded conservatively.

5.2.6 Consideration Of Test Uncertainties

When developing test acceptance criteria, the affect of various uncertainties associated with the test procedure shall be considered. Therefore, when equipment meets test acceptance criteria, assurance is provided that the same equipment will support the mitigation of analyzed accidents. Based on this fact, the relationship between test acceptance criteria and safety (analytical) limits shall be understood. If required, test acceptance criteria shall be adjusted to accommodate appropriate uncertainties associated with, but not necessarily limited to:

Design Basis Event Instrument Uncertainty,
Process Dependent Effects,
Calculation Model Effects,
Dynamic Effects,
Instrument Calibration Uncertainty, and
Instrument Uncertainty - Normal Operations.

Safety (analytical) limits are established during the design of the Plant. The values of these terms may be found in the FSAR, Technical Specifications, and in calculations performed by various Plant engineering departments. It is assumed that the safety (analytical) limit represents the true maximum value at which action must be taken to avoid further degradation of a component. Based on this assumption, it is important that the test acceptance criteria be set at levels where corrective action will result prior to violating Plant safety limits.

5.3 DATA EVALUATION

5.3.1 The initial evaluation of Technical Specification Surveillance test data and determination of pump operability is conducted by the operator who performed the test and is reviewed by the Shift Manager. Individual pump Technical Specifications require this evaluation to be done as soon as possible, usually by the end of the shift in which the data was taken, in order to meet possible Limiting Condition of Operation (LCO) requirements. If the data is not available before the end of the shift, then the oncoming shift will make the determination. A follow-up evaluation is performed by the IST Coordinator or his designee to monitor trends in pump hydraulic performance (pump d/p, flowrate, and speed) and mechanical performance (vibrations). In addition, when the test results are used as new reference values, such as after maintenance or for a new system configuration, the IST Coordinator must evaluate and verify that the new values represent acceptable pump performance. In the latter case, a revision to the record of tests may be required. Therefore, the follow up IST review should be conducted in a timely manner.

Following data evaluation, the IST Coordinator notes any abnormal conditions under remarks, signs the completed test, and forwards the test to the System Engineer for identification and completion of necessary corrective action.

5.3.2 The allowable ranges for the pump operating parameters are defined in Attachment 2. These ranges are based on the ranges provided in ASME OM Code, Tables ISTB 5121-1, ISTB-5222-1, ISTB-5321-1 and ISTB-5321-2.

If deviations fall within the alert range, the frequency of testing specified for the pump (in Attachment 3) shall be doubled until the cause of the deviation is determined and the condition corrected. If deviations fall within the required action range, the pump shall be declared inoperable until the cause of the deviation has been determined and the condition corrected. If any measured parameter falls within the required action range, the evaluator shall initiate corrective action per Section 5.4 below.

When a test shows deviations outside of the acceptable range, the instruments involved may be recalibrated and the test rerun. If during the test, it becomes obvious that the instrument is malfunctioning, the test may be halted and the instruments promptly recalibrated. Care should be taken to ensure that the noted deviations are due to the gauge and not a result of degraded pump performance or a system related problem.

5.3.3 Where available, the data sheets require that motor currents, voltages, and other data be recorded as an additional aid for pump performance evaluation. Although this information is not required by ASME OM Code, the IST Coordinator should consider using this information and/or obtaining similar data from other pumps when necessary to evaluate a change in pump operating parameters. This data is not compared to acceptance criteria and should not lead to a pump being declared inoperable unless the supporting parameter has other specific acceptance limits which affect pump operability.

Testing data necessary to determine pump head capacity, efficiency, and break horsepower shall be made available upon request and anytime changes to test parameters are approved. Such data is necessary to maintain the Diesel Generator Steady State Load Analysis.

5.3.4 If adverse trends are detected in pump parameters, the reviewers should attempt to predict when the parameter will enter the alert or required action ranges. This prediction should then be used to schedule necessary maintenance during a convenient outage or when practical.

5.3.5 Through the performance of the review following repair or replacement of a pump, new reference values and acceptance criteria may be required, as identified in Step 5.2.2. This change is to be accomplished per Palisades Administrative Procedure 10.41, "Site Procedure and Policy Processes."

5.4 CORRECTIVE ACTION

5.4.1 Any variation of a measured parameter falling within the specified Required Action Range shall be documented on a corrective action document for identification and evaluation.

5.4.2 If a measured parameter falls within the specified Required Action Range, the pump shall be declared inoperable and identified to prevent its use, except in an emergency, until either the cause of the deviation has been determined and the condition is corrected, or an analysis of the pump is performed and new reference values are established. [ISTB-6200(a)]

5.4.3 If the measured test parameter values fall within the alert range the frequency of testing shall be doubled until the cause of the deviation is determined and the condition is corrected. [ISTB-6200(b)]

5.4.4 In cases where the pump's test parameters are within either the alert or required action ranges, and the pump's continued use at the changed values is supported by an analysis, a new set of reference values may be established. This analysis shall include verification of the pump's operational readiness. The analysis shall include both a pump level and a system level evaluation of operational readiness, the cause of the change in pump performance, and an evaluation of all trends indicated by

available data. The results of this analysis shall be documented in the record of tests. [ISTB-6200]

5.4.5 When a test shows measured parameter values that fall outside of the acceptable range that have resulted from an identified systematic error, such as improper system lineup or inaccurate instrumentation, the test shall be rerun after correcting the error. [ISTB-6300]

5.5 TRENDING

5.5.1 The results of the quarterly or biennial comprehensive inservice tests for each pump shall be recorded on trending program(s) in a format adequate to identify trends in pump performance [ISTB-6100]. As a minimum, parameters to be recorded in the pump record include (actual measured values are preferred to calculated values):

a. Pump speed (for variable speed pumps only).

b. Pump differential pressure (except for positive displacement pumps) as calculated (measured discharge pressure minus calculated or measured suction pressure), or as directly measured. [RLR]

c. Pump Discharge Pressure (for positive displacement pumps only).

d. Pump flow rate. [RLR]

e. Pump vibration.

f. Entries referencing significant maintenance actions or other pertinent comments.

5.5.2 When the required action limits for pump parameters change, the IST Coordinator must ensure that the specified test procedure limits are also changed to appropriate new values. Since the first level Shift Manager review provides immediate verification of pump operability, these limits shall be kept current. The IST Coordinator shall notify the TSSPA of any revisions to pump tests, which must be completed by the next inservice test interval. Attachment 5, "Inservice Testing Program Pump Reference Value/Ranges Change Form" (or equivalent) should be used as the engineering evaluation to establish, calculate, and evaluate any new reference values and acceptance limits.

6.0 RECORDS AND ATTACHMENTS

6.1 RECORDS

6.1.1 A record is maintained for each pump covered in the IST Program. The records include the following:

a. The pump manufacturer and associated model numbers and serial numbers, or other identification numbers, are maintained in the Plant Equipment Data Base.

b. A copy or summary of the manufacturer's acceptance test report, and a copy of the pump manufacturer's operating limit, if available. This information is contained in the appropriate pump vendor file.

6.1.2 Each individual test procedure is considered a record and is controlled by Administrative Procedure 10.41 "Site Procedure And Policy Processes." Each test procedure includes the following:

a. The hydraulic test circuit to be used, either in textual and/or diagrammatic form.

b. The location and type of measurement for each of the required test quantities.

c. The reference values, limits, and any other values required per ASME OM Code, Subsection ISTB and/or Technical Specifications.

6.1.3 Each completed test is considered a record and is controlled by Administrative Procedure 9.20 "Technical Specification Surveillance and Special Test Program." Each completed test procedure includes the following:

a. Pump identification

b. Date of test.

c. Reason for test.

d. Test procedure that was used

e. Identification of instruments used.

f. Calibration records or identification of calibrated equipment

g. Values of measured and observed parameters.

h. Comparisons with allowable ranges of test values and analysis of deviations.

i. Requirement for corrective action.

j. Evaluation and justification for changes to reference values.

k. Signature of the person or persons responsible for conducting and analyzing the test.

6.1.4 Corrective actions required by the ASME OM Code are considered records and are controlled in accordance with Entergy Procedure EN-LI-102, "Corrective Action Process". Inservice Testing related corrective actions include the following:

a. Summary of the corrective actions made

b. Inservice Test used for conformation of operational adequacy

c. Identification of the person(s) responsible for the corrective action

6.2 ATTACHMENTS

6.2.1 Attachment 1, "Pump Testing System Index"

6.2.2 Attachment 2, "Allowable Ranges of Test Quantities"

6.2.3 Attachment 3, "Pump Test Plan"

6.2.4 Attachment 4, "Group A and B Pump Test Hydraulic Circuits"

6.2.5 Attachment 5, "IST Pump Reference Value(s)/Range(s) Change Form"

6.2.6 Attachment 6, "Pump Summary Listing"

TABLE 1
PUMP TESTING SYSTEM INDEX

SYSTEM	PUMP NO	GROUP	DRAWING	COORDINATES
Service Water	P-7A	A	M-213	F-3
	P-7B	A	M-213	F-2
	P-7C	A	M-213	F-1
Auxiliary Feedwater	P-8A	B	M-207-2	E-6
	P-8B	B	M-207-2	H-6
	P-8C	A	M-207-2	B-6
Component Cooling	P-52A	A	M-209-3	C-4
	P52B	A	M-209-3	B-4
	P52C	A	M-209-3	A-4
Containment Spray	P-54A	B	M-204-1A	D-5
	P-54B	B	M-204-1	B-3
	P-54C	B	M-204-1	D-3
HP Safety Injection	P-66A	A	M-204-1A	B-5
	P-66B	A	M-204-1	F-3
LP Safety Injection	P-67A	A	M-204-1A	E-5
	P-67B	A	M-204-1	E-3
Diesel Jacket Water Cooling	P-211A	Skid	M-214-1	B-3
	P-211B	Skid	M-214-1	B-3

Includes those Class 1, 2, and 3 pumps important to reactor and spent fuel safety which transfer automatically and restart on an emergency power supply under accident conditions.

ALLOWABLE RANGES OF TEST QUANTITIES

TABLE 2
CENTRIFUGAL PUMPS TEST ACCEPTANCE CRITERIA
(TABLE ISTB-5121-1)

					Required Action Range	
Test Type	**Pump Speed**	**Test Parameter**	**Acceptable Range**	**Alert Range**	**Low Values**	**High Values**
Group A Test	N/A N/A ≥ 600 rpm	Q ΔP V_d or V_v	0.90 to 1.10 Q_r 0.90 to 1.10 ΔP_r ≤ 2.5 V_r	None None > 2.5 V_r to 6 V_r or > 0.325 to 0.7 IPS	< 0.90 Q_r < 0.90 ΔP_r None	> 1.10 Q_r > 1.10 ΔP_r > 6 V_r or > 0.7 IPS
Group B Test	N/A N/A	Q, or ΔP	0.90 to 1.10 Q_r 0.90 to 1.10 ΔP_r	None None	< 0.90 Q_r < 0.90 ΔP_r	> 1.10 Q_r > 1.10 ΔP_r
Comprehensive Test	N/A N/A ≥ 600 rpm	Q ΔP V_d or V_v	0.94 to 1.03 Q_r 0.93 to 1.03 ΔP_r ≤ 2.5 V_r	0.90 to < 0.94 Q_r 0.90 to < 0.93 ΔP_r > 2.5 V_r to 6 V_r or > 0.325 to 0.7 IPS	< 0.90 Q_r < 0.90 ΔP_r None	> 1.03 Q_r > 1.03 ΔP_r > 6 V_r or > 0.7 IPS

1. V_r, ΔP_r, Q_r, are reference values (specified in pump records).

2. Definitions:
   ΔP- Pump differential pressure
   Q - Pump flow rate

ALLOWABLE RANGES OF TEST QUANTITIES

TABLE 3
VERTICAL LINE SHAFT AND CENTRIFUGAL PUMPS TEST ACCEPTANCE CRITERIA
(TABLE ISTB-5221-1)

					Required Action Range	
Test Type	**Pump Speed**	**Test Parameter**	**Acceptable Range**	**Alert Range**	**Low Values**	**High Values**
Group A Test	N/A N/A ≥ 600 rpm	Q ΔP V_d or V_v	0.95 to 1.10 Q_r 0.95 to 1.10 ΔP_r ≤ 2.5 V_r	0.93 to < 0.95 Q_r 0.93 to < 0.95 ΔP_r > 2.5 V_r to 6 V_r or > 0.325 to 0.7 IPS	< 0.93 Q_r < 0.93 ΔP_r None	> 1.10 Q_r > 1.10 ΔP_r > 6 V_r or > 0.7 IPS
Group B Test	N/A N/A	Q, or ΔP	0.90 to 1.10 Q_r 0.90 to 1.10 ΔP_r	None None	< 0.90 Q_r < 0.90 ΔP_r	> 1.10 Q_r > 1.10 ΔP_r
Comprehensive Test	N/A N/A ≥ 600 rpm	Q ΔP V_d or V_v	0.95 to 1.03 Q_r 0.95 to 1.03 ΔP_r ≤ 2.5 V_r	0.93 to < 0.95 Q_r 0.93 to < 0.95 ΔP_r > 2.5 V_r to 6 V_r or > 0.325 to 0.7 IPS	< 0.93 Q_r < 0.93 ΔP_r None	> 1.03 Q_r > 1.03 ΔP_r > 6 V_r or > 0.7 IPS

1. V_r, ΔP_r, Q_r, are reference values (specified in pump records).

2. Definitions:

   ΔP- Pump differential pressure
   Q - Pump flow rate

TABLE 4
PUMP TEST PLAN

PUMP LISTING

SYSTEM	PUMP	SURV PROC NO	CLASS	FREQ	N	ΔP	Q	V
Service Water	P7A	QO-14	3	Q	(1)	X	X	X
	P7B	QO-14	3	Q	(1)	X	X	X
	P7C	QO-14	3	Q	(1)	X	X	X
Auxiliary Feedwater	P8A	QO-21	3	Q	(1)	X	X	
	P8B	QO-21	3	Q	X	X	X	
	P8C	QO-21	3	Q	(1)	X	X	X
Component Cooling Water	P52A	QO-15	3	Q	(1)	X	X	X **[RLR]**
	P52B	QO-15	3	Q	(1)	X	X	X **[RLR]**
	P52C	QO-15	3	Q	(1)	X	X	X **[RLR]**
Containment Spray	P54A	QO-16	2	Q	(1)	X	X	
	P54B	QO-16	2	Q	(1)	X	X	
	P54C	QO-16	2	Q	(1)	X	X	
High Pressure Safety Injection Pumps	P66A	QO-19	2	Q	(1)	X	X	X
	P66B	QO-19	2	Q	(1)	X	X	X
Low Pressure Safety Injection Pumps	P67A	QO-20	2	Q	(1)	X	X	X
	P67B	QO-20	2	Q	(1)	X	X	X
Diesel Jacket Water Cooling Pumps	P211A	MO-7A-1	3	M	(2)	(2)	(2)	(2) **[RLR]**
	P211B	MO-7A-2	3	M	(2)	(2)	(2)	(2) **[RLR]**

Definitions:
- N Pump Speed (variable Speed Pump only)
- ΔP Differential Pressure
- Q Flow Rate
- V Vibration (Displacement or Velocity as appropriate)

NOTE 1: Shaft Speed is not measured for pumps directly coupled to synchronous or induction type motors.

NOTE 2: Diesel Jacket Water Cooling Pumps are tested with the Diesel Generator skid.

NOTE 3: Although the component cooling water pumps are tested on a frequency of every three months and the diesel jacket cooling water pumps are tested monthly, the Renewed License only requires testing every eighteen months for aging management of components.

