March 24, 2006

10 CFR 50.55a

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

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

Inservice Testing Program: Fourth Ten-Year Interval Update

In accordance with 10 CFR 50.55a(f), Nuclear Management Company, LLC (NMC) is providing the updated Inservice Testing (IST) program for the fourth ten-year interval at Palisades Nuclear Plant (PNP). The fourth ten-year IST interval begins on March 24, 2006. The IST Program for the fourth interval has been developed to the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition through 2003 Addenda.

The updated IST program is enclosed. Section 7.0 of the enclosure, "Valve Relief Requests," is being submitted for NRC review and approval in accordance with 10 CFR 50.55a. NMC requests approval of the relief requests by March 25, 2007.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

Paul A. Harden
Site Vice President, Palisades Nuclear Plant
Nuclear Management Company, LLC

Enclosure (1)

CC Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

A047

ENCLOSURE 1

FOURTH TEN-YEAR INTERVAL
PUMP AND VALVE

INSERVICE TESTING PROGRAM
FOR

Palisades Nuclear Plant
Commercial Service Date: December 31, 1971
(Docket no. 50-255)
27780 Blue Star Memorial Highway
Covert, Michigan 49090

1.0 INSERVICE TESTING PROGRAM PREPARATION AND APPROVAL

Prepared By: _____ Date: 3/21/2006
Inservice Testing Program Owner

Reviewed By: _____ Date: 3/21/2006
Peer, Engineering Programs

Reviewed By: _____ Date: 3/22/06
Supervisor, Engineering Programs

Approved By: _____ Date: 3/22/06
Manager, Engineering Programs

8.0 Deferred Test Justifications – Valves

16 Pages to Follow

2.0 TABLE OF CONTENTS

Section Number and Description

3.0 EM-09-04, Inservice Testing of Selected Safety Related Pumps

39 Pages to Follow

Procedure No EM-09-04
Revision 22
Effective Date 3/24/06

PALISADES NUCLEAR PLANT
ENGINEERING MANUAL PROCEDURE

TITLE: INSERVICE TESTING OF SELECTED SAFETY-RELATED PUMPS

Approved: GESchrader / 3/23/06
Procedure Sponsor **Date**

New Procedure/Revision Summary:

Revision

Specific Changes

Rev 22 – IST Program, 10 CFR 50.55a, 10-Year Program Update; PCR00816794

TITLE: INSERVICE TESTING OF SELECTED SAFETY-RELATED PUMPS

Table of Contents

ATTACHMENTS

TITLE: INSERVICE TESTING OF SELECTED SAFETY-RELATED PUMPS

USER ALERT
REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

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.

2.0 SCOPE

2.1 This procedure complies with the requirements of the ASME OM Code 2001 Edition with Addenda Through 2003, Operations and Maintenance of Nuclear Power Plants, Subsections ISTA and ISTB, with the exception of the relief requests contained in Attachment 5.

2.2 The Palisades Plant Inservice Pump Testing Program Plan will be in effect through the fourth 120-month interval (2006 through 2016) and will be updated in accordance with 10CFR50.55a(f).

2.3 Attachment 1 provides a complete listing of those pumps included in this program per the requirements of the ASME OM Code, Subsections ISTB-1100 and ISTB-1400.

3.0 REFERENCES

3.1 ASME OM Code 2001 with Addenda through 2003, 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, "Guidelines for Inservice Testing at Nuclear Power Plants"

3.4 10CFR50.55a, Codes and Standards

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

3.8 NMC-1, "Quality Assurance Topical Report"

3.9 Engineering Manual Procedure EM-30, "Plant Predictive Maintenance Program"

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

3.11 NMC Fleet Procedure FP-G-DOC-04, "Procedure Processing"

3.12 Palisades Administrative Procedure 10.51, "Writer's Guideline for Procedures"

3.13 NMC Fleet Procedure FP-G-DOC-03, "Procedure Use and Adherence"

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"

TITLE: INSERVICE TESTING OF SELECTED SAFETY-RELATED PUMPS

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 NMC Fleet Procedure FP-G-RM-01, "Records Management"

3.19 Engineering Assistance Request EAR-99-0081, "CVCS Declassification"

4.0 DEFINITIONS AND RESPONSIBILITIES

4.1 Group A Pump - A pump that is operated continuously or routinely during normal operation, cold shutdown, or refueling operations.

4.2 Group B Pump - A pump that is in standby systems that are not operated routinely except for testing.

4.3 Alert Range - That range (Attachment 2) for a given pump parameter outside the normal operating range in which an increased testing frequency is specified.

4.4 Required Action Range - That region (Attachment 2) outside the upper and lower limits of the alert range in which the pump is considered inoperable until the cause of the deviation has been determined and the condition corrected.

4.5 Pump Record - Information showing the history of the pump, including the original manufacturer's test data, surveillance test results, significant maintenance actions, and evaluation of new reference values established following maintenance, repair, or replacement of pumps. At Palisades, the pump record includes the vendor print files (original pump data), the Uniform Filing Index (UFI) (test results), the maintenance order files contained on AMMS (pump maintenance documentation), the applicable surveillance test procedure basis document (source of test limits and basis), and the pump trend/data programs.

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

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

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

4.9 Reference Values - One or more fixed set of pump operating parameters which reflect acceptable pump operating characteristics and 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.

4.10 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. Relief Requests shall also be sent to the State of Michigan Department of Labor.

5.0 PROCEDURES

USER ALERT
REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

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).