TABLE 4
PUMP TEST PLAN

PUMP LISTING

SYSTEM	PUMP	SURV PROC NO	CLASS	FREQ	N	ΔP	Q	V
Service Water	P7A	RO-144	3	18MO	(1)	X	X	X
	P7B	RO-144	3	18MO	(1)	X	X	X
	P7C	RO-144	3	18MO	(1)	X	X	X
Auxiliary Feedwater	P8A	RO-145	3	2YR	(1)	X	X	X
	P8B	RO-145	3	2YR	X	X	X	X
	P8C	RO-145	3	2YR	(1)	X	X	X
Component Cooling Water	P52A	RO-146	3	2YR	(1)	X	X	X
	P52B	RO-146	3	2YR	(1)	X	X	X
	P52C	RO-146	3	2YR	(1)	X	X	X
Containment Spray	P54A	RO-98	2	18MO	(1)	X	X	X
	P54B	RO-98	2	18MO	(1)	X	X	X
	P54C	RO-98	2	18MO	(1)	X	X	X
High Pressure Safety Injection Pumps	P66A	RO-147	2	2YR	(1)	X	X	X
	P66B	RO-147	2	2YR	(1)	X	X	X
Low Pressure Safety Injection Pumps	P67A	RO-98	2	18MO	(1)	X	X	X
	P67B	RO-98	2	18MO	(1)	X	X	X
Diesel Jacket Water Cooling Pumps	P211A	MO-7A-1	3	M	(2)	(2)	(2)	(2)
	P211B	MO-7A-2	3	M	(2)	(2)	(2)	(2)

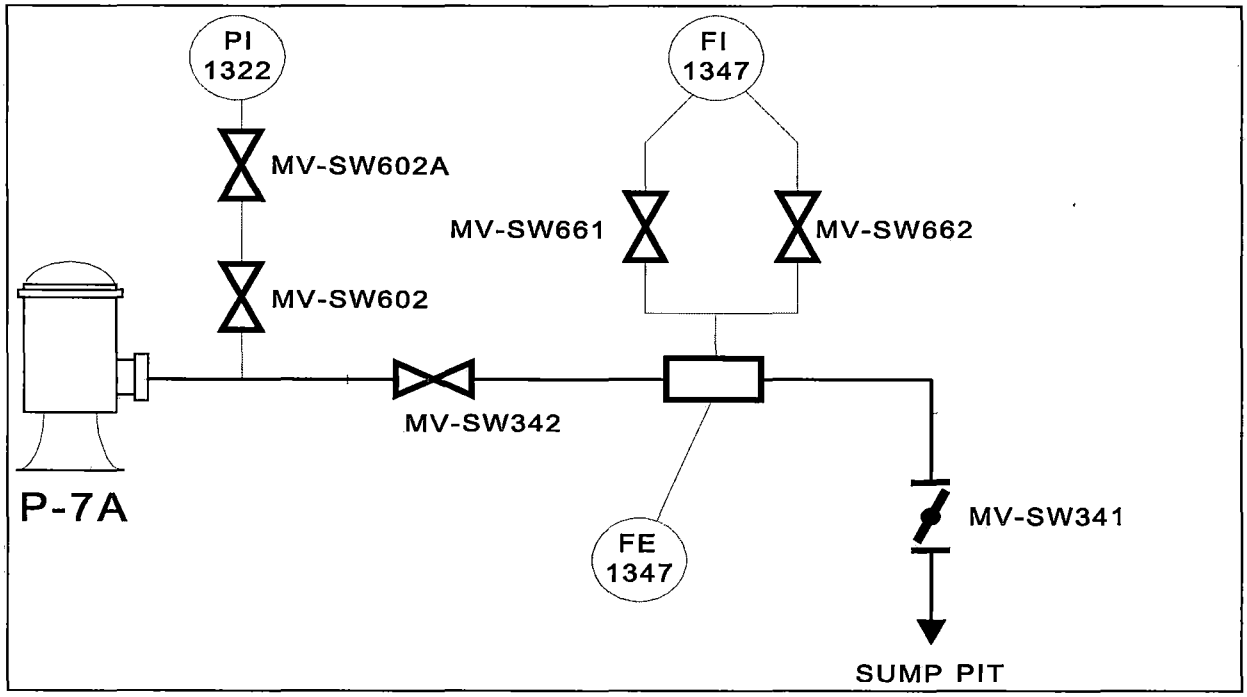
Definitions:
- N Pump Speed (variable Speed Pump only)
- ΔP Differential Pressure
- Q Flow Rate
- V Vibration (Displacement or Velocity as appropriate)

NOTE 1: Shaft Speed is not measured for pumps directly coupled to synchronous or induction type motors.

NOTE 2: Diesel Jacket Water Cooling Pumps are tested with the Diesel Generator skid.

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

SERVICE WATER SYSTEM TEST FLOWPATH		
PUMP P-7A/ Group A	TEST PROC NO QO-14	P&ID: M-213/F3



SERVICE WATER PUMPS

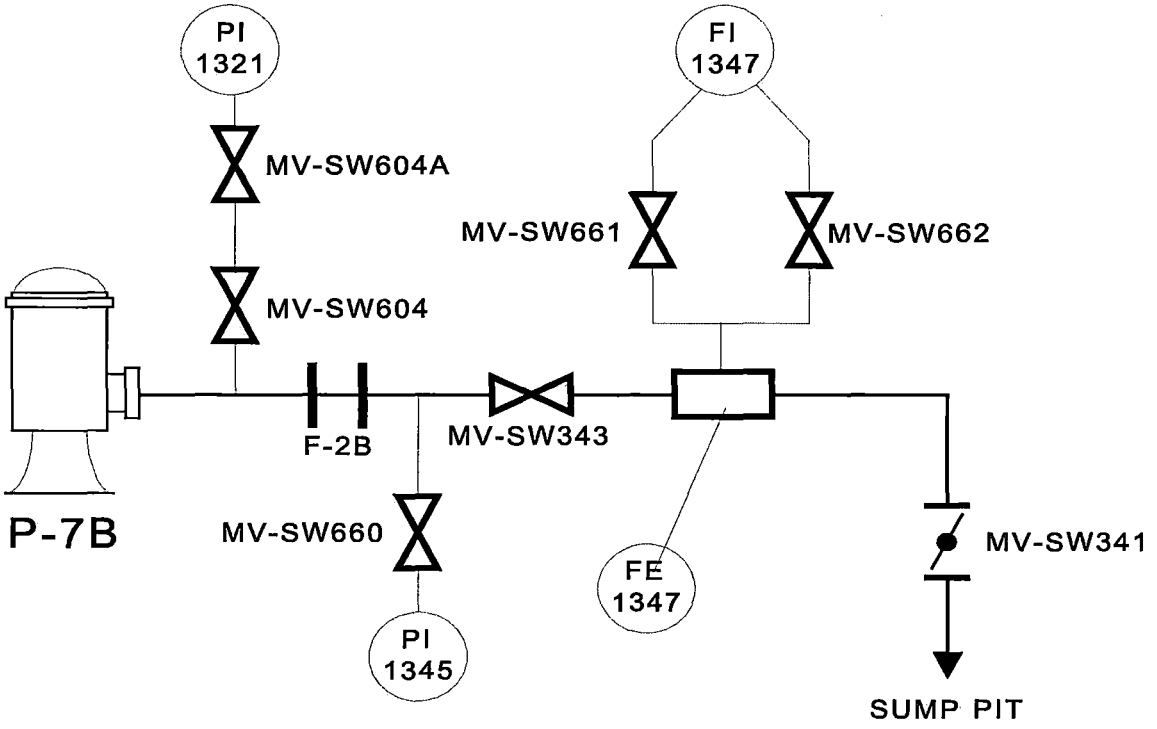
The Service Water Pumps have an active safety function to supply cooling water to essential loads during an accident as well as during normal Plant power operations. The SWS pumps start automatically upon receipt of a Safety Injection Signal (SIS). Each SWS pump delivers essentially 50% capacity, although one pump may be adequate during particular scenarios. The power supply to this pump is 2400 VAC bus 1D.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
INLET PRESS (1)	VARIABLE PSI	LIT-1338
DISCHARGE PRESSURE (1)	VARIABLE PSI	PI-1322
DIFFERENTIAL PRESSURE	99.9 PSID	CALCULATED
FLOW RATE	2000 GPM	FI-1347
VIBRATION	MULTIPLE IPS-PK	M&TE

(1) Inlet and discharge pressure are required for calculation of pump differential pressure.

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

SERVICE WATER SYSTEM TEST FLOWPATH		
PUMP P-7B/ Group A	TEST PROC NO QO-14	P&ID: M-213/F2



SERVICE WATER PUMPS

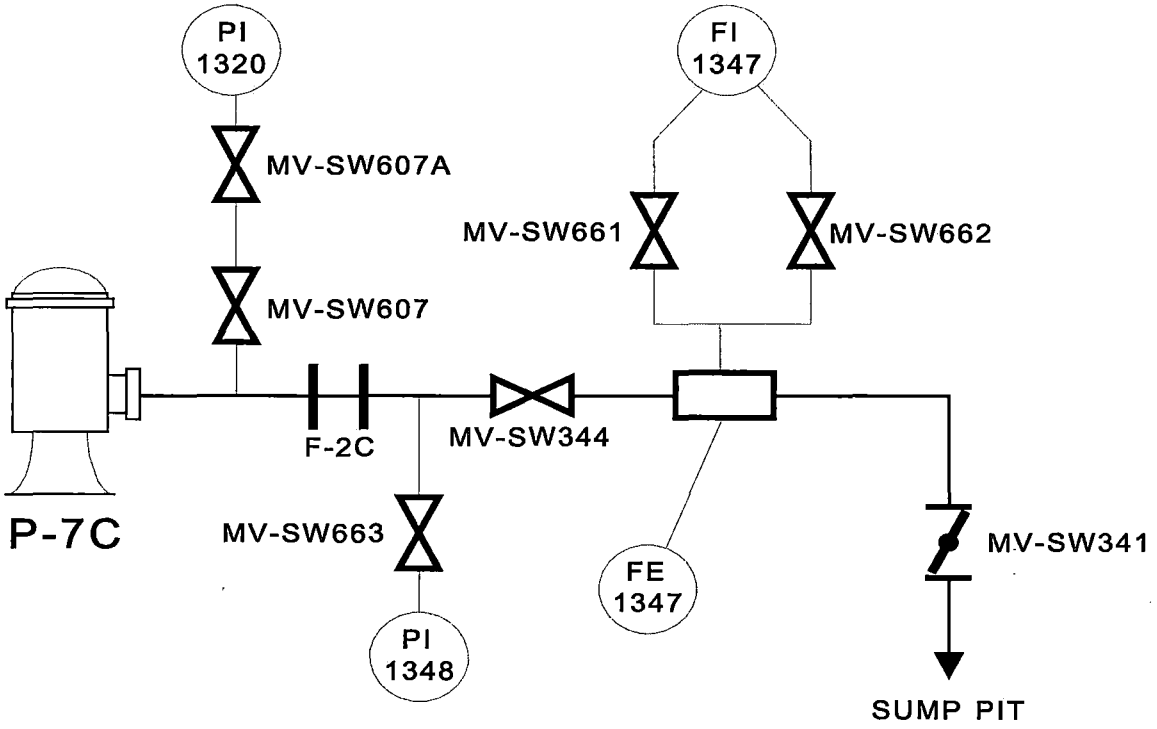
The Service Water Pumps have an active safety function to supply cooling water to essential loads during an accident as well as during normal Plant power operations. The SWS pumps start automatically upon receipt of a Safety Injection Signal (SIS). Each SWS pump delivers essentially 50% capacity, although one pump may be adequate during particular scenarios. The power supply to this pump is 2400 VAC bus 1C.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
INLET PRESS (1)	VARIABLE PSI	LIT-1338
DISCHARGE PRESSURE (1)	VARIABLE PSI	PI-1321
DIFFERENTIAL PRESSURE	101.1 PSID	CALCULATED
FLOW RATE	2000 GPM	FI-1347
VIBRATION	MULTIPLE IPS-PK	M&TE

(1) Inlet and discharge pressure are required for calculation of pump differential pressure.

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

SERVICE WATER SYSTEM TEST FLOWPATH		
PUMP P-7C/ Group A	TEST PROC NO QO-14	P&ID: M-213/F1



SERVICE WATER PUMPS

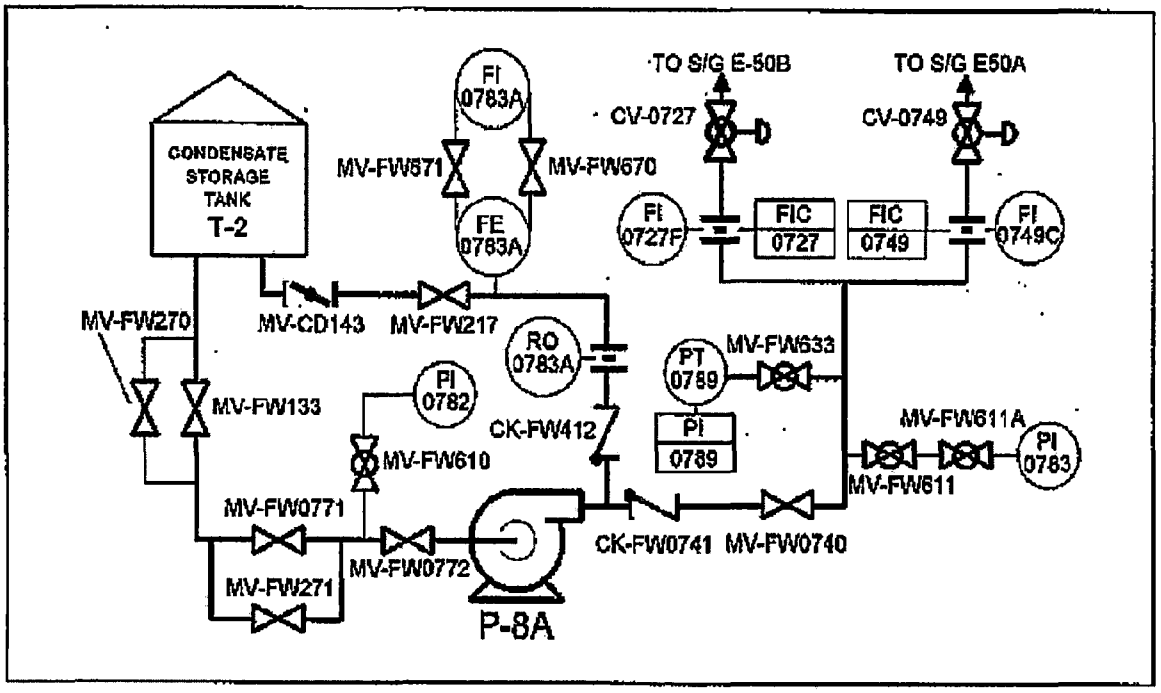
The Service Water Pumps have an active safety function to supply cooling water to essential loads during an accident as well as during normal Plant power operations. The SWS pumps start automatically upon receipt of a Safety Injection Signal (SIS). Each SWS pump delivers essentially 50% capacity, although one pump may be adequate during particular scenarios. The power supply to this pump is 2400 VAC bus 1D.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
INLET PRESS (1)	VARIABLE PSI	LIT-1338
DISCHARGE PRESSURE (1)	VARIABLE PSI	PI-1320
DIFFERENTIAL PRESSURE	100.7 PSID	CALCULATED
FLOW RATE	2000 GPM	FI-1347
VIBRATION	MULTIPLE IPS-PK	M&TE

(1) Inlet and discharge pressure are required for calculation of pump differential pressure.