5.1.3 Unless otherwise specified, each inservice test surveillance requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the surveillance interval per Technical Specifications SR 3.0.2.

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 Procedures," and NMC Fleet Procedures FP-G-DOC-04, "Procedure Processing," and FP-G-DOC-03, "Procedure Use and Adherence."

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 5.1.5, 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 via Step 5.3.1 or equal. 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. An engineering evaluation should be used to establish, calculate, and evaluate any new reference values and acceptance limits.

5.2.3 Required instrument accuracies are given are stipulated in ASME OM Code, Table ISTB-3500-1; further interpretation of these requirements is contained in NUREG-1482. If the accuracies of the station's instruments are not acceptable, temporary instruments meeting those requirements in Table ISTB-3500-1 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.

5.2.4 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 (OM-6, PARAGRAPH 6.1)

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 5100-1, ISTB-5200-1, ISTB-5300-1 and ISTB-5300-2.

If deviations fall within the alert range, the frequency of testing specified for the pump 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 5.3.2. This change may be accomplished per NMC Fleet Procedure FP-G-DOC-04, "Procedure Processing."

5.4 NONCONFORMANCES

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 the cause of the deviation has been determined and the condition corrected. It should be noted that this may be a reportable condition and require NRC notification. The corrective action is not considered complete until a successful inservice test has been completed following repairs and the new operating parameters evaluated by the IST Coordinator and System Engineer.

5.5 RECORDS

5.5.1 A listing of pumps shall be maintained to record the current status of the IST Program for pumps. The status of each pump may be reported and documented in a Pump Inservice Test Program, Program Health Assessments or the individual System Health Assessments.

5.5.2 A record shall be maintained for each pump covered in the IST Program which shall include the following:

a. The pump manufacturer and associated model numbers and serial numbers, or other identification numbers, are maintained on 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 will generally be contained in the appropriate pump vendor file.

5.5.3 Each individual test procedure shall include 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.

5.5.4 A record of tests shall be maintained which shall include the following:

a. Pump identification as Group A or Group B

b. Date of test.

c. Reason for test.

d. Values of measured and observed parameters.

e. Identification of instruments used.

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

g. Requirement for corrective action.

h. Evaluation and justification for changes to reference values.

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

5.5.5 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. 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 as calculated (measured discharge pressure minus calculated or measured suction pressure), or as directly measured.

c. Pump Discharge Pressure (for positive displacement pumps only).

d. Pump flow rate.

e. Pump vibration.

f. Entries referencing significant maintenance actions or other pertinent comments.

5.5.6 If a pump should require some form of corrective action, whether replacement, repair, or reanalysis of pump operating characteristics for justifying different reference data, it shall be included in the pump record. The record shall include a summary of the corrections made, the subsequent inservice test, confirmation of operational adequacy, and the signature of the individual responsible for corrective action and verification of results.

5.5.7 After transferring the required data to the trending program(s), the completed working copies of the procedures shall be routed as indicated on each procedure and filed in the Uniform Filing Index (UFI), in accordance with NMC Fleet Procedure FP-G-RM-01, "Records Management."

5.5.8 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.

6.0 ATTACHMENTS AND RECORDS

6.1 ATTACHMENTS

6.1.1 Attachment 1, "Pump Testing System Index"

6.1.2 Attachment 2, "Allowable Ranges of Test Quantities"

6.1.3 Attachment 3, "Pump Test Table"

6.1.4 Attachment 4, "Group A and B Pump Test Hydraulic Circuits"

6.2 RECORDS

Records required by the Inservice Testing (IST) Program Code may be summarized in the IST database PvPlus, 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

The scope of this procedure does not include activities that require a 50.59 review per NMC Fleet Procedure FP-G-DOC-04, "Procedure Processing." Therefore, changes to this procedure do not require a 50.59 review.

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	E-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	B	M-204-1A	B-5
	P-66B	B	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	B	M-214-1	B-3
	P-211B	B	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-5100-1)

					Required Action Range	
Test Type	**Pump Speed**	**Test Parameter**	**Acceptable Range**	**Alert Range**	**Low Values**	**High Values**
Group A Test	N/A	Q	0.90 to 1.10 Q_r	None	< 0.90 Q_r	> 1.10 Q_r
	N/A	ΔP	0.90 to 1.10 ΔP_r	None	< 0.90 ΔP_r	> 1.10 ΔP_r
	≥ 600 rpm	V_d or V_v	≤ 2.5 V_r	> 2.5 V_r to 6 V_r	None	> 6 V_r
				> 0.325 to 0.7 IPS		> 0.7 IPS
Group B Test	N/A	Q, or	0.90 to 1.10 Q_r	None	< 0.90 Q_r	> 1.10 Q_r
	N/A	ΔP	0.90 to 1.10 ΔP_r	None	< 0.90 ΔP_r	> 1.10 ΔP_r
Comprehensive Test	N/A	Q	0.94 to 1.03 Q_r	0.90 to < 0.94 Q_r	< 0.90 Q_r	> 1.03 Q_r
	N/A	ΔP	0.93 to 1.03 ΔP_r	0.90 to < 0.93 ΔP_r	< 0.90 ΔP_r	> 1.03 ΔP_r
	≥ 600 rpm	V_d or V_v	≤ 2.5 V_r	> 2.5 V_r to 6 V_r	None	> 6 V_r
				> 0.325 to 0.7 IPS		> 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-5200-1)

					Required Action Range	
Test Type	**Pump Speed**	**Test Parameter**	**Acceptable Range**	**Alert Range**	**Low Values**	**High Values**
Group A Test	N/A	Q	0.95 to 1.10 Q_r	0.93 to < 0.95 Q_r	< 0.93 Q_r	> 1.10 Q_r
	N/A	ΔP	0.95 to 1.10 ΔP_r	0.93 to < 0.95 ΔP_r	< 0.93 ΔP_r	> 1.10 ΔP_r
	≥ 600 rpm	V_d or V_v	≤ 2.5 V_r	> 2.5 V_r to 6 V_r	None	> 6 V_r
				> 0.325 to 0.7 IPS		> 0.7 IPS
Group B Test	N/A	Q, or	0.90 to 1.10 Q_r	None	< 0.90 Q_r	> 1.10 Q_r
	N/A	ΔP	0.90 to 1.10 ΔP_r	None	< 0.90 ΔP_r	> 1.10 ΔP_r
Comprehensive Test	N/A	Q	0.95 to 1.03 Q_r	0.93 to < 0.95 Q_r	< 0.93 Q_r	> 1.03 Q_r
	N/A	ΔP	0.95 to 1.03 ΔP_r	0.93 to < 0.95 ΔP_r	< 0.93 ΔP_r	> 1.03 ΔP_r
	≥ 600 rpm	V_d or V_v	≤ 2.5 V_r	> 2.5 V_r to 6 V_r	None	> 6 V_r
				> 0.325 to 0.7 IPS		> 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 TABLES

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	
	P8B	QO-21	3	Q	X		X	
	P8C	QO-21	3	Q	(1)	X	X	X
Component Cooling Water	P52A	QO-15	3	Q	(1)	X	X	X
	P52B	QO-15	3	Q	(1)	X	X	X
	P52C	QO-15	3	Q	(1)	X	X	X
Containment Spray	P54A	QO-16	2	Q	(1)		X	
	P54B	QO-16	2	Q	(1)		X	
	P54C	QO-16	2	Q	(1)		X	
High Pressure Safety Injection Pumps	P66A	QO-19	2	Q	(1)		X	
	P66B	QO-19	2	Q	(1)		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)
	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.

TABLE 4

PUMP TEST TABLES

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)

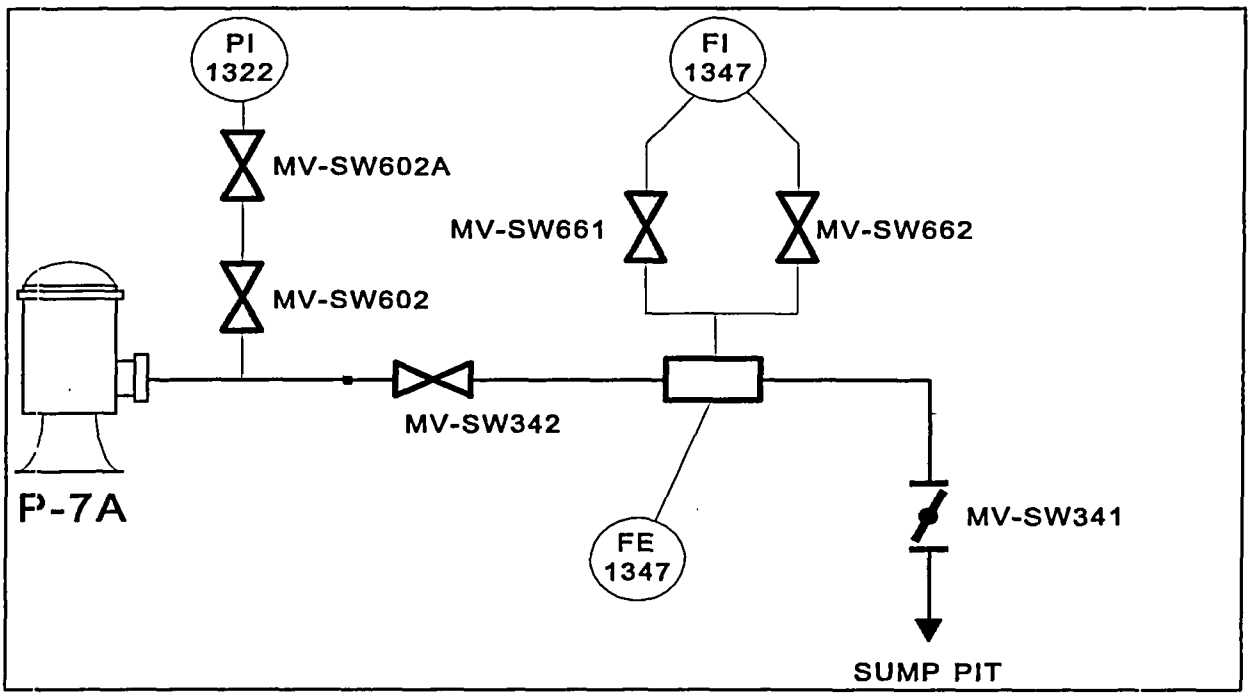
Definitions:
N Pump Speed (variable Speed Pump only)
ΔP Differential Pressure
Q Flow Rate
V Vibration (Displacement or Velocity as appropriate)