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

SERVICE WATER SYSTEM TEST FLOWPATH		
PUMP P-8A/ Group B	TEST PROC NO QO-21	P&ID: M-207-2/E6



AUXILIARY FEEDWATER PUMPS

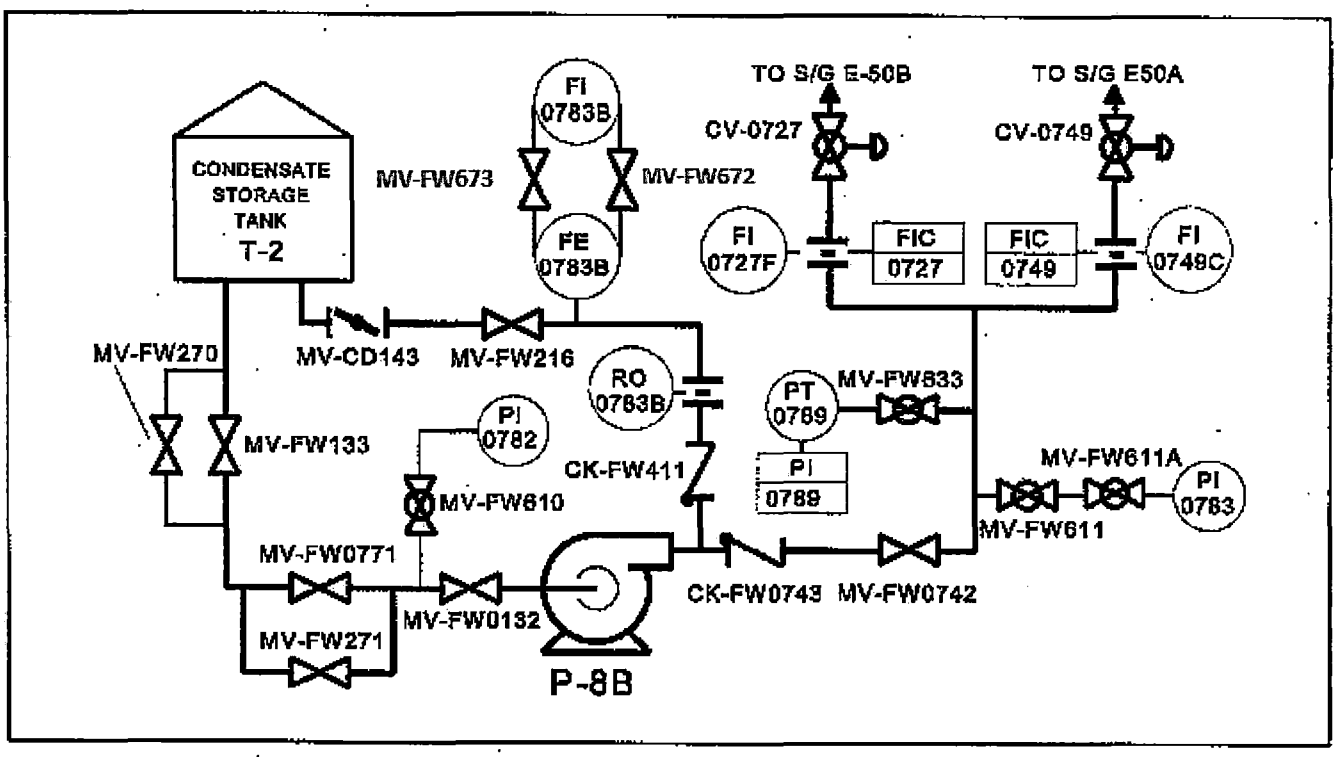
The Auxiliary Feedwater Pumps have an active safety function to supply 100% of the required AFW flow during accident and normal startup and shutdown conditions. AFW flow is required whenever the main feedwater system is unavailable following a loss of offsite power, main feed line break, or a steam line break. These pumps start automatically upon receipt of an Auxiliary Feedwater Actuation Signal (AFAS). Flow from these pumps can be directed to either or both Steam Generators. P-8A is powered from safety-related 2400 VAC bus 1C.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
INLET PRESS (1)	VARIABLE PSI	PI-0783
DISCHARGE PRESSURE (1)	VARIABLE PSI	PI-0782
DIFFERENTIAL PRESSURE	1530 PSID	CALCULATED
FLOW RATES	78 GPM	FI-0783A
VIBRATION	MULTIPLE IPS-PK	M&TE

(1) Inlet and discharge pressure are required for calculation of pump differential pressure.

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

AUXILIARY FEEDWATER SYSTEM TEST FLOWPATH		
PUMP P-8B/ Group B	TEST PROC NO QO-21	P&ID: M-207-2/H6



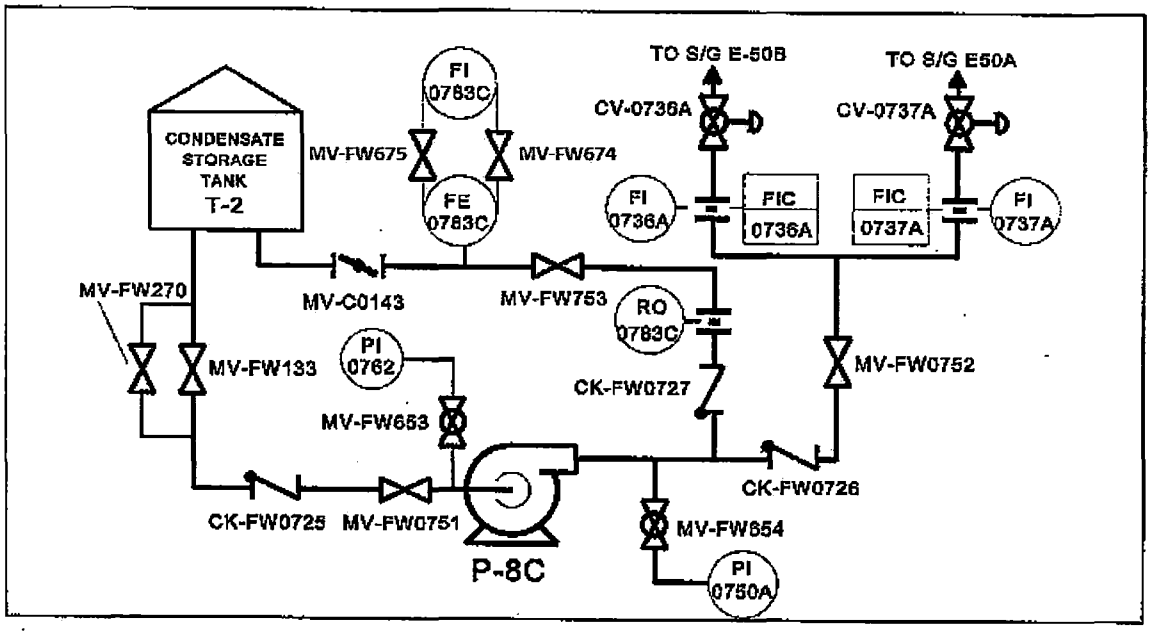
AUXILIARY FEEDWATER PUMPS

The Auxiliary Feedwater Pumps have an active safety function to supply 100% of the required AFW flow during accident and normal startup and shutdown conditions. AFW flow is required whenever the main feedwater system is unavailable following a loss of offsite power, main feed line break, or a steam line break. These pumps start automatically upon receipt of an Auxiliary Feedwater Actuation Signal (AFAS). Flow from these pumps can be directed to either or both Steam Generators. P-8B is turbine driven using steam from S/G E-50A.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	3560 RPM	M&TE
INLET PRESS (1)	VARIABLE PSI	PI-0782
DISCHARGE PRESSURE (1)	VARIABLE PSI	PI-0783
DIFFERENTIAL PRESSURE	1509 PSID	CALCULATED
FLOW RATES	65 GPM	FI-0783B
VIBRATION	Not Required	Not Required

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

AUXILIARY FEEDWATER SYSTEM TEST FLOW PATH		
PUMP P-8C/ Group A	TEST PROC NO QO-21	P&ID: M-207-2/B6



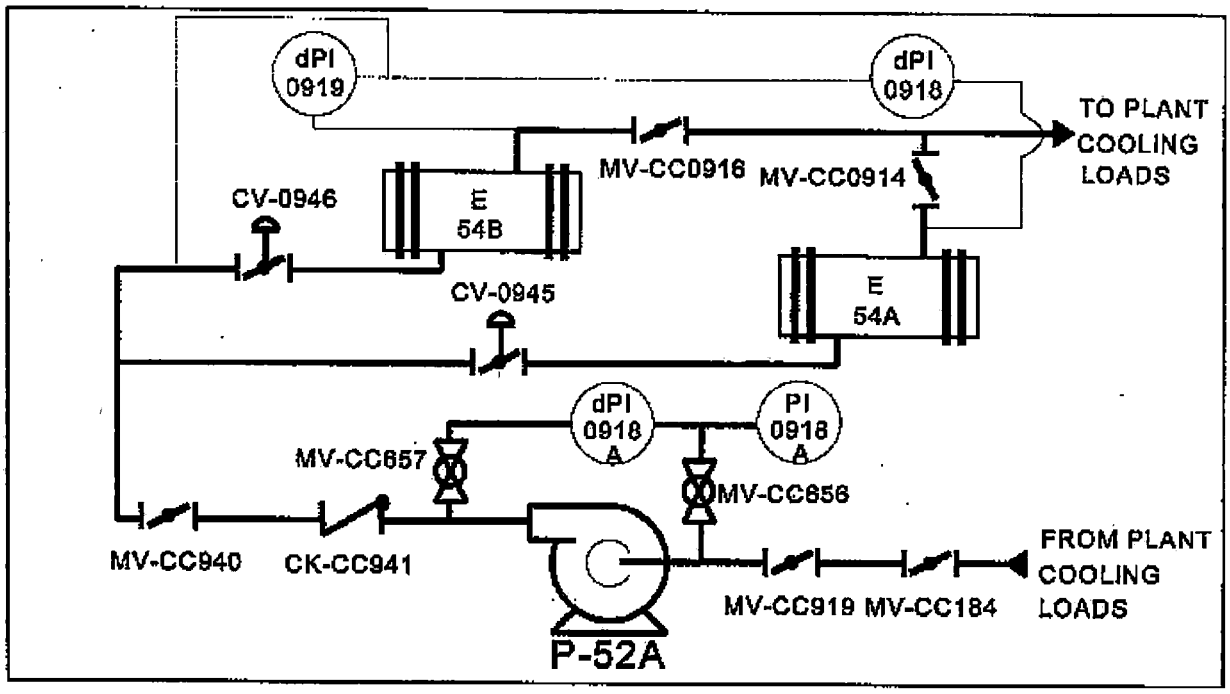
AUXILIARY FEEDWATER PUMPS

The Auxiliary Feedwater Pumps have an active safety function to supply 100% of the required AFW flow during accident and normal startup and shutdown conditions. AFW flow is required whenever the main feedwater system is unavailable following a loss of offsite power, main feed line break, or a steam line break. These pumps start automatically upon receipt of an Auxiliary Feedwater Actuation Signal (AFAS). Flow from these pumps can be directed to either or both Steam Generators. P-8C is powered from safety-related 2400 VAC bus 1D.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
INLET PRESS (1)	VARIABLE PSI	PI-0762
DISCHARGE PRESSURE (1)	VARIABLE PSI	PI-0750A
DIFFERENTIAL PRESSURE	1040 PSID	CALCULATED
FLOW RATES	165 GPM	FI-0736A
	165 GPM	FI-0737A
	30.5 GPM	FI-0783C/FI-0954
VIBRATION	MULTIPLE IPS-PK	M&TE

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

COMPONENT COOLING WATER RECIRC TEST FLOW PATH		
PUMP P-52A/ Group A	TEST PROC NO QO-15	P&ID: M-209-3/C4



COMPONENT COOLING WATER PUMPS

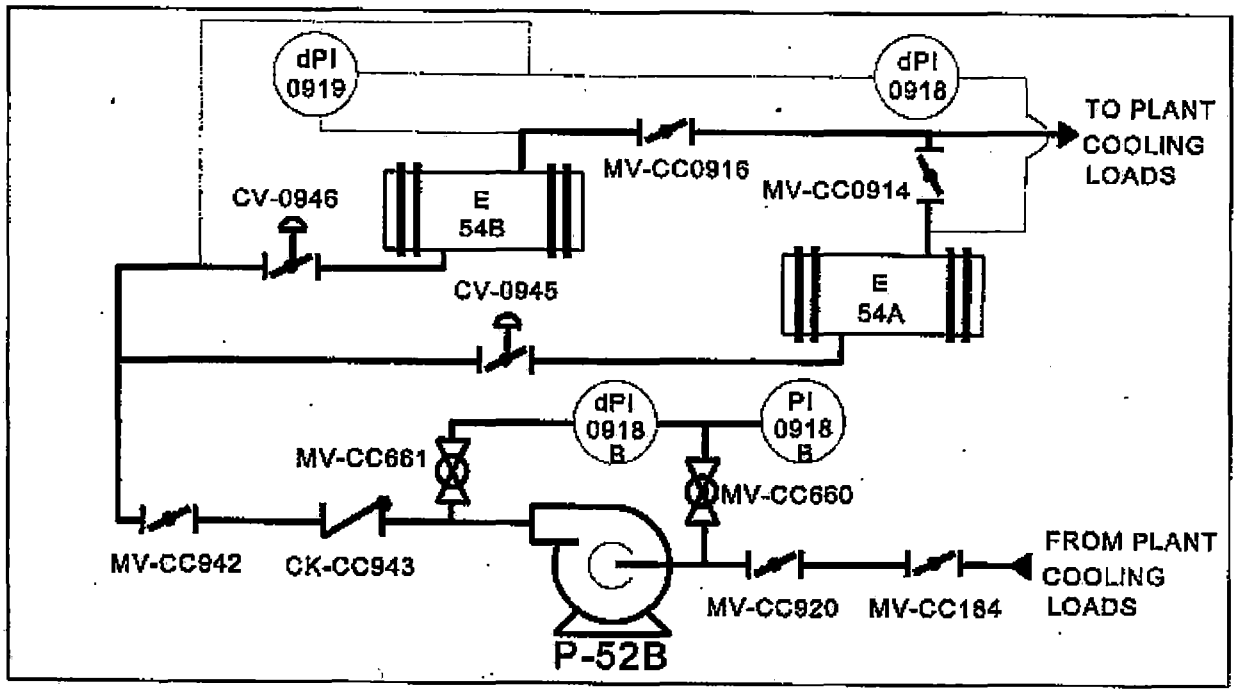
The Component Cooling Water Pumps are designed to maintain Plant cooling loads during normal operation and accident conditions. These pumps provide adequate cooling capability for the Safety Injection and Containment Spray water when it is recirculated through the Shutdown Cooling Heat Exchangers and for cooling the glands of the Safety Injection, Charging and Containment Spray Pumps. This pump is provided with 2400 VAC emergency power from bus 1C.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DIFFERENTIAL PRESSURE	83.0 PSID	dPI-0918A
FLOW RATE (1)	6.0 PSID	dPI-0918
	6.0 PSID	dPI-0919
VIBRATION	MULTIPLE IPS-PK	M&TE

(1) Flow rate is determined indirectly by setting heat exchanger E-54A and E-54B differential pressures to the specified reference value to obtain a flowrate of 4200 gpm.

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

COMPONENT COOLING WATER RECIRC TEST FLOW PATH		
PUMP P-52B/ Group A	TEST PROC NO QO-15	P&ID: M-209-3/B4



COMPONENT COOLING WATER PUMPS

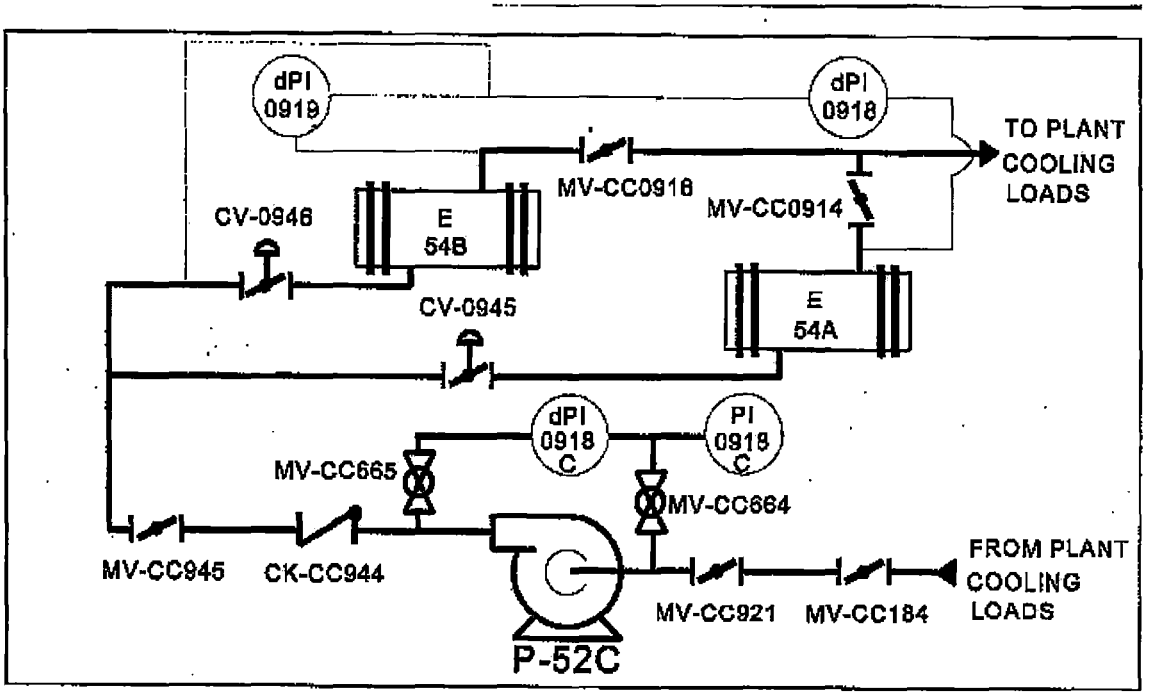
The Component Cooling Water Pumps are designed to maintain Plant cooling loads during normal operation and accident conditions. These pumps provide adequate cooling capability for the Safety Injection and Containment Spray water when it is recirculated through the Shutdown Cooling Heat Exchangers and for cooling the glands of the Safety Injection, Charging and Containment Spray Pumps. This pump is provided with 2400 VAC emergency power from bus 1D.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DIFFERENTIAL PRESSURE	83 PSID	dPI-0918B
FLOW RATE (1)	6.0 PSID	dPI-0918
	6.0 PSID	dPI-0919
VIBRATION	MULTIPLE IPS-PK	M&TE

(1) Flow rate is determined indirectly by setting heat exchanger E-54A and E-54B differential pressures to the specified reference value to obtain a flowrate of 4200 gpm.

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

COMPONENT COOLING WATER RECIRC TEST FLOW PATH		
PUMP P-52C/ Group A	TEST PROC NO QO-15	P&ID: M-209-3/A4



COMPONENT COOLING WATER PUMPS

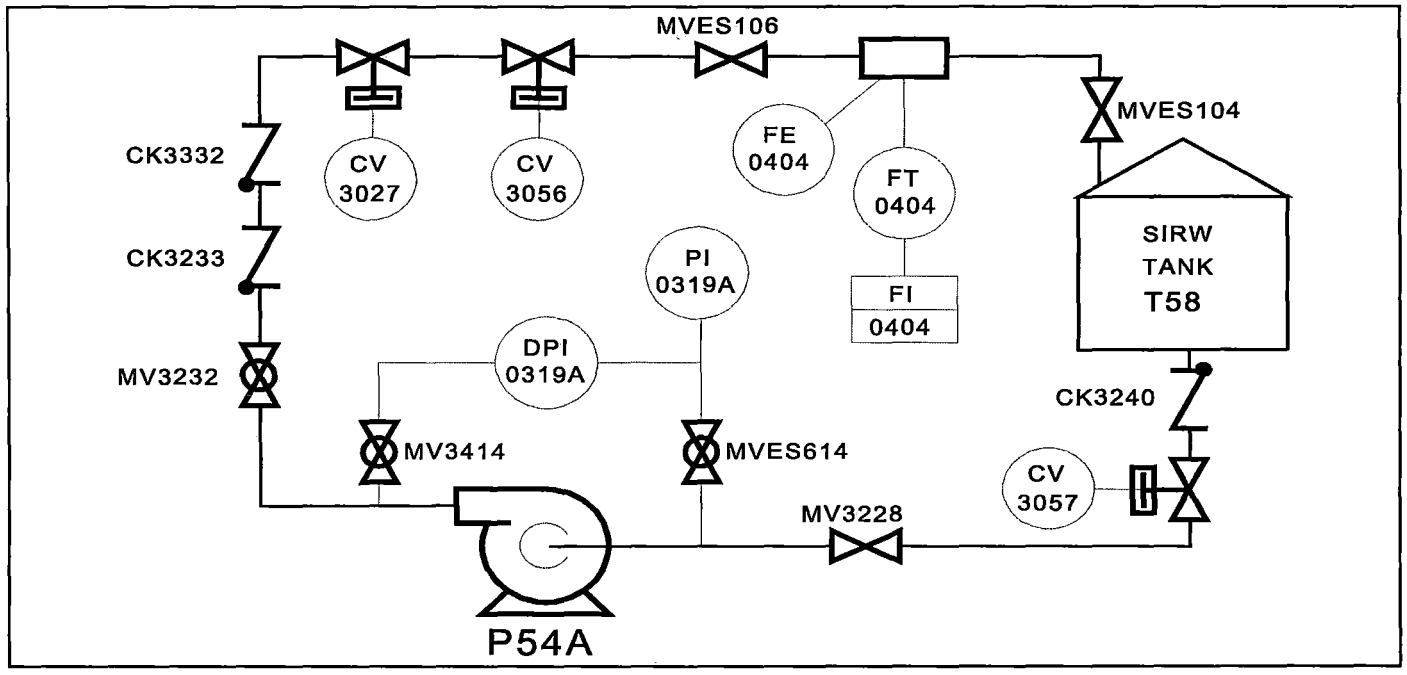
The Component Cooling Water Pumps are designed to maintain Plant cooling loads during normal operation and accident conditions. These pumps provide adequate cooling capability for the Safety Injection and Containment Spray water when it is recirculated through the Shutdown Cooling Heat Exchangers and for cooling the glands of the Safety Injection, Charging, and Containment Spray Pumps. This pump is provided with 2400 VAC emergency power from bus 1C.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DIFFERENTIAL PRESSURE	83 PSID	dPI-0918C
FLOW RATE (1)	6.0 PSID	dPI-0918
	6.0 PSID	dPI-0919
VIBRATION	MULTIPLE IPS-PK	M&TE

(1) Flow rate is determined by indirectly setting heat exchanger E-54A and E-54B differential pressures to the specified reference value to obtain a flowrate of 4200 gpm.

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

CONTAINMENT SPRAY SYSTEM TEST FLOWPATH		
PUMP P-54A/ Group B	TEST PROC NO Q0-16	P&ID: M-204-1A/D5



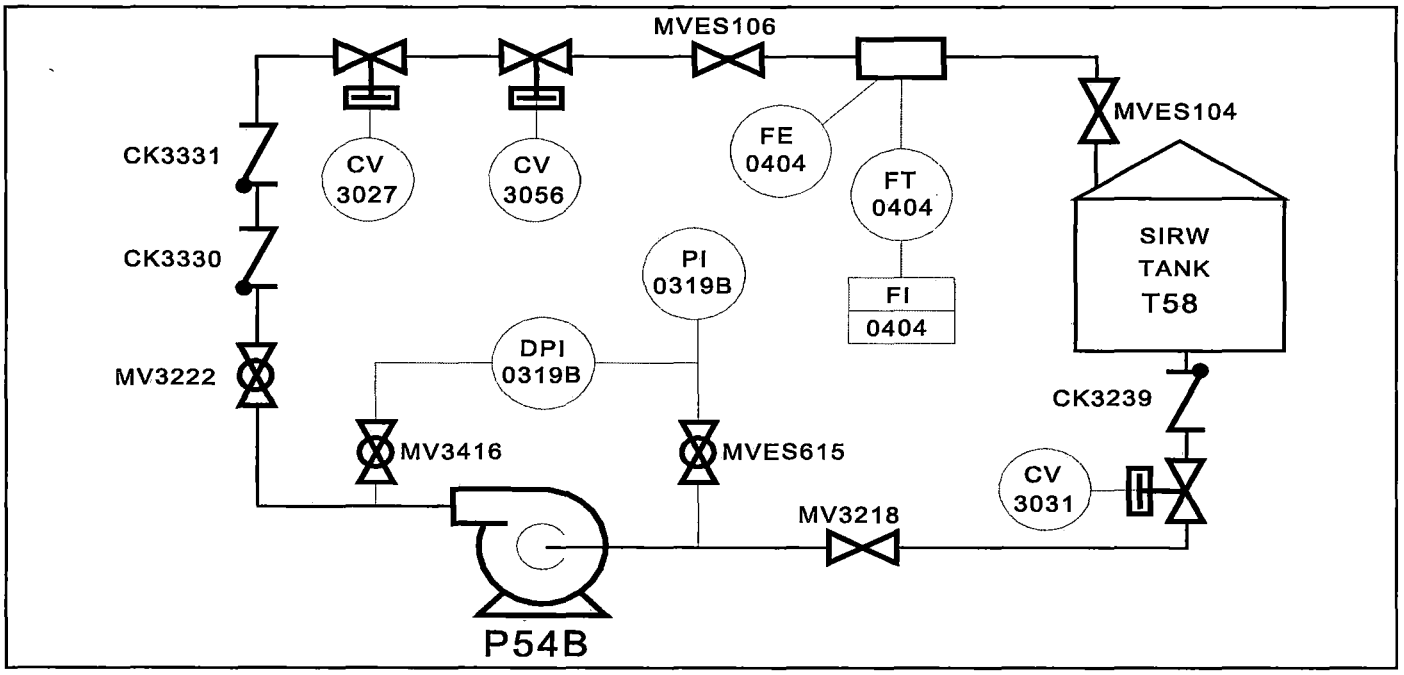
CONTAINMENT SPRAY PUMPS

The Containment Spray Pumps have an active safety function to supply water to the Containment Spray Headers. The water is used to depressurize the Containment following a LOCA or Main Steam Line Break. P-54A starts automatically upon receipt of a Containment High Pressure Signal (CHP). The Containment Spray Pumps are designed to provide 50% of the required Containment Spray flow each, which provides on redundant 50% capacity pump. Pump P-54A is powered from 2400 VAC safety-related bus 1D.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DIFFERENTIAL PRESSURE	227 PSID	dPI-0319A
FLOW RATE	260 GPM	FI-0404
VIBRATION	MULTIPLE IPS-PK	Not Required

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

CONTAINMENT SPRAY SYSTEM TEST FLOWPATH		
PUMP P-54B/ Group B	TEST PROC NO QO-16	P&ID: M-204-1/B3



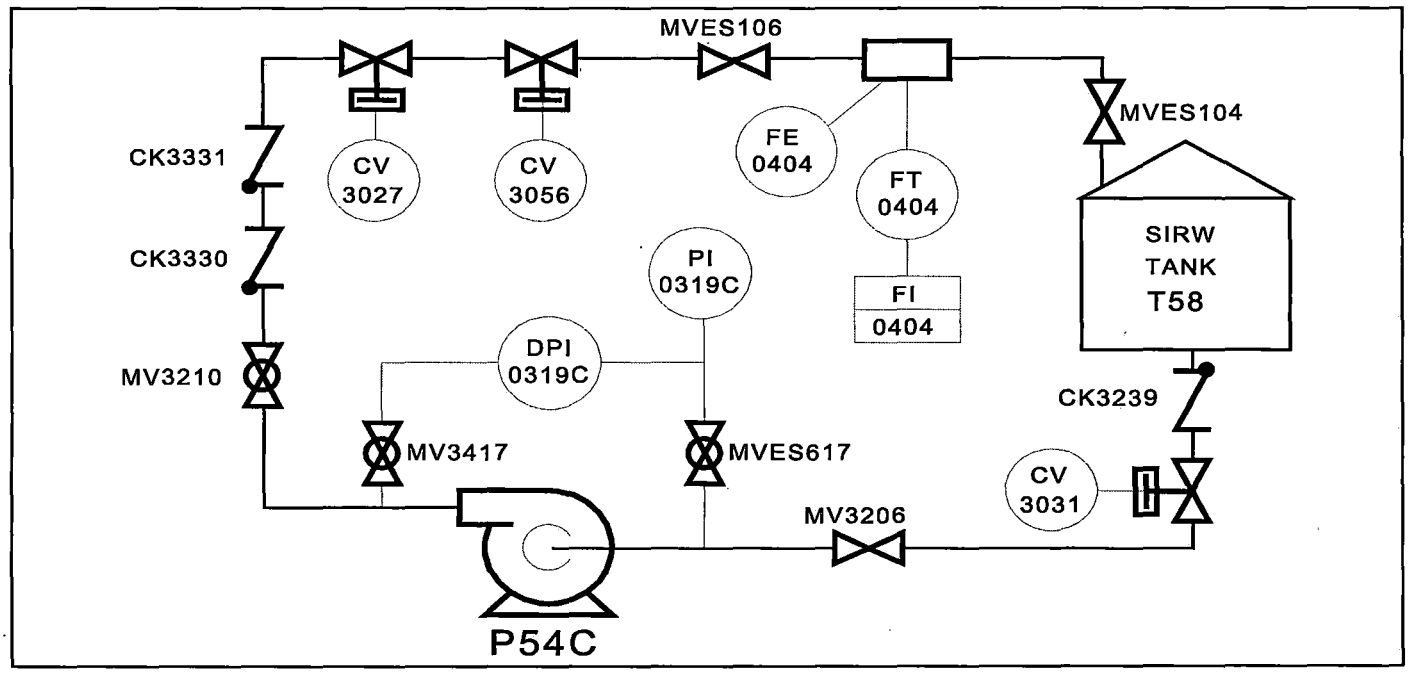
CONTAINMENT SPRAY PUMPS

The Containment Spray Pumps have an active safety function to supply water to the Containment Spray Headers. The water is used to depressurize the Containment following a LOCA or Main Steam Line Break. P-54B starts automatically upon receipt of a Containment High Pressure Signal (CHP). The Containment Spray Pumps are designed to provide 50% of the required Containment Spray flow each, which provides on redundant 50% capacity pump. Pump P-54B is powered from 2400 VAC safety-related bus 1C.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DIFFERENTIAL PRESSURE	225 PSID	dPI-0319B
FLOW RATE	260 GPM	FI-0404
VIBRATION	MULTIPLE IPS-PK	Not Required

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

CONTAINMENT SPRAY SYSTEM TEST FLOWPATH		
PUMP P-54C/ Group B	TEST PROC NO QO-16	P&ID: M-204-1/D3



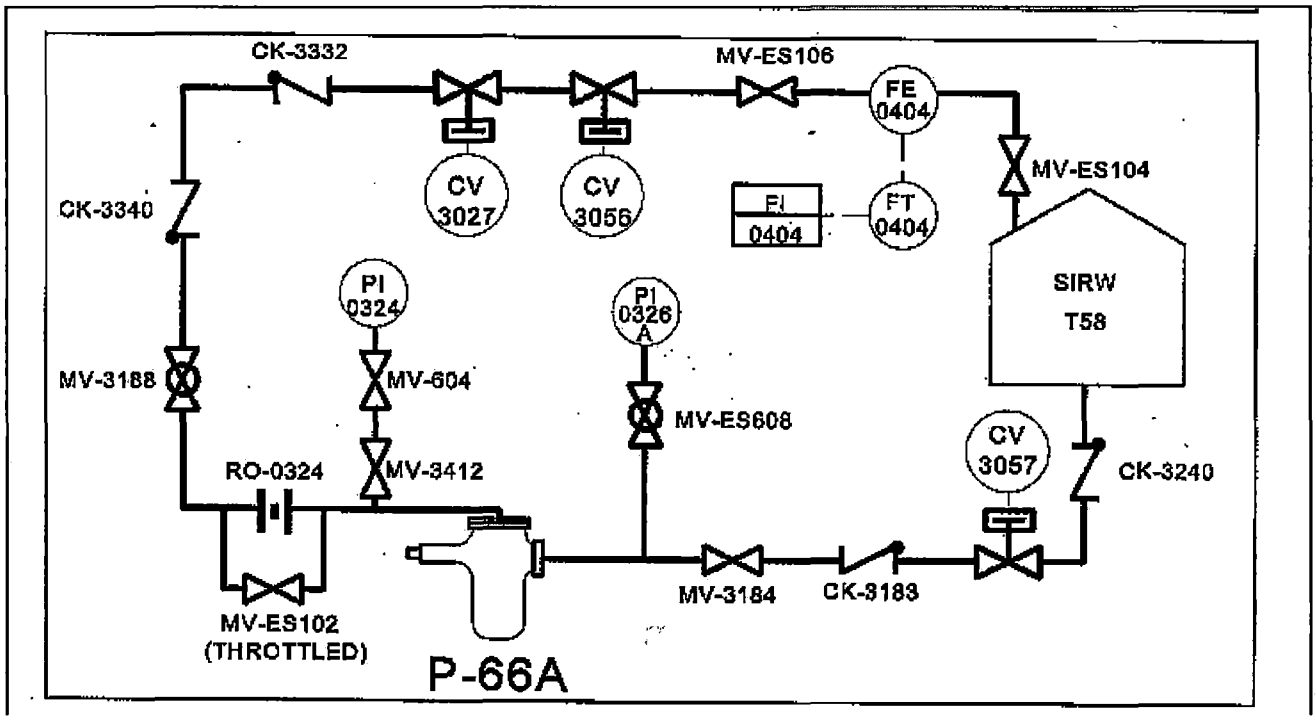
CONTAINMENT SPRAY PUMPS

The Containment Spray Pumps have an active safety function to supply water to the Containment Spray Headers. The water is used to depressurize the Containment following a LOCA or Main Steam Line Break. P-54C starts automatically upon receipt of a Containment High Pressure Signal (CHP). The Containment Spray Pumps are designed to provide 50% of the required Containment Spray flow each, which provides on redundant 50% capacity pump. Pump P-54C is powered from 2400 VAC safety-related bus 1C.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DIFFERENTIAL PRESSURE	225 PSID	dPI-0319C
FLOW RATE	260 GPM	FI-0404
VIBRATION	MULTIPLE IPS-PK	Not Required