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

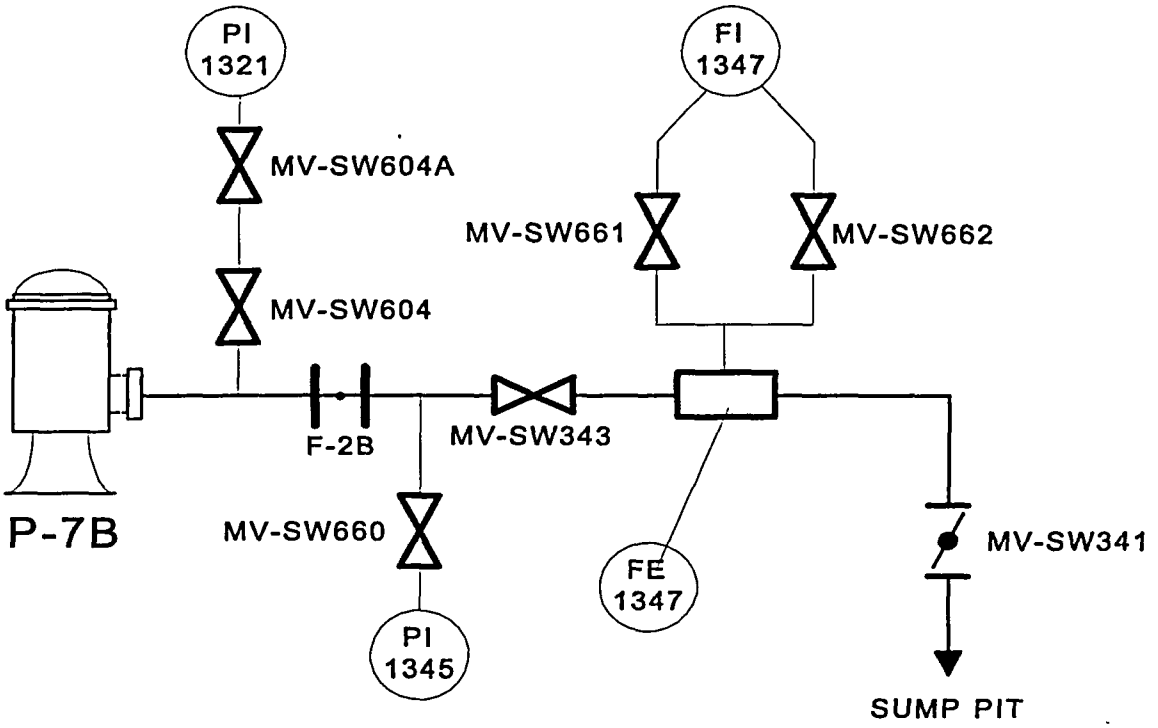
The Service Water Pumps have an active safety function to supply cooling water to essential loads during an accident as well as during normal Plant power operations. The SWS pumps start automatically upon receipt of a Safety Injection Signal (SIS). Each SWS pump delivers essentially 50% capacity, although 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	102 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

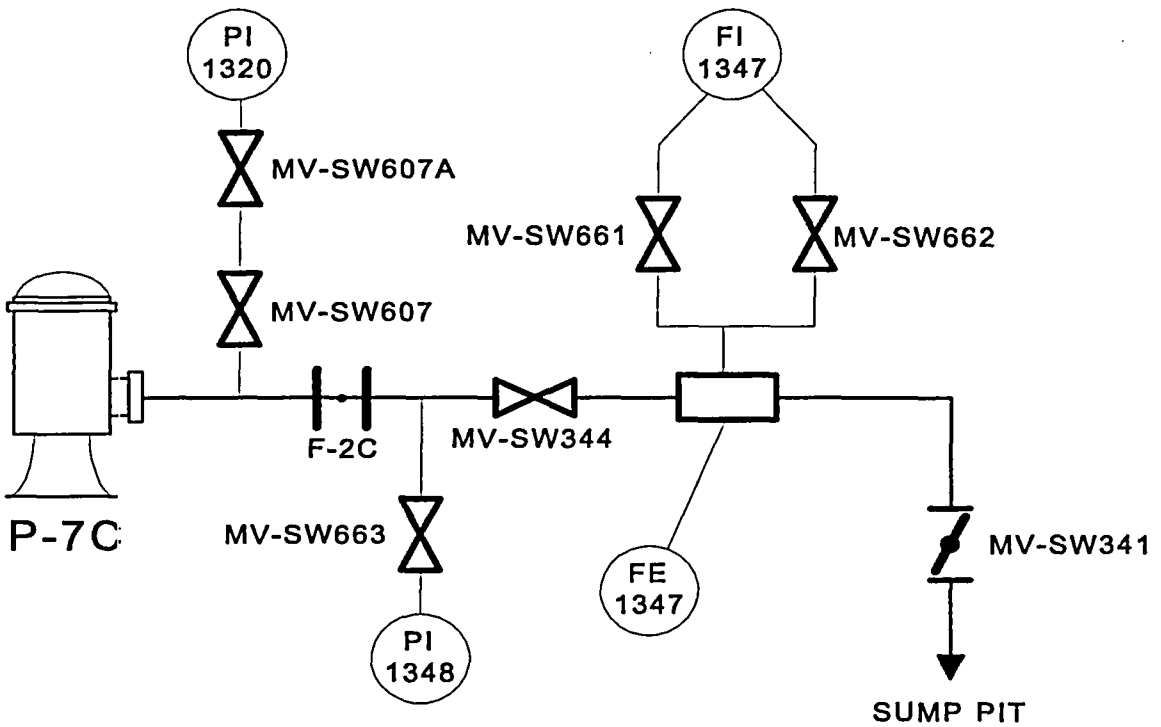
The Service Water Pumps have an active safety function to supply cooling water to essential loads during an accident as well as during normal Plant power operations. The SWS pumps start automatically upon receipt of a Safety Injection Signal (SIS). Each SWS pump delivers essentially 50% capacity, although 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	99 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

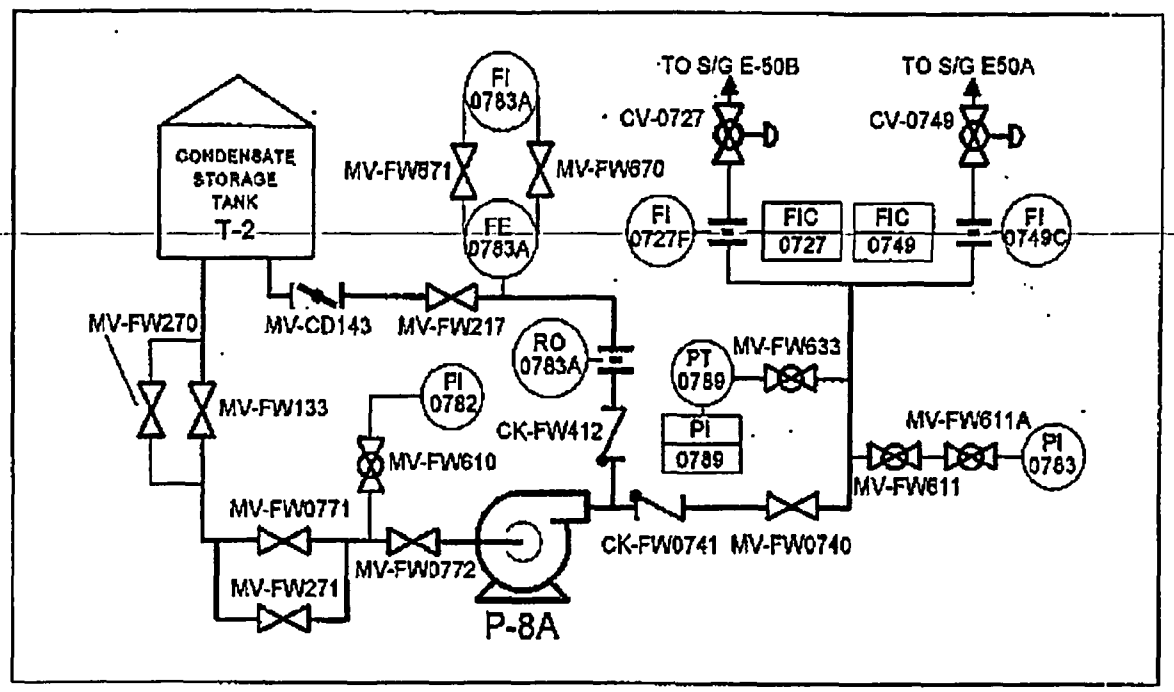
The Service Water Pumps have an active safety function to supply cooling water to essential loads during an accident as well as during normal Plant power operations. The SWS pumps start automatically upon receipt of a Safety Injection Signal (SIS). Each SWS pump delivers essentially 50% capacity, although 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	98.5 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

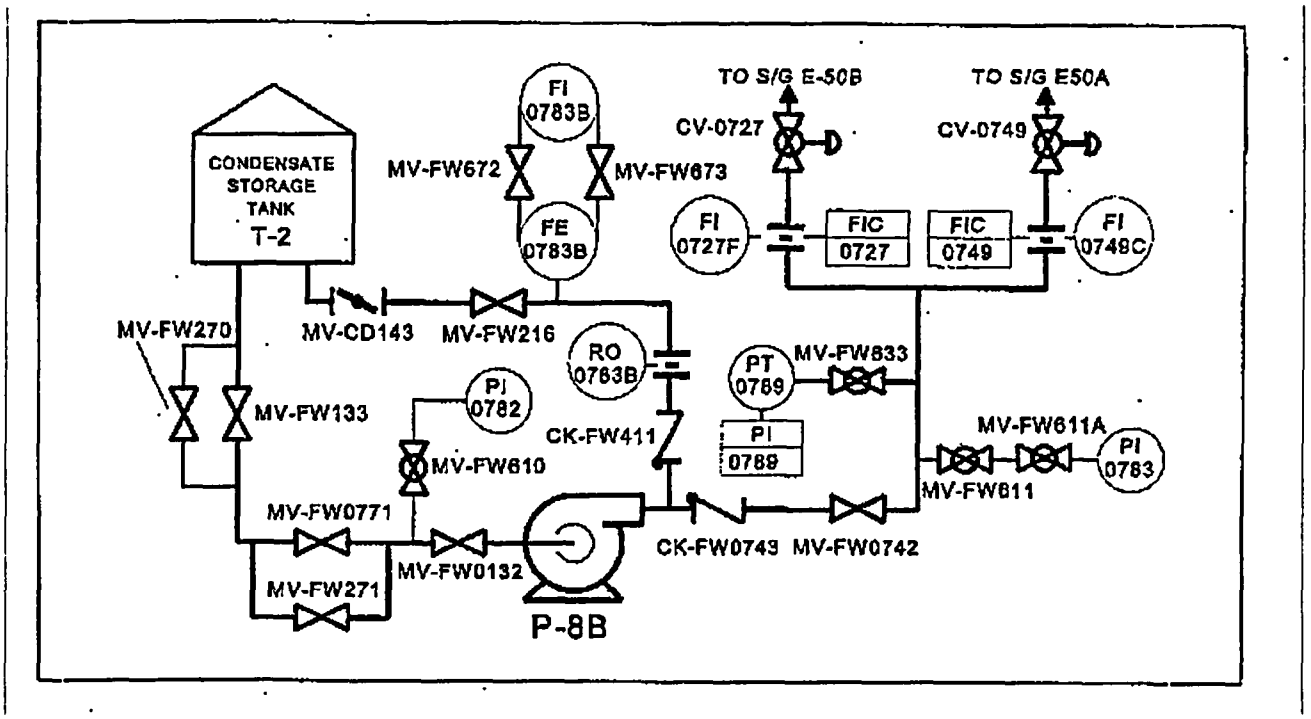
The Auxiliary Feedwater Pumps have an active safety function to supply 100% of the required AFW flow during accident and normal startup and shutdown conditions. AFW flow is required whenever the main feedwater system is unavailable following a loss of offsite power, main feed line break, or a steam line 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/-6