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

HIGH PRESSURE SAFETY INJECTION PUMPS RECIRC TEST FLOW PATH		
PUMP P-66A/ Group A	TEST PROC NO QO-19	P&ID: M-204-1A/B5



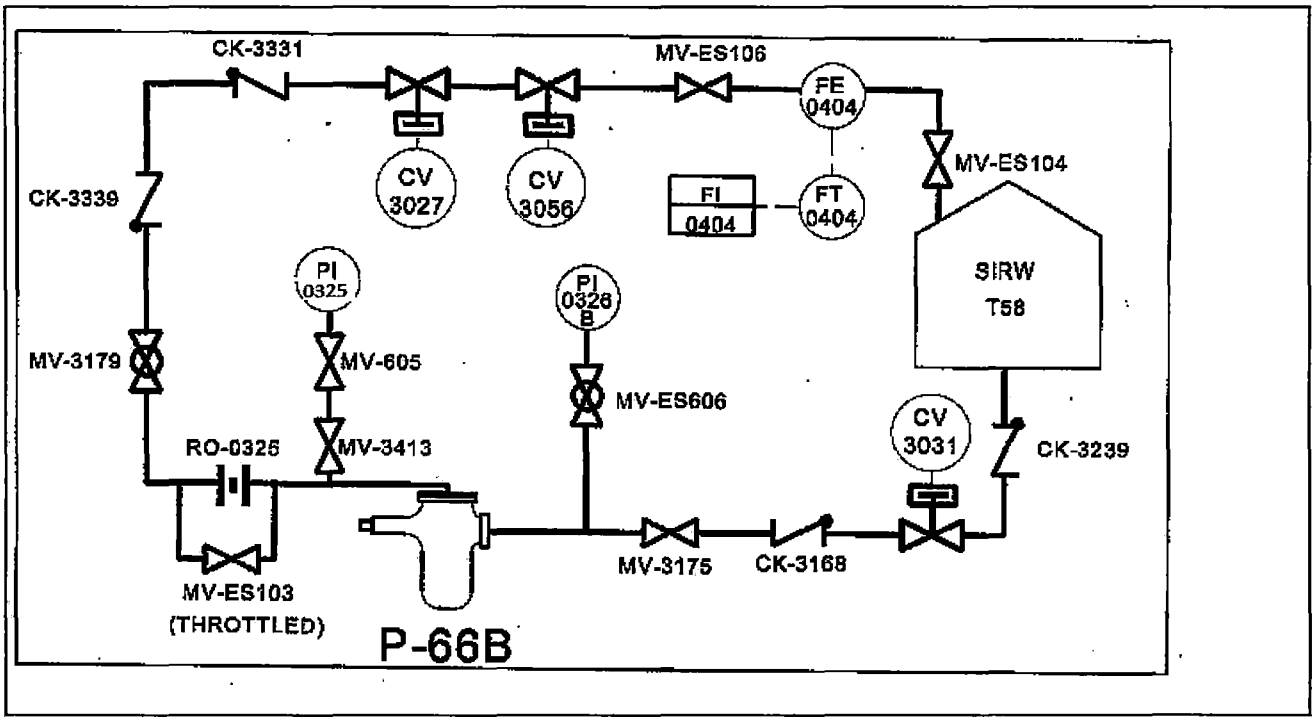
HIGH PRESSURE SAFETY INJECTION PUMPS

The High Pressure Safety Injection (HPSI) Pumps have an active safety function to supply primary makeup water in response to various accidents. The pumps start automatically upon receipt of a Safety Injection Signal (SIS) and may continue to operate to provide long term post accident cooling until Shutdown Cooling can be initiated. These pumps may be started manually by operators in response to a steam generator tube rupture. Each pump is designed to provide 100% of the required HPSI flow rate. The power supply to pump P-66A is safety-related 2400 VAC bus 1D.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
INLET PRESS (1)	VARIABLE PSI	PI-0326A
DISCHARGE PRESSURE (1)	VARIABLE PSI	PI-0324
DIFFERENTIAL PRESSURE	1236 PSID	CALCULATED
FLOW RATE	150 GPM	FI-0404
VIBRATION	MULTIPLE IPS-PK	Not Required

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

HIGH PRESSURE SAFETY INJECTION PUMPS RECIRC TEST FLOW PATH		
PUMP P-66B/ Group A	TEST PROC NO QO-19	P&ID: M-204-1/F3



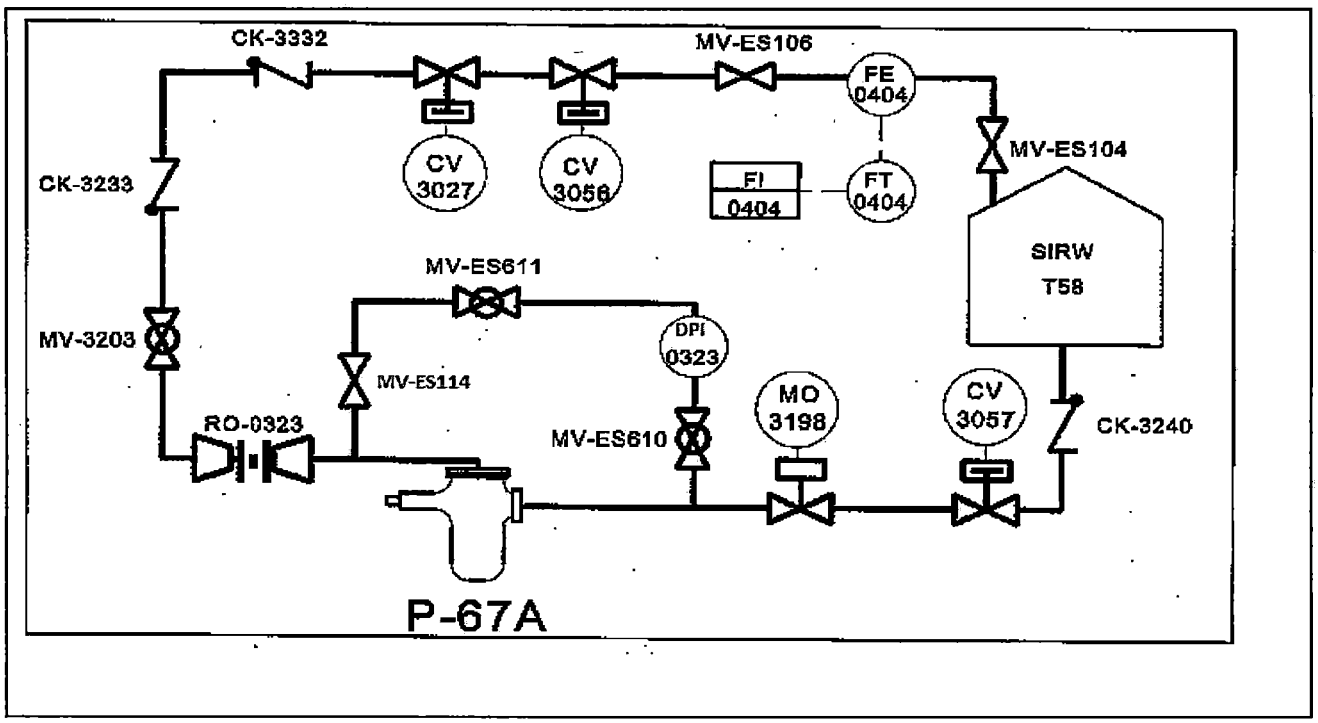
HIGH PRESSURE SAFETY INJECTION PUMPS

The High Pressure Safety Injection (HPSI) Pumps have an active safety function to supply primary makeup water in response to various accidents. The pumps start automatically upon receipt of a Safety Injection Signal (SIS) and may continue to operate to provide long term post accident cooling until Shutdown Cooling can be initiated. These pumps may be started manually by operators in response to a steam generator tube rupture. Each pump is designed to provide 100% of the required HPSI flow rate. The power supply to pump P-66B is safety-related 2400 VAC bus 1C.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
INLET PRESS (1)	VARIABLE PSI	PI-0326B
DISCHARGE PRESSURE (1)	VARIABLE PSI	PI-0324
DIFFERENTIAL PRESSURE	1240 PSID	CALCULATED
FLOW RATE	150 GPM	FI-0404
VIBRATION	MULTIPLE IPS-PK	Not Required

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

LOW PRESSURE SAFETY INJECTION RECIRC TEST FLOW PATH		
PUMP P-67A/ Group A	TEST PROC NO QO-20	P&ID: M-204-1A/E6



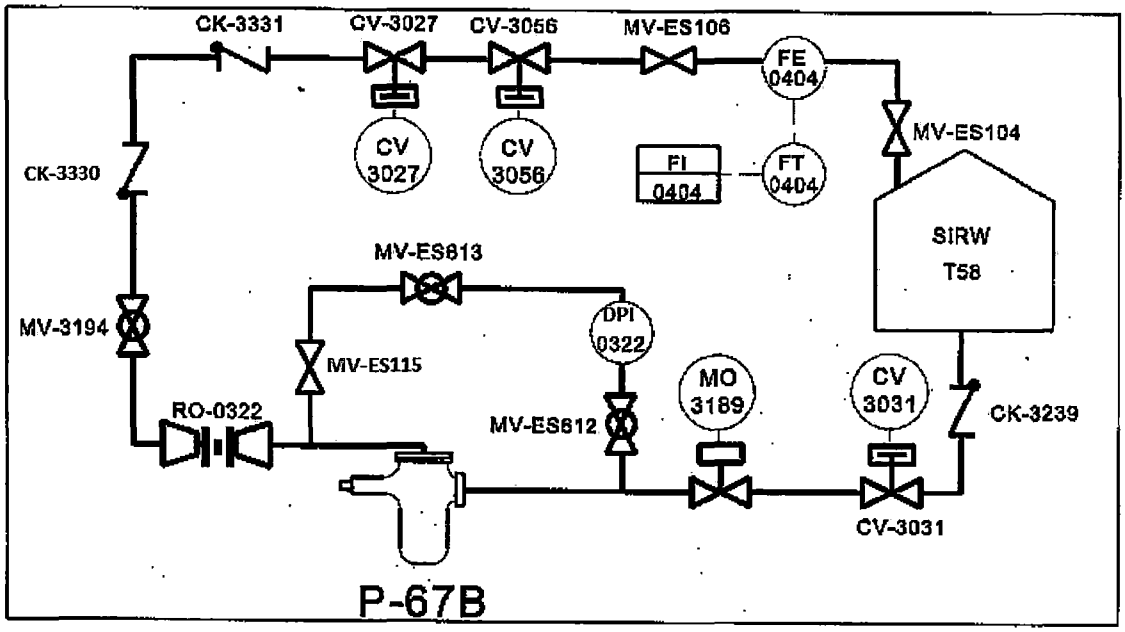
LOW PRESSURE SAFETY INJECTION PUMPS

The Low Pressure Safety Injection (LPSI) Pumps have an active safety function to supply primary makeup water in response to various accidents, as well as, provide cooling flow for either normal or post accident Shutdown Cooling. The pumps start automatically upon receipt of a Safety Injection Signal (SIS) or is started manually to enter Shutdown Cooling. The LPSI pumps are each designed to supply 100% of the required LPSI or Shutdown Cooling flow. The power supply to pump P-67A is safety-related 2400 VAC bus 1D.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DIFFERENTIAL PRESSURE	187 PSID	dPI-0323
FLOW RATE	190 GPM	FI-0404
VIBRATION	MULTIPLE IPS-PK	M&TE

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

LOW PRESSURE SAFETY INJECTION RECIRC TEST FLOW PATH		
PUMP P-67B/ Group A	TEST PROC NO QO-20	P&ID: M-204-1/E3



LOW PRESSURE SAFETY INJECTION PUMPS

The Low Pressure Safety Injection (LPSI) Pumps have an active safety function to supply primary makeup water in response to various accidents, as well as, provide cooling flow for either normal or post accident Shutdown Cooling. The pumps start automatically upon receipt of a Safety Injection Signal (SIS) or is started manually to enter Shutdown Cooling. The LPSI pumps are each designed to supply 100% of the required LPSI or Shutdown Cooling flow. The power supply to pump P-67B is safety-related 2400 VAC bus 1C.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DIFFERENTIAL PRESSURE	186 PSID	dPI-0322
FLOW RATE	190 GPM	FI-0404
VIBRATION	MULTIPLE IPS-PK	M&TE

IST PUMP REFERENCE VALUE(S)/RANGE(S) CHANGE FORM

COMPONENT AND CODE IDENTIFICATION

Pump Component ID: _____

Pump Description: _____

Pump Category:

☐ Group A

☐ Group B

IST Parameter(s) Being Changed:

Applicable ASME Code: ASME OM Code 2004, OMb-2006, Subsection ISTA and ISTB.

REASON FOR REFERENCE VALUE/ACCEPTANCE CRITERIA CHANGE

Reason for the Reference Value/Acceptance Criteria Change:

☐ Pump Repair (ISTB-3310)

☐ Pump Replacement (ISTB-3310)

☐ Routine Servicing of a Pump (ISTB-3310)

☐ Establishment of Additional Set of Reference Values (ISTB-3320)

☐ Other: _____

Description of the reason for the Reference Value/Acceptance Criteria change:

BASIS FOR REFERENCE VALUE/ACCEPTANCE CRITERIA CHANGE

Test used to establish Reference Value/Acceptance Criteria:

☐ Preservice Test: _____
Date: _____
Work Order: _____

☐ Inservice Test: _____
Date: _____
Work Order: _____

☐ Other: _____
Date: _____
Work Order: _____

Current IST Reference Value/Range

Use the applicable parameters in the table below to define the current IST reference value(s)/range(s).

IST PUMP REFERENCE VALUE(S)/RANGE(S) CHANGE FORM

PARAMETER	REFERENCE VALUE	ACCEPTABLE RANGE	ALERT RANGE	REQUIRED ACTION RANGE
Differential Pressure (psid)				
Flowrate (gpm)				
Speed (rpm)				
P1X (IPS-PK)				
P1Y (IPS-PK)				
P1Z (IPS-PK)				
P2X (IPS-PK)				
P2Y (IPS-PK)				
P2Z (IPS-PK)				
M1X (IPS-PK)				
M1Y (IPS-PK)				
M1Z (IPS-PK)				
M2X (IPS-PK)				
M2Y (IPS-PK)				
M2Z (IPS-PK)				

New IST Reference Value/Range

Use the applicable parameters in the table below to define the new IST reference value(s)/range(s).