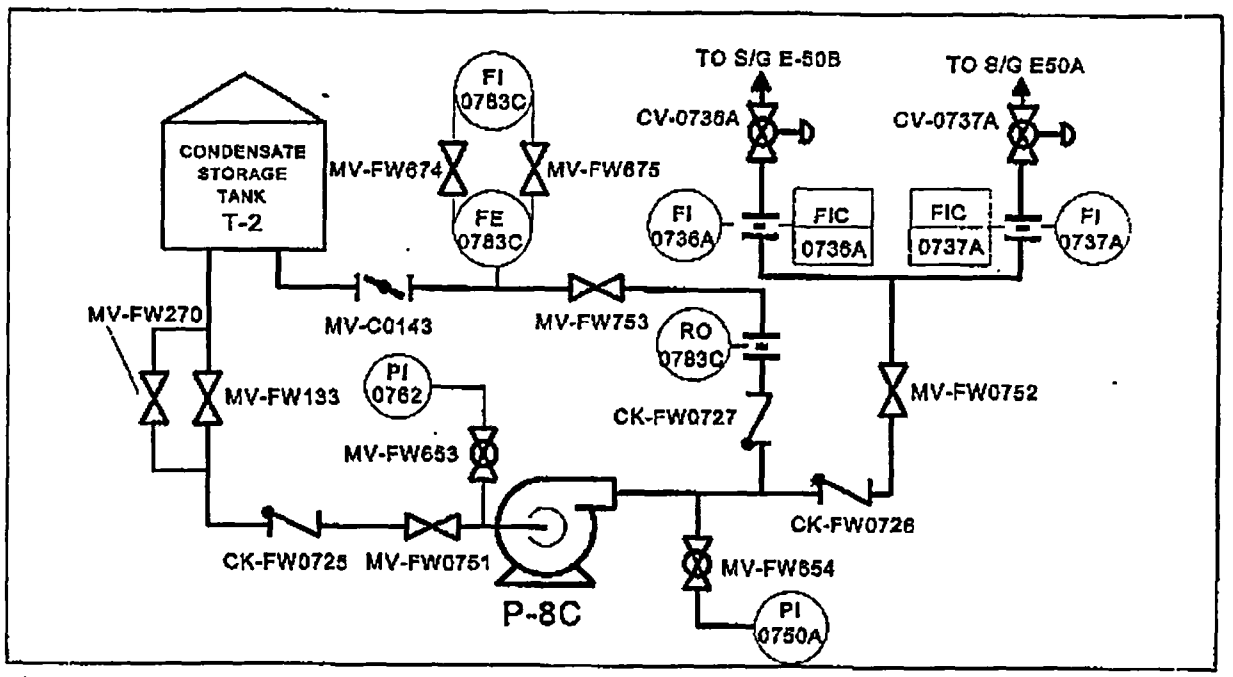
AUXILIARY FEEDWATER PUMPS

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	3475 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



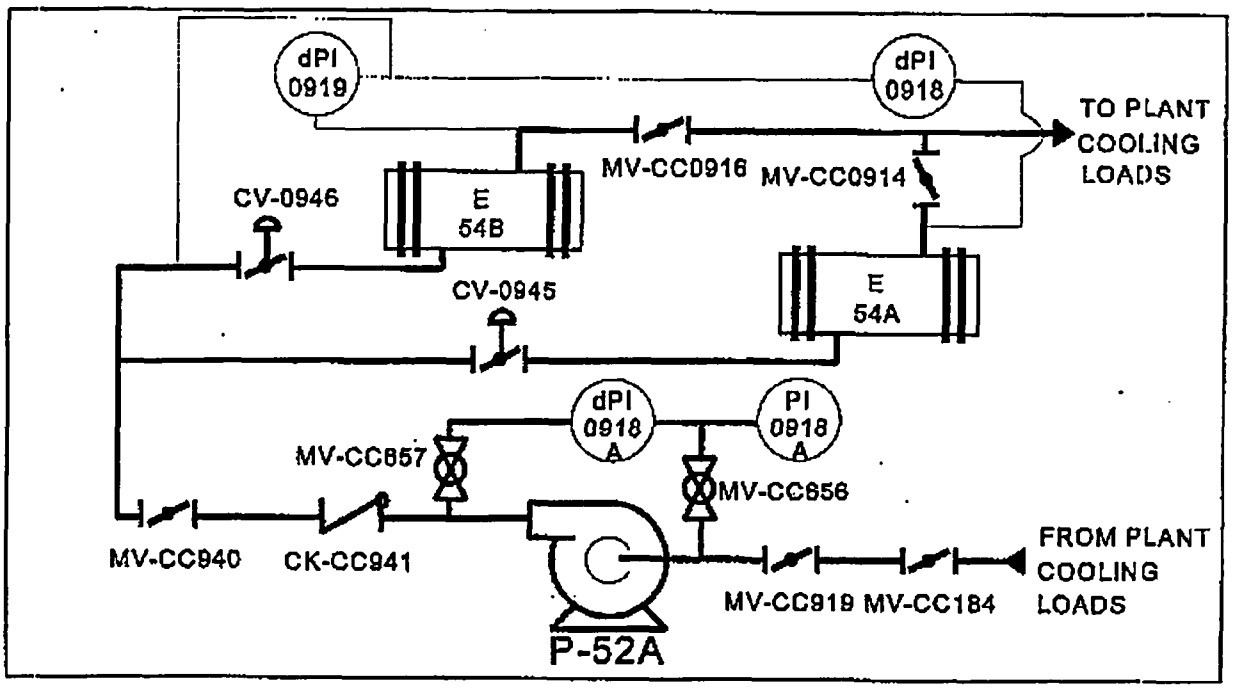
AUXILIARY FEEDWATER PUMPS

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

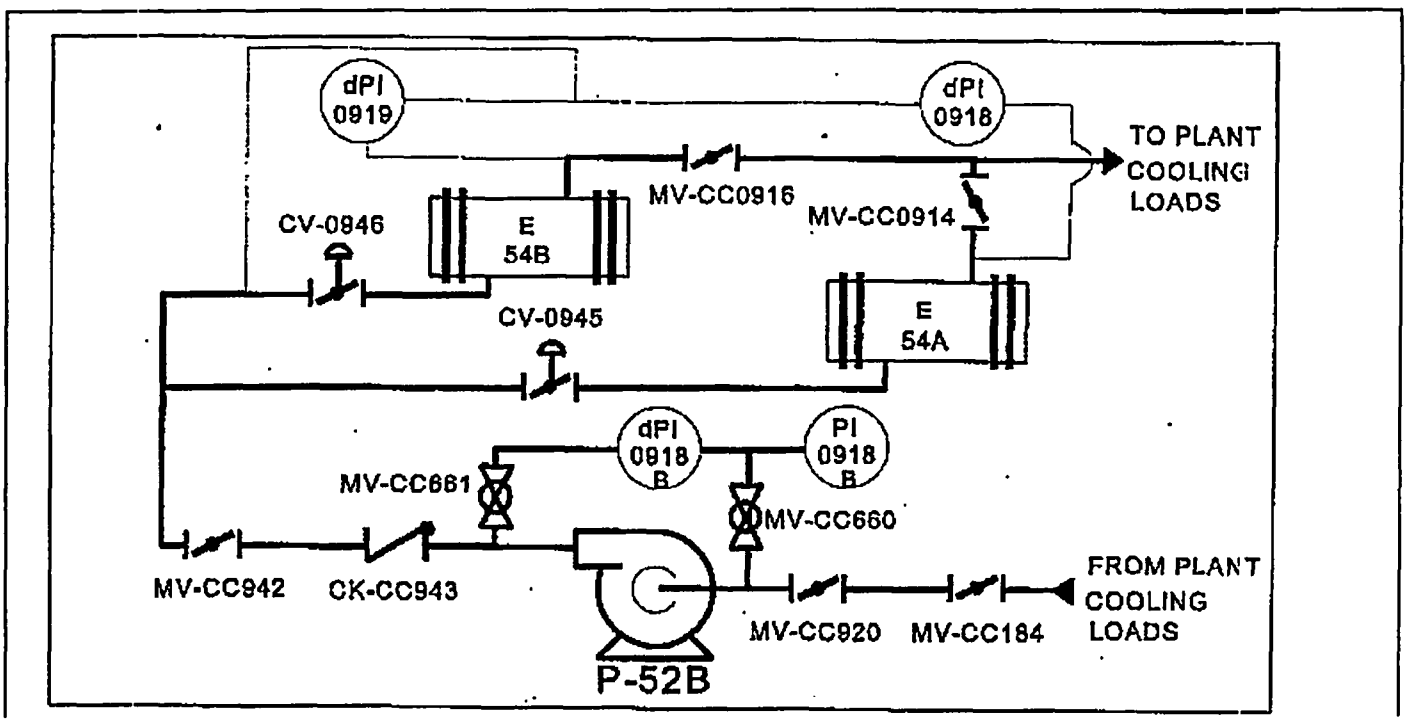
The Component Cooling Water Pumps are designed to maintain Plant cooling loads during normal operation and accident conditions. These pumps provide adequate cooling capability for the Safety Injection and Containment Spray water when it is recirculated through the Shutdown Cooling Heat Exchangers and 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.