PARAMETER	REFERENCE VALUE	ACCEPTABLE RANGE	ALERT RANGE	REQUIRED ACTION RANGE
Differential Pressure (psid)				
Flowrate (gpm)				
Speed (rpm)				
P1X (IPS-PK)				
P1Y (IPS-PK)				
P1Z (IPS-PK)				
P2X (IPS-PK)				
P2Y (IPS-PK)				
P2Z (IPS-PK)				
M1X (IPS-PK)				
M1Y (IPS-PK)				
M1Z (IPS-PK)				
M2X (IPS-PK)				
M2Y (IPS-PK)				
M2Z (IPS-PK)				

Does the pump have a minimum Technical Specification Value?

☐ Yes
☐ No

Description of value: _____

Does the pump have a FSAR Design Basis Accident Value?

☐ Yes
☐ No

IST PUMP REFERENCE VALUE(S)/RANGE(S) CHANGE FORM

Description of value: _____

Basis for New IST Reference Value/Acceptance Criteria

_____

_____

ANALYSIS OF NEW REFERENCE VALUE/ACCEPTANCE CRITERIA

Analysis of deviations between the previous and new reference values:

_____

_____

Verification that the new reference value/ranges represent acceptable operation:

_____

_____

DOCUMENT UPDATES

Is a Surveillance Test Procedure Change Required?

☐ Yes
☐ No

If Yes, document the procedure and DRN No.

_____

Are Changes to Other Documents Required?

☐ Yes
☐ No

If Yes, then Describe:

_____

_____

APPROVALS

Prepared by Qualified IST Engineer:

Name: _____
Signature: _____
Date: _____

Approved by:

Name: _____
Signature: _____
Date: _____

PUMP SUMMARY LISTING

The following table provides the details of the pumps that are in the scope of the Inservice Testing Program.

Pump Summary Listing - Entergy

PUMP ID	FUNCTION	DRAWING/COOR	GROUP	CLASS	TYPE	FIXED OR VAR.	ACTUAL SPEED	TEST REQ	FREQ	PROCEDURE	NOTES
P-052A	COMPONENT COOLING WATER PUMP	M209-3	A	3	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-146	
								Q	2Y	RO-146	
								V	2Y	RO-146	
								dP	Q	QO-15	
								Q	Q	QO-15	
								V	Q	QO-15	
P-052B	COMPONENT COOLING WATER PUMP	M209-3	A	3	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-146	
								Q	2Y	RO-146	
								V	2Y	RO-146	
								dP	Q	QO-15	
								Q	Q	QO-15	
								V	Q	QO-15	
P-052C	COMPONENT COOLING WATER PUMP	M209-3	A	3	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-146	
								Q	2Y	RO-146	
								V	2Y	RO-146	
								dP	Q	QO-15	
								Q	Q	QO-15	
								V	Q	QO-15	
P-054A	CONTAINMENT SPRAY PUMP	M204-1A	B	2	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-98	
								Q	2Y	RO-98	
								V	2Y	RO-98	
								dP	Q	QO-16	
								Q	Q	QO-16	

Pump Summary Listing - Entergy

Page 2 of 5

PUMP ID	FUNCTION	DRAWING/COOR	GROUP	CLASS	TYPE	FIXED OR VAR.	ACTUAL SPEED	TEST REQ	FREQ	PROCEDURE	NOTES
P-054B	CONTAINMENT SPRAY PUMP	M204-1	B	2	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-98	
								Q	2Y	RO-98	
								V	2Y	RO-98	
								dP	Q	QO-16	
								Q	Q	QO-16	
P-054C	CONTAINMENT SPRAY PUMP	M204-1	B	2	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-98	
								Q	2Y	RO-98	
								V	2Y	RO-98	
								dP	Q	QO-16	
								Q	Q	QO-16	
P-066A	HIGH PRESSURE SAFETY INJECTION PUMP	M204-1A	A	2	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-147	
								Q	2Y	RO-147	
								V	2Y	RO-147	
								dP	Q	QO-19	
								Q	Q	QO-19	
								V	Q	QO-19	
P-066B	HIGH PRESSURE SAFETY INJECTION PUMP	M204-1	A	2	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-147	
								Q	2Y	RO-147	
								V	2Y	RO-147	
								dP	Q	QO-19	
								Q	Q	QO-19	
								V	Q	QO-19	

Pump Summary Listing - Entergy

PUMP ID	FUNCTION	DRAWING/COOR	GROUP	CLASS	TYPE	FIXED OR VAR.	ACTUAL SPEED	TEST REQ	FREQ	PROCEDURE	NOTES
P-067A	LOW PRESSURE SAFETY INJECTION PUMP	M204-1A	A	2	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-98	
								Q	2Y	RO-98	
								V	2Y	RO-98	
								dP	Q	QO-20	
								Q	Q	QO-20	
								V	Q	QO-20	
P-067B	LOW PRESSURE SAFETY INJECTION PUMP	M204-1	A	2	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-98	
								Q	2Y	RO-98	
								V	2Y	RO-98	
								dP	Q	QO-20	
								Q	Q	QO-20	
								V	Q	QO-20	
P-008A	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP	M207-2	B	3	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-145	
								Q	2Y	RO-145	
								V	2Y	RO-145	
								dP	Q	QO-21	
								Q	Q	QO-21	

Pump Summary Listing - Entergy

Page 4 of 5

PUMP ID	FUNCTION	DRAWING/COOR	GROUP	CLASS	TYPE	FIXED OR VAR.	ACTUAL SPEED	TEST REQ	FREQ	PROCEDURE	NOTES
P-008B	STEAM DRIVEN AUXILIARY FEEDWATER PUMP	M207-2	B	3	Centrifugal Horizontal	Var	GE600	dP	2Y	RO-145	
								N	2Y	RO-145	
								Q	2Y	RO-145	
								V	2Y	RO-145	
								dP	Q	QO-21	
								N	Q	QO-21	
								Q	Q	QO-21	
P-008C	MOTOR DRIVEN AUXILIARY FEEDWATER PUMP	M207-2	A	3	Horizontal Centrifugal	Fixed	GE600	dP	2Y	RO-145	
								Q	2Y	RO-145	
								V	2Y	RO-145	
								dP	Q	QO-21	
								Q	Q	QO-21	
								V	Q	QO-21	
P-007A	SERVICE WATER PUMP	M213	A	3	Vertical Line Shaft Centrifugal	Fixed	GE600	dP	2Y	RO-144	
								Q	2Y	RO-144	
								V	2Y	RO-144	
								dP	Q	QO-14	
								Q	Q	QO-14	
								V	Q	QO-14	

Pump Summary Listing - Entergy

Page 5 of 5

PUMP ID	FUNCTION	DRAWING/COOR	GROUP	CLASS	TYPE	FIXED OR VAR.	ACTUAL SPEED	TEST REQ	FREQ	PROCEDURE	NOTES
P-007B	SERVICE WATER PUMP	M213	A	3	Vertical Line Shaft Centrifugal	Fixed	GE600	dP	2Y	RO-144	
								Q	2Y	RO-144	
								V	2Y	RO-144	
								dP	Q	QO-14	
								Q	Q	QO-14	
								V	Q	QO-14	
P-007C	SERVICE WATER PUMP	M213	A	3	Vertical Line Shaft Centrifugal	Fixed	GE600	dP	2Y	RO-144	
								Q	2Y	RO-144	
								V	2Y	RO-144	
								dP	Q	QO-14	
								Q	Q	QO-14	
								V	Q	QO-14	

Palisades Nuclear Plant
Inservice Testing (IST) Program Plan

Fifth Ten-Year Interval

Section 5.0

Deferred Test Justifications

(29 pages follow)

Palisades Pump and Valve Inservice Testing (IST) Program

COLD SHUTDOWN JUSTIFICATION

CSJ-01

Component ID	Class	Cat	System	Label
PRV-1067	1	B	PCS	Reactor Head Vent Valve
PRV-1068	1	B	PCS	Reactor Head Vent Valve
PRV-1069	1	B	PCS	Pressurizer Head Vent Valve
PRV-1070	1	B	PCS	Pressurizer Head Vent Valve
PRV-1071	1	B	PCS	Rx Head and Pressurizer Head Combined Vent Valve
PRV-1072	1	B	PCS	Rx Head and Pressurizer Head Combined Vent Valve

FUNCTION:

The Reactor Head Vent Valves perform a safety function to OPEN during a LOCA in order to vent gasses from the reactor vessel head. They perform a safety function in the CLOSED position to maintain Primary Coolant System Integrity.

The Pressurizer Head Vent Valves perform a safety function to OPEN during a LOCA in order to vent gasses from the pressurizer head. They perform a safety function in the CLOSED position to maintain Primary Coolant System Integrity.

The Rx Head and Pressurizer Head Combined Vent Valves perform a safety function to OPEN during a LOCA in order to vent gasses from the reactor vessel or pressurizer head. They perform a safety function in the CLOSED position to maintain Primary Coolant System Integrity.

TEST REQUIREMENT:

ASME OMa-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

These valves are Reactor Coolant Pressure Boundary (RCPB) valves per the requirements of 10 CFR 50.2. Testing these valves during reactor operation would violate the two valve RCPB isolation provision of 10 CFR 50.2. Additionally, testing these valves during operation with the PCS at normal operating temperature and pressure would result in discharge of small amounts of radioactive steam to the containment atmosphere.

ALTERNATE TESTING:

Exercise during cold shutdowns, but not necessarily more frequently than once each quarter.

Remote Position Indication verification is performed each refueling outage and at least once every two years.

COLD SHUTDOWN JUSTIFICATION

CSJ-02

Component ID	Class	Cat	System	Label
CV-2083	2	A	CVC	PCS Pumps Controlled Bleedoff Containment Isolation
CV-2099	2	A	CVC	PCP P-50A, B, C & D Controlled Bleedoff

FUNCTION:

These valves have a safety function to CLOSE for Containment isolation of the primary coolant pump seal controlled bleedoff line to volume control tank.

CV-2083 and CV-2099 perform a safety function in the CLOSED position to isolate containment penetration 44 on a Containment High Pressure (CHP) Signal and/or a Containment High Radiation (CHR) Signal from the Containment Isolation system and a Safety Injection Signal, which are expected to occur as a result of a LOCA.

TEST REQUIREMENT:

ASME OMa-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Shutting this valve during primary coolant pump operation (i.e., any hot Plant condition) stops pump seal leakoff flow and, subsequently, a loss of seal lubrication and cooling. This scenario could lead to a seal failure resulting in significant pump damage, and relief valve lift, resulting in the unnecessary loss of primary coolant as radioactive waste.

ALTERNATE TESTING:

Exercise during cold shutdowns, but not necessarily more frequently than once each quarter. Perform Position Indication Test at least once every two years. Leak testing is performed in accordance with 10 CFR 50.55, Appendix J, Local Leak Rate Test Program.

Palisades Pump and Valve Inservice Testing (IST) Program
COLD SHUTDOWN JUSTIFICATION
CSJ-04

Component ID	Class	Cat	System	Label
CV-2009	2	A	CVC	Containment Letdown Isolation

FUNCTION:

CV-2009 performs a safety function in the CLOSED position to isolate containment penetration 36 on a Containment High Pressure (CHP) Signal and/or a Containment High Radiation (CHR) Signal from the Containment Isolation system and a Safety Injection Signal, which are expected to occur as a result of a LOCA.

TEST REQUIREMENT:

ASME OMa-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Interrupting letdown flow at normal operating temperature is undesirable because subsequent re-initiation of flow may cause thermal shock to the regenerative heat exchanger. Disruption of normal letdown flow may result in pressurizer pressure and level transients. In addition, closing this valve at PCS pressures greater than 600 psia will cause relief valve RV-2006 to lift, unless the letdown line is isolated prior to exercising this valve. The isolation function can only be verified safely at lower PCS pressures and temperatures.

ALTERNATE TESTING:

Exercise during cold shutdown, but not necessarily more often than once each quarter, and a Position Indication Test at least once every two years.

Leak testing shall be performed in accordance with the 10 CFR 55.55, Appendix J, Local Leak Rate Test Program.

COLD SHUTDOWN JUSTIFICATION

CSJ-08

Component ID	Class	Cat	System	Label
CV-3001	2	B	ESS	Containment Spray Header Isolation Valve
CV-3002	2	B	ESS	Containment Spray Header Isolation Valve

FUNCTION:

CV-3001 and CV-3002 perform a safety function to OPEN to provide a flow path for containment spray to its associated containment spray header. This valve opens automatically upon receipt of a containment high pressure signal to reduce containment pressure and thus maintain containment integrity.

CV-3001 and CV-3002 perform a safety function in the CLOSED position to prevent spraying the containment during shutdown cooling operations.

TEST REQUIREMENT:

ASME OM-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Exercising these valves during normal operation may result in draining the containment spray headers. The spray headers must be maintained full to a level of 735 ft. per Technical Specification Surveillance Requirement SR 3.6.6.3. Restoration of spray header water level would require a containment entry with the Plant at power. Entering Containment with the Plant at power would expose personnel to excessive radiation levels.

ALTERNATE TESTING:

Exercise during cold shutdowns but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years.

COLD SHUTDOWN JUSTIFICATION

CSJ-10

Component ID	Class	Cat	System	Label
CV-3027	2	A	ESS	SIRW Tank T-58 Recirculation
CV-3056	2	A	ESS	SIRW Tank T-58 Recirculation Shutoff

FUNCTION:

CV-3027 and CV-3056 perform a safety function in the OPEN position to provide a minimum recirculation flow path to prevent damage to the low pressure and high pressure safety injection pumps while primary coolant system pressure is higher than pump discharge pressure.

CV-3027 and CV-3056 perform a safety function in the CLOSED position to prevent pumping contaminated water from the containment sump to the safety injection and refueling water tank following a recirculation actuation signal (RAS). These valves must also limit leakage back to the SIRW Tank that could lead to releases of radionuclides in excess of those allowed.

TEST REQUIREMENT:

ASME OM-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

These normally open valves isolate the minimum flow recirculation lines for all ECCS pumps. For the period of time either of these valves are closed, both ECCS trains are inoperable, which is not allowed by technical specification. As such, an immediate Plant shutdown would be required when either valve is closed.

ALTERNATE TESTING:

Exercise during cold shutdowns but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years.

Palisades Pump and Valve Inservice Testing (IST) Program

COLD SHUTDOWN JUSTIFICATION

CSJ-13

Component ID	Class	Cat	System	Label
CV-3031	2	A	ESS	SIRW Tank T-58 Outlet Isolation
CV-3057	2	A	ESS	SIRW Tank T-58 Discharge Shutoff Valve

FUNCTION:

CV-3031 and CV-3057 perform a safety function in the OPEN position to provide a flow path from the safety injection and refueling water tank to the suction of the low pressure safety injection pumps, the high pressure safety injection pumps, and the containment spray pumps.

CV-3031 and CV-3057 perform a safety function in the CLOSED position to prevent a loss of suction to the safety injection and containment spray pumps.

TEST REQUIREMENT:

ASME OM-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Exercising CV-3031 and CV-3057 eliminates the suction source of one ECCS train. Exercising CV-3031 eliminates the suction source for P-66B HPSI Pump and P-67B LPSI Pump, as well as P-54B and P-54C CTMT Spray Pumps. Exercising CV-3057 eliminates the suction source for P-66A HPSI Pump and P-67A LPSI Pump and P-54A CTMT Spray Pump. To preclude equipment failure should a coincidental ESS actuation occur while either CV-3031 (or CV-3057) is closed, Operations would have to manually disable all 4 (3) pumps by removing their breaker control power fuses, and then they would have to subsequently test-start all 4 (3) pumps to verify operability in accordance with administrative procedures. In addition to entry into a 72 hour action statement, the potential for equipment failure (fuse, breaker) and/or human performance error is increased. The additional equipment and human performance failures associated with stroke-testing either CV-3031 (T-58 to West Safeguards) or CV-3057 (T-58 to East Safeguards) introduces a risk that is not commensurate with the benefit of stroking these valves above cold shutdown (Mode 5). Therefore, these valves will be exercised at cold shutdowns.

ALTERNATE TESTING:

Exercise during cold shutdowns but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years.

Component ID	Class	Cat	System	Label
CV-3029	2	B	ESS	Containment Sump Isolation to ESS Room
CV-3030	2	B	ESS	Containment Sump Isolation to West ESS Room

FUNCTION:

Valves CV-3029 and CV-3030 have a safety function in the OPEN position to provide a suction flow path to the ECCS pumps during a Recirculation Actuation Signal (RAS). These valves have a safety function in the CLOSED position to isolate the suction flow path from the containment sump from the high pressure safety injection pumps, low pressure safety injection pumps, and the containment spray pumps.

TEST REQUIREMENT:

ASME OM-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Exercising CV-3029 and CV-3030 eliminates the suction source for one ECCS train. Exercising CV-3029 is associated with the suction source for P-66A HPSI Pump and P-67A LPSI Pump and P-54A CTMT Spray Pump. Exercising CV-3031 is associated with the suction source for P-66B HPSI Pump and P-67B LPSI Pump, as well as P-54B and P-54C CTMT Spray Pumps.

If either of these Control Valves is opened while above 325 degrees F in Mode 3, and then a LBLOCA occurs as the initiating event which pressurizes containment to 55 psig, then assuming no concurrent single-failure, there will be a 10 CFR 100 release via the unmonitored SIRWT (T-58) vent via the affected ESS room LPSI and HPSI Pump un-isolated mini-flow lines. To preclude the scenario described above, Operations would have to manually disable the applicable ECCS train HPSI and LPSI Pumps by removing their breaker control power fuses as well as isolating their mini-flow valves. They would have to subsequently restore normal valve line-ups and then test-start the applicable HPSI and LPSI Pumps to verify operability in accordance with administrative procedures.

In addition to entry into a 72-hour action statement, the potential for equipment failure (fuse, breaker) and/or human performance error is increased. A minimum of two entries into either Engineering Safeguards Room to allow for stroking either one of these valves is not ALARA. The additional dose, equipment, and human performance failures associated with stroke testing either CV-3029 (Containment Sump to East Safeguards) or CV-3030 (Containment Sump to West Safeguards) introduces a risk that is not commensurate with the benefit of stroking these valves above Mode 3 and greater than 325 degrees F. Therefore, these valves will be exercised at cold shutdowns.

ALTERNATE TESTING:

Exercise during cold shutdowns but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years.

Palisades Pump and Valve Inservice Testing (IST) Program

COLD SHUTDOWN JUSTIFICATION

CSJ-15

Component ID	Class	Cat	System	Label
CV-0501	2	B	MSS	Main Steam Isolation Valve SG E-50B to HP Turbine
CV-0510	2	B	MSS	Main Steam Isolation Valve SG E-50A to HP Turbine

FUNCTION:

CV-0501 and CV-0510 have a safety function to CLOSE upon receipt of a steam generator low pressure signal from a MSLB to limit the POS Cooldown rate and the resultant reactivity insertion. Technical Specifications specify a maximum closing time of five seconds.

TEST REQUIREMENT:

ASME OMa-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

These valves cannot be exercised during normal Plant operation, since a full-stroke exercise results in loss of steam flow to the turbine creating adverse transients and a resulting reactor trip. A partial stroke exercise is not practical during power operations, since these valves fully stroke on initiation of a close signal. These valves can be exercised during hot standby, hot shutdown or cold shutdown periods.

ALTERNATE TESTING:

Exercise during cold shutdowns but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years.

Palisades Pump and Valve Inservice Testing (IST) Program
COLD SHUTDOWN JUSTIFICATION
CSJ-17

Component ID	Class	Cat	System	Label
CK-CC910	2	C	CCS	CCS Water Inlet Containment Isolation Valve
CV-0910	2	N/A	CCS	CCS Water Inlet Containment Isolation Valve
CV-0911	2	B	CCS	CCS Water Return Containment Isolation Valve
CV-0940	2	N/A	CCS	CCS Water Return Containment Isolation Valve

FUNCTION:

Check valve CK-CC910 has a safety function to CLOSE to isolate containment penetration MZ-14.

Control Valve CV-0911 has a safety function to CLOSE upon receipt of a Containment High Pressure signal.

These valves perform NO safety function in the Open position.

Tests performed on CV-0910 and CV-0940 are Supplemental Tests only.

TEST REQUIREMENT:

ASME OM-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

ASME OMb-2006 ISTC-3522(b); if exercising is not practicable during operation at power, it shall be performed during cold shutdowns.

BASIS:

Exercising the above valves during normal operation results in loss of cooling water flow to the primary coolant pump seals. The interruption of flow would cause failure of the pump seals and eventual pump bearing failure. This test is impractical to perform while the primary coolant pumps are in service. This testing can be performed during cold shutdowns when the primary coolant pumps are not in service,

ALTERNATE TESTING:

Exercise during cold shutdowns but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years.

Component ID	Class	Cat	System	Label
CV-0824	2	B	SWS	Containment Air Coolers Service WTR Return
CV-0847	2	B	SWS	Containment Air Coolers Service Water Supply

FUNCTION:

CV-0824 and CV-0847 have a safety function in the CLOSED position to restore SW header pressure to greater than 42 psig upon a loss of right train SW (loss of bus 1D).

These valves have a safety function in the OPEN position to allow Service Water flow to and from containment to support containment heat removal (CAC).

TEST REQUIREMENT:

ASME OMa-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Exercising CV-0824 isolates the discharge flow path of all 4 Containment Air Coolers (CACs).

Exercising CV-0847 isolates the suction flow path of all 4 Containment Air Coolers (CACs).

If either of these valves is closed above Mode 5 (greater than 200 degrees F), then approximately 6800-7500 gpm flow to containment from the Service Water System (SWS) will be interrupted. In addition to the hydraulic shock that will be experienced by the CACs (especially when the inlet valve CV-0847 is cycled), the secondary side of the plant (i.e., the Turbine-Generator) will remain coupled to the SWS header via normally-open CV-1359, Non critical Service Water Isolation Valve. The potential damage associated with hydraulically shocking the main generator would have a devastating economic impact on the plant. In addition to potential damage to the SWS and its associated loads, the impact on Component Cooling Water (CCW) related loads (e.g., Primary Coolant Pumps, Letdown Heat Exchanger, etc.) would place the plant's reliability at risk as well.

To preclude the scenario described above, Operations would have to close CV-1359, Non-critical Service Water Isolation Valve, prior to stroking either CV-0847 or CV-0824. In the event that the SWS is interrupted for as many as 10 seconds, ONP 6.1, Loss of SWS, states that a failed generator exciter will result.

In addition to entry into a 72-hour action statement per 3.7.8.A, the potential for equipment failure and/or human performance error is increased, ASME Code allows for periodicity to be challenged if testing becomes a burden. The additional equipment and human performance failures associated with stroke-testing CV-0824 or CV-0847 introduces a risk that is not commensurate with the benefit of stroking these valves above Mode 5 and greater than 200 degrees F.

ALTERNATE TESTING:

Exercise during cold shutdowns but not necessarily more frequently than once each quarter. Perform a Position Indication Test at least once every two years.

COLD SHUTDOWN JUSTIFICATION

CSJ-24

Component ID	Class	Cat	System	Label
MO-1042A	1	B	PCS	Power Relief Valve Isolation Valve
MO-1043A	1	B	PCS	Power Relief Valve Isolation Valve

FUNCTION:

Power Operated Relief Valve (PORV) Block Valves MO-1042A and MO-1043A have a safety function to isolate PRV-1042B in the event that it should fail to reseat following a lift or in the event of leakage.

Power Operated Relief Valve (PORV) Block Valves MO-1042A and MO-1043A have a safety function to provide low temperature overpressure protection (LTOP) and feed and bleed operation during "once through cooling".

TEST REQUIREMENT:

ASME OMa-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Exercising MO-1042A or MO-1043A while the Primary Coolant System (PCS) is not depressurized will result in the respective PORV being opened by the increased inlet pressure to the PORV. This will cause depressurization of the PCS and possible damage to downstream equipment from the excessive steam flow past the PORV and Block Valves.

This test is impractical to perform during normal operations. These valves will be exercised during cold shutdowns when the PCS is depressurized.

ALTERNATE TESTING:

Full-stroke exercise to the open and closed positions each cold shutdown, but not necessarily more frequently than once each quarter. Test position indication at least once every two years.

Palisades Pump and Valve Inservice Testing (IST) Program
COLD SHUTDOWN JUSTIFICATION
CSJ-31

Component ID	Class	Cat	System	Label
CV-3006	2	B	ESS	LPSI Shutdown CLG Heat Exchangers Bypass

FUNCTION:

CV-3006 is in the Low Pressure Safety Injection flow path and is electrically locked open during Plant operation. This valve has a safety function to CLOSE when lining up for shutdown cooling. CV-3006 is not required to change position until the Plant is in the process of being aligned for shutdown cooling.

CV-3006 has a safety function in the OPEN position to provide a flow path for low pressure safety injection to the primary coolant system.

TEST REQUIREMENT:

ASME OM Code-2004 through 2006 addenda, ISTC-3510 states that active category A, Category B, and category C check valves be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC-5222.

ASME OM Code-2004 through 2006 addenda, ISTC-3521(c) states: if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

This valve is normally electrically locked in the safety position required for normal Plant operation. Its safety function is to reposition in order to place the Plant in the shutdown cooling mode of operation. The manual operator for this valve (handwheel) is credited for the Close safety function. Closing CV-3006 during power operations renders both ECCS trains inoperable such that 100% of the required ECCS flow is not available which places the plant in LCO 3.03. Therefore, CV-3006 will be tested during cold shutdown.

ALTERNATE TESTING:

Full-stroke exercise to the open and closed positions each cold shutdown, but not necessarily more frequently than once each quarter.

COLD SHUTDOWN JUSTIFICATION

CSJ-33

Component ID	Class	Cat	System	Label
CV-1359	3	B	SWS	Non-Critical Service Water Isolation

FUNCTION:

This valve has a safety function to CLOSE and isolate the non-essential service water header on receipt of a Safety Injection Signal or Containment High Pressure signal. This will ensure that sufficient service water cooling capacity will be available to mitigate the consequences of an accident.

This valve has NO safety function in the OPEN position. It provides SWS flow to only non-critical loads.

TEST REQUIREMENT:

ASME OMa-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Shutting of this valve during Plant operation will isolate cooling water to components that are essential for the operation of the non-nuclear portion of the Plant. The components served include the condensate pumps, the generator cooler, the exciter cooler, and the feedwater pump turbine heat exchanger. This valve will be full-stroke exercised during cold shutdowns when these components are out of service.

ALTERNATE TESTING:

Full-stroke exercise to the closed position each cold shutdown, but not necessarily more frequently than once each quarter. Test position indication at least once every two years.

Component ID	Class	Cat.	System	Label
CV-2001	1	B	CVC	Letdown Stop
CV-2002	1	B	CVC	Letdown Orifice Bypass Valve
CV-2003	1	B	CVC	Letdown Orifice Stop Valve
CV-2004	1	B	CVC	Letdown Orifice Stop Valve
CV-2005	1	B	CVC	Letdown Orifice Stop Valve

FUNCTION:

These valves have NO safety function in the OPEN position. The letdown function of the CVC System is not relied upon for any accident scenario.

These valves have an ACTIVE safety function in the CLOSED position to provide Reactor Coolant Pressure Boundary integrity in the event of a passive failure in the charging piping downstream of this valve.

CV-2001 does not have a safety function in either the OPEN or CLOSED position. Its testing is supplemental.

TEST REQUIREMENT:

ASME OM-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Open and closing of these valves will interrupt normal letdown flow and may result in pressurizer pressure and level transients.

Open and closing of these valves may cause dose rates in the charging pump area to increase.

ALTERNATE TESTING:

Exercise during cold shutdowns, but not necessarily more frequently than once every 3 months (quarterly). The testing for CV-2001 is supplemental testing. CV-2001 does not have a safety function in the open or closed direction.

Position Verification (Remote Position Indication) Testing is performed each refueling outage and at least once every two years.

Component ID	Class	Cat.	System	Label
CV-2111	2	B	CVC	Charging Line Containment Isol (MZ-45)

FUNCTION:

CV-2111 does NOT perform a safety function in the OPEN position.

CV-2111 performs a safety function in the CLOSED position. This air operated valve is a containment isolation valve for penetration 45, but it does not receive an automatic closure signal because the charging system operates during all Emergency Operations and Shutdown modes.

TEST REQUIREMENT:

ASME OM-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Open and closing of this valve will interrupt normal charging flow and may result in pressurizer pressure and level transients.

ALTERNATE TESTING:

Exercise during cold shutdowns, but not necessarily more frequently than once every 3 months (quarterly).

Position Verification (Remote Position Indication) Testing is performed each refueling outage and at least once every two years.

Component ID	Class	Cat.	System	Label
MO-2160	2	B	CVC	SIRWT T-58 OUTLET TO CHARGING PP P-55A,B,C

FUNCTION:

This valve has NO safety function in the OPEN position.

This valve has an ACTIVE safety function in the CLOSED position to prevent diversion of SIRW Tank inventory from the Safety Injection Systems during a design basis accident.

TEST REQUIREMENT:

ASME OM-2005 ISTC-3521(c); if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Opening MO-2160 will cause boration of the PCS through the addition of borated water from the SIRW tank. This could result in a reactivity change.

ALTERNATE TESTING

Exercise during cold shutdowns, but not necessarily more frequently than once every 3 months (quarterly).

Position Verification (Remote Position Indication) Testing is performed each refueling outage and at least once every two years.

Component ID	Class	Cat	System	Label
CK-FW701	2	C	MFW	MAIN FW SUPPLY TO S/G E-50B CHECK
CK-FW702	2	C	MFW	MAIN FW SUPPLY TO S/G E-50B CHECK

FUNCTION:

Check valves CK-FW701 and CK-FW702 are normally open during power operations to provide feedwater flow to the steam generators. These check valves have a close safety function to provide containment isolation for the feedwater system in the event of a steam generator failure or a feedwater line rupture to isolate containment penetrations 8 and 7, respectively. These check valves also provide isolation of the steam generator secondary side to prevent the flashing of water and rapid cooldown of the Primary Coolant System following a feedwater line break upstream of the check valves.

TEST FREQUENCY REQUIREMENT:

ASME OM Code-2004 through 2006 addenda, ISTC-3510 states that active category C check valves be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC5222.

ASME OM Code-2004 through 2006 addenda, ISTC-3521(c) states: if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Exercising check valves CK-FW701 and CK-FW702 during power operation results in loss of main feedwater water flow to the steam generators, resulting in a plant trip. Stroke exercising of these check valves is not practicable to perform during power operations.

ALTERNATE TESTING:

Main FW Supply Check Valves IST stroke exercising will be performed during cold shutdown, but not necessarily more frequently than once each quarter.

COLD SHUTDOWN JUSTIFICATION

CSJ-38

Component ID	Class	Cat	System	Label
CK-ES3201	2	C	ESS	LOW PRESS PUMP P-67A DISCHARGE CHECK
CK-ES3192	2	C	ESS	LOW PRESS PUMP P-67B DISCHARGE CHECK

FUNCTION:

Check valves CK-ES3201 and CK-ES3192 have an open safety function to provide low pressure safety injection (LPSI) flow to the primary coolant system following a safety injection actuation signal (SIAS). These check valves have a close safety function if the associated LPSI pump is idle to prevent diversion of flow from the operating LPSI pump in the opposite train.

TEST FREQUENCY REQUIREMENT:

ASME OM Code-2004 through 2006 addenda, ISTC-3510 states that active category C check valves be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC5222.

ASME OM Code-2004 through 2006 addenda, ISTC-3521(c) states: if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Exercising check valves CK-ES3201 and CK-ES3192 during power operation is not feasible since the check valves are downstream of the minimum recirculation flow line. There are no other flow paths downstream of the minimum recirculation line available for flow testing, without making other systems inoperable, with the primary coolant system (PCS) pressurized. Stroke exercising of these check valves is not practicable to perform during power operations.

ALTERNATE TESTING:

LPSI pump discharge check valves IST stroke exercising will be performed during cold shutdown, but not necessarily more frequently than once each quarter, when the PCS is depressurized.

COLD SHUTDOWN JUSTIFICATION

CSJ-39

Component ID	Class	Cat	System	Label
CK-ES3103	1	A/C	ESS	LOW PRESSURE INJECTION CHECK VALVE
CK-ES3118	1	A/C	ESS	LOW PRESSURE INJECTION CHECK VALVE
CK-ES3133	1	A/C	ESS	LOW PRESSURE INJECTION CHECK VALVE
CK-ES3148	1	A/C	ESS	LOW PRESSURE INJECTION CHECK VALVE

FUNCTION:

Check valves CK-ES3103, CK-ES3118, CK-ES3133 and CK-ES3148 have an open safety function to provide low pressure safety injection (LPSI) flow to the primary coolant system following a safety injection actuation signal (SIAS). These check valves must close to prevent a diversion of high pressure safety injection flow. This check valve is a primary coolant system (PCS) pressure isolation valve (PIV). PIVs have a safety function to isolate high PCS pressure from an attached low pressure system.

TEST FREQUENCY REQUIREMENT:

ASME OM Code-2004 through 2006 addenda, ISTC-3510 states that active category A and category C check valves be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221, and ISTC5222.

ASME OM Code-2004 through 2006 addenda, ISTC-3521(c) states: if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.

BASIS:

Exercising check valves CK-ES3103, CK-ES3118, CK-ES3133 and CK-ES3148 during power operation is not feasible since the check valves are downstream of the minimum recirculation flow line. There are no other flow paths downstream of the minimum recirculation line available for flow testing, without making other systems inoperable, with the primary coolant system (PCS) pressurized. Stroke exercising of these check valves is not practicable to perform during power operations.

ALTERNATE TESTING:

LPSI pump injection check valves IST stroke exercising will be performed during cold shutdown, but not necessarily more frequently than once each quarter, when the PCS is depressurized.

REFUELING OUTAGE JUSTIFICATION
ROJ-01

Component ID	Class	Cat.	System	Description	Drawing
CK-ES3410	1	C	ESS	HPSI Hot Leg Injection Check Valve	(M201-1/C-3)

FUNCTION:
(Open) This check valve must open to provide a flow path for high pressure safety injection (HPSI) to the primary coolant system (PCS) hot leg. The hot leg injection flow path is established in order to prevent excessive buildup of boron precipitate due to boiloff in the core. Excessive precipitate could interfere with core cooling.

TEST REQUIREMENT:
ASME OMb-2006 ISTC-3522(c); If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

BASIS:
Open-stroke testing during hot plant conditions is not practical based on a full flow test path not being available with the plant above cold shutdown conditions. Also due to the HPSI Pump head being lower than Primary Coolant System (PCS) system pressure, and nozzle thermal shock considerations while testing using the Hot Leg Injection flow path is not possible.

Full flow testing cannot be performed during cold shutdowns while the reactor head is installed due to the potential for primary system over pressurization. Operation of the HPSI Pumps is prohibited by Technical Specification with the PCS temperature <300°F and the Reactor Vessel Head in place.

ALTERNATE TESTING:
CK-ES3410 will be open-stroke exercised during each refueling outage. System flow and pressure is recorded and trended to monitor the valve for degradation.

Component ID	Class	Cat.	System	Description	Drawing
CK-ES3104	1	A/C	ESS	High Pressure Injection Check Valve	(M203-2/G-8)
CK-ES3119	1	A/C	ESS	High Pressure Injection Check Valve	(M203-2/F-8)
CK-ES3134	1	A/C	ESS	High Pressure Injection Check Valve	(M203-2/D-8)
CK-ES3149	1	A/C	ESS	High Pressure Injection Check Valve	(M203-2/B-8)

FUNCTION:
(Open) These check valves must open to provide a flow path for emergency core cooling from the high pressure safety injection (HPSI) pump to the reactor coolant system. HPSI flow is initiated by a Safety Injection Signal (SIS).

(Closed) These check valves must close to prevent a diversion of flow from Train 2 of high pressure safety injection and/or LPSI if the Train 1 HPSI Pump is idle. This check valve is also a primary coolant system (PCS) pressure isolation valve (PIV). PIVs have a safety function to isolate high PCS pressure from an attached low pressure system. This is required to prevent failure of the pressure boundary of the low pressure system resulting in a loss of coolant accident.

TEST REQUIREMENT:
ASME OMb-2006 ISTC-3522(c); If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

BASIS:
Full-stroke (Open) testing during normal operation is impractical because the discharge pressure of the HPSI pumps is insufficient to overcome PCS pressure at normal operating conditions. Testing during normal operations is also not prudent due to the risk of damage to the valve seats and nozzles resulting from the thermal stresses set up when injecting cold water across a hot valve seat. In addition full-stroke exercising these valves would require injecting highly borated water into the Primary Coolant System (PCS). This would rapidly reduce reactivity resulting in a power transient (reduction) and possibly a pressure/temperature transient.

Full flow testing cannot be performed during cold shutdowns while the reactor head is installed due to the potential for primary system over pressurization. Operation of the HPSI pumps is prohibited by Technical Specification with the PCS temperature <300 F and the reactor vessel head in place. Full-stroke testing can only be performed during a reactor refueling when the reactor vessel head is removed providing an adequate surge volume for the pumps.

Closed testing can be performed in cold shutdowns, however, the plant may not be in a cold shutdown condition during a fuel cycle and therefore the testing will be performed during refueling outages.

ALTERNATE TESTING:
During refueling outages (reactor vessel head removed), these check valves will be full-stroke (Open and Closed) exercise tested.

REFUELING OUTAGE JUSTIFICATION
ROJ-03

Component ID	Class	Cat.	System	Description	Drawing
CK-ES3250	1	C	ESS	High Pressure Injection Check Valve	(M203-2/G-8)
CK-ES3251	1	C	ESS	High Pressure Injection Check Valve	(M203-2/E-8)
CK-ES3252	1	C	ESS	High Pressure Injection Check Valve	(M203-2/C-8)
CK-ES3253	1	C	ESS	High Pressure Injection Check Valve	(M203-2/B-8)

FUNCTION:
(Open) These check valves must open to provide a flow path for emergency core cooling from the high pressure safety injection (HPSI) pump to the primary coolant system (PCS). HPSI flow is initiated by a Safety Injection Signal (SIS).

(Closed) These check valves must close to prevent a diversion of flow from Train 1 of high pressure safety injection and/orlow pressure safety injection (LPSI) if the Train 2 HPSI Pump is idle. This check valve is a primary coolant system (PCS) boundary valve; however, it is not a pressure isolation valve (PIV). PIVs have a safety function to isolate high PCS pressure from an attached low pressure system.

TEST REQUIREMENT:
ASME OMb-2006 ISTC-3522(c); If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

BASIS:
Full-stroke (Open) testing during normal operation is impractical because the discharge pressure of the HPSI pumps is insufficient to overcome PCS pressure at normal operating conditions. Testing during normal operations is also not prudent due to the risk of damage to the valve seats and nozzles resulting from the thermal stresses set up when injecting cold water across a hot valve seat. In addition full-stroke exercising these valves would require injecting highly borated water into the Primary Coolant System (PCS). This would rapidly reduce reactivity resulting in a power transient (reduction) and possibly a pressure/temperature transient.

Full flow testing cannot be performed during cold shutdowns while the reactor head is installed due to the potential for primary system over pressurization. Operation of the HPSI pumps is prohibited by Technical Specification with the PCS temperature <300°F and the reactor vessel head in place. Full-stroke testing can only be performed during a reactor refueling when the reactor vessel head is removed providing an adequate surge volume for the pumps.

Closed testing can be performed in cold shutdowns, however, the plant may not be in a cold shutdown condition during a fuel cycle and therefore the testing will be performed during refueling outages.

ALTERNATE TESTING:
During refueling outages (reactor vessel head removed), these check valves will be full-stroke (Open and Closed) exercise tested.

Component ID	Class	Cat.	System	Description	Drawing
CK-ES3408	1	C	ESS	Hot Leg Injection Check Valve	(M203-2/E-5)
CK-ES3409	1	C	ESS	Hot Leg Injection Check Valve	(M203-2/E-5)

FUNCTION:
(Open) These check valves must open to provide a flow path for high pressure safety injection (HPSI) to the primary coolant system (PCS) hot leg. The hot leg injection flow path is established in order to prevent excessive buildup of boron precipitate due to boiloff in the core. Excessive precipitate could interfere with core cooling.

(Closed) These check valves must close to prevent diversion of flow if the redundant train of high pressure safety injection is idle. This check valve must also close to maintain the reactor coolant pressure boundary (RCPB).

TEST REQUIREMENT:
ASME OMb-2006 ISTC-3522(c); If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

BASIS:
Full-stroke (Open and Closed) exercise testing of these valves during normal operation, including cold shutdowns is impractical. Exercising these valves requires injecting Safety Injection and Refueling Water (SIRW) tank water into the PCS. This test path cannot be used during normal power operations, since the PCS is at a greater pressure than the HPSI pump discharge. Also, the injection of the highly borated SIRW tank water into the PCS would result in a reactivity change power transient (reduction) and possibly a pressure/temperature transient. Testing at any Plant condition greater than cold shutdown may result in thermal shock to the injection nozzles.

Full flow testing cannot be performed during cold shutdowns while the reactor head is installed due to the potential for primary system over pressurization. Operation of the HPSI pumps is prohibited by Technical Specification with the PCS temperature <300 F and the reactor vessel head in place. Full-stroke testing can only be performed during a reactor refueling when the reactor vessel head is removed providing an adequate surge volume for the pumps.

ALTERNATE TESTING:
During refueling outages (reactor vessel head removed), these check valves will be full-stroke(Open and Closed) exercise tested.

REFUELING OUTAGE JUSTIFICATION

ROJ-05

Component ID	Class	Cat.	System	Description	Drawing
CK-SW401	3	C	SWS	Service Water Pump P-7A Discharge Check	(M213/F-4)
CK-SW402	3	C	SWS	Service Water Pump P-7B Discharge Check	(M213/F-3)
CK-SW403	3	C	SWS	Service Water Pump P-7C Discharge Check	(M213/F-2)

FUNCTION:
(Open) These check valves provide service water (SW) flow from pump to the SW discharge header. The SW pumps start automatically upon receipt of a Safety Injection Signal (SIS) as well as on low SW discharge header pressure. These valves must pass the required design flow rate of pump.

TEST REQUIREMENT:
ASME OMb-2006 ISTC-3522(c); If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

BASIS:
Full flow (Open) exercising these check valves to the open position requires knowledge of the individual pump flow rates. Individual pump units do not have installed flow indicators capable of recording high SW flow rates and piping configuration will not allow an installation of indicators which meet Code requirements. Therefore SW pump full flow testing can only be accomplished during refueling outages when SW flow can be removed from other components and the Containment service water flow indicator used to determine individual SW pump flows.

ALTERNATIVE TESTING:
These check valves will be full flow (Open) tested each refueling outage during performance of the SW pumps comprehensive test RO-144, "Comprehensive Pump Test Procedure Service Water Pumps P-7A, P-7B and P-7C."

REFUELING OUTAGE JUSTIFICATION
ROJ-06

Component ID	Class	Cat.	System	Description	Drawing
CK-ES3102	1	A/C	ESS	Safety Injection Tank T-82A Check Valve	(M203-1/D-7)
CK-ES3117	1	A/C	ESS	Safety Injection Tank T-82B Check Valve	(M203-1/D-5)
CK-ES3132	1	A/C	ESS	Safety Injection Tank T-82C Check Valve	(M203-1/D-3)
CK-ES3147	1	A/C	ESS	Safety Injection Tank T-82D Check Valve	(M203-1/D-2)

FUNCTION:
(Open) These check valve opens to provide a flow path from the Emergency Core Cooling System (ECCS) safety injection (SI) tank to the primary coolant system (PCS). This valve is required to operate when primary pressure decreases below that of the safety injection accumulators.

TEST REQUIREMENT:
ASME OMb-2006 ISTC-3522(c); If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

BASIS:
Full-stroke (Open) exercise testing of these valves during normal operation is impractical. The subject valves cannot be full-stroke tested open during power operations or hot standby when PCS operating conditions are at 2060 psia and 532°F. The SI Tanks provide an available driving head of 258 psia which is not sufficient to overcome a PCS pressure of 2060 psia. Therefore, it is necessary to cool down and depressurize the PCS to conduct a stroke test of these valves.

Stroke testing these valves at a normal/forced cold shutdown is also impractical due to the fact that the SI Tanks contain highly borated water. Injection of the SI Tanks to the PCS at a time other than refueling is impractical due to excessive dilution required to restart the plant from cold shutdown.

ALTERNATE TESTING:
These check valves will be full-stroke (Open) exercise tested each refueling outage when the reactor vessel closure head is removed.

Component ID	Class	Cat.	System	Description	Drawing
CK-ES3101	1	A/C	ESS	PCS Loop Check Valve (Loop 1A)	(M203-1/B-8)
CK-ES3116	1	A/C	ESS	PCS Loop Check Valve (Loop 1B)	(M203-1/B-7)
CK-ES3131	1	A/C	ESS	PCS Loop Check Valve (Loop 2A)	(M203-1/B-7)
CK-ES3146	1	A/C	ESS	PCS Loop Check Valve (Loop 2B)	(M203-1/B-7)

FUNCTION:
(Open) These check valves open to provide a flow path from the Emergency Core Cooling System (ECCS) safety injection (SI) tank and the safety injection pumps to the primary coolant system (PCS). These valves are required to operate when primary pressure decreases below that of the safety injection accumulators.

TEST REQUIREMENT:
ASME OMb-2006 ISTC-3522(c); If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

BASIS:
Full-stroke (Open) exercise testing of these valves during normal operation, including cold shutdowns is impractical. The subject valves cannot be full-stroke tested during power operations or hot standby when Primary Coolant System (PCS) operating conditions are at 2060 psia and 532°F. The SI Tanks provide an available driving head of 258 psia which is not sufficient to overcome a PCS pressure of 2060 psia. Additionally, none of the Safety Injection or Charging Pumps provide sufficient head and flow to perform an acceptable test. Therefore, it is necessary to cool down and depressurize the PCS to conduct a stroke test of these valves.

ALTERNATE TESTING:
Palisades will full-stroke (Open) exercise these check valves each refueling outage.

Component ID	Class	Cat.	System	Description	Drawing
CK-ES3208	2	C	ESS	CTMT Spray Pump P-54C Discharge Check Valve	(M204-1/D-4)
CK-ES3220	2	C	ESS	CTMT Spray Pump P-54B Discharge Check Valve	(M204-1/B-4)
CK-ES3230	2	C	ESS	CTMT Spray Pump P-54A Discharge Check Valve	(M204-1/D-5)

FUNCTION:
(Open) These check valves must open to allow containment spray flow from the containment spray pump to the discharge header.

(Closed) These check valves must close to prevent diversion of flow if the associated containment spray pump is idle.

TEST REQUIREMENT:
ASME OMb-2006 ISTC-3522(c); If exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

BASIS:
Full-stroke (Open and Closed) exercising the Containment Spray Pump discharge check valves by initiation of the Containment Spray System (CSS) and spraying down the containment, if the containment spray valves are used as the flow path, is not practicle. Large spray flow into containment would potentially result in equipment damage.

Use of the 1 inch recirculation line to the Safety Injection and Refueling Water (SIRW) tank is not practical for flow testing due to the small size of the recirculation line.

Use of the 6-inch shutdown cooling (SDC) HX discharge recirc to SIRW tank line while operating is not possible because it requires installation of the open end of a spectacle flange and presents an unmonitored leak path should an accident occur during pump/valve testing that requires recirculation of contaminated fluid from the containment sump. This alignment makes the entire containment spray system inoperable. This line is isolated by installation of a blind-flange during normal Plant operation.

ALTERNATE TESTING:
Each check valve will be full-stroke (Open and Closed) exercised during refueling outages.