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

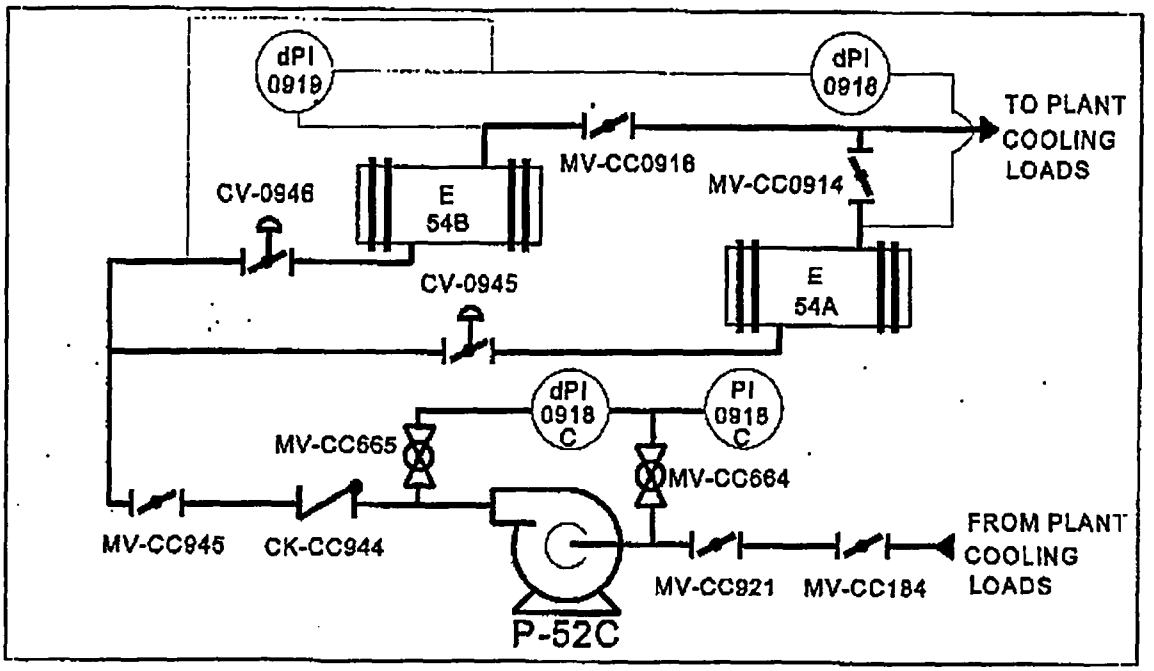
The Component Cooling Water Pumps are designed to maintain Plant cooling loads during normal operation and accident conditions. These pumps provide adequate cooling capability for the Safety Injection and Containment Spray water when it is recirculated through the Shutdown Cooling Heat Exchangers and 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.

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

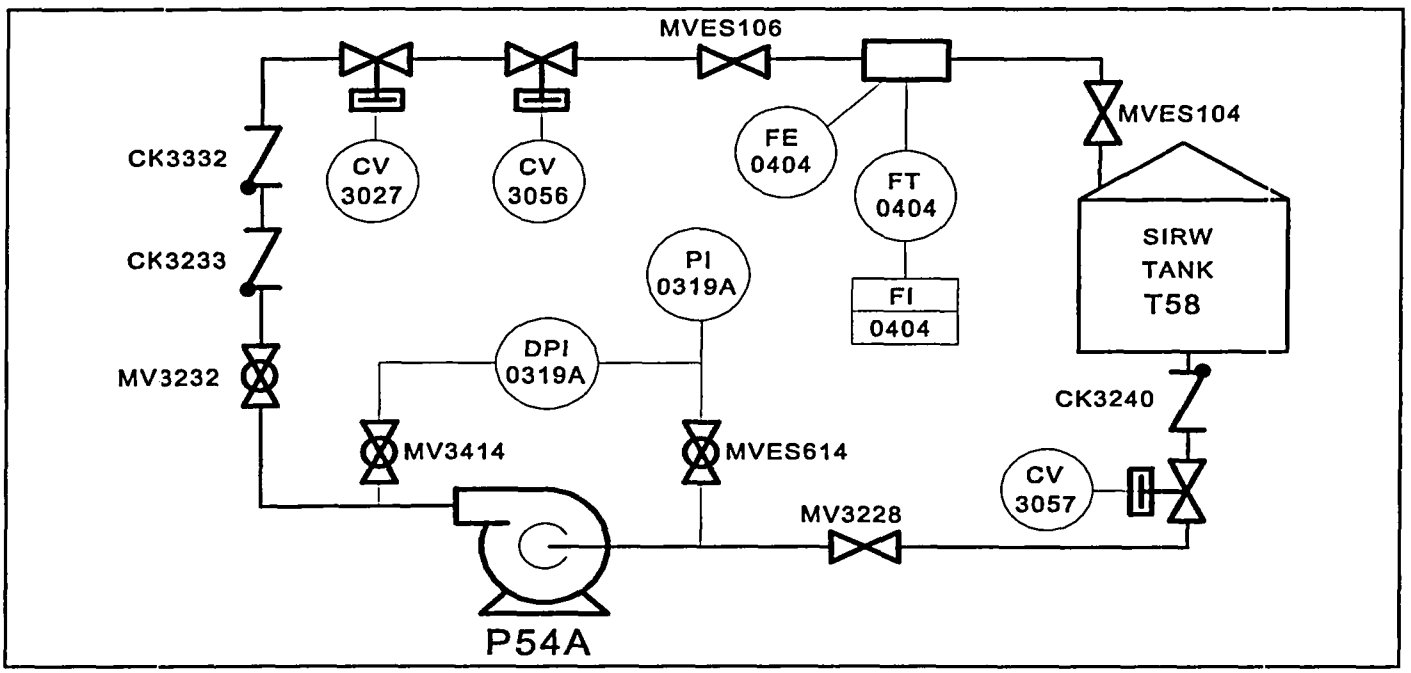
The Component Cooling Water Pumps are designed to maintain Plant cooling loads during normal operation and accident conditions. These pumps provide adequate cooling capability for the Safety Injection and Containment Spray water when it is recirculated through the Shutdown Cooling Heat Exchangers and 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	86.7 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.

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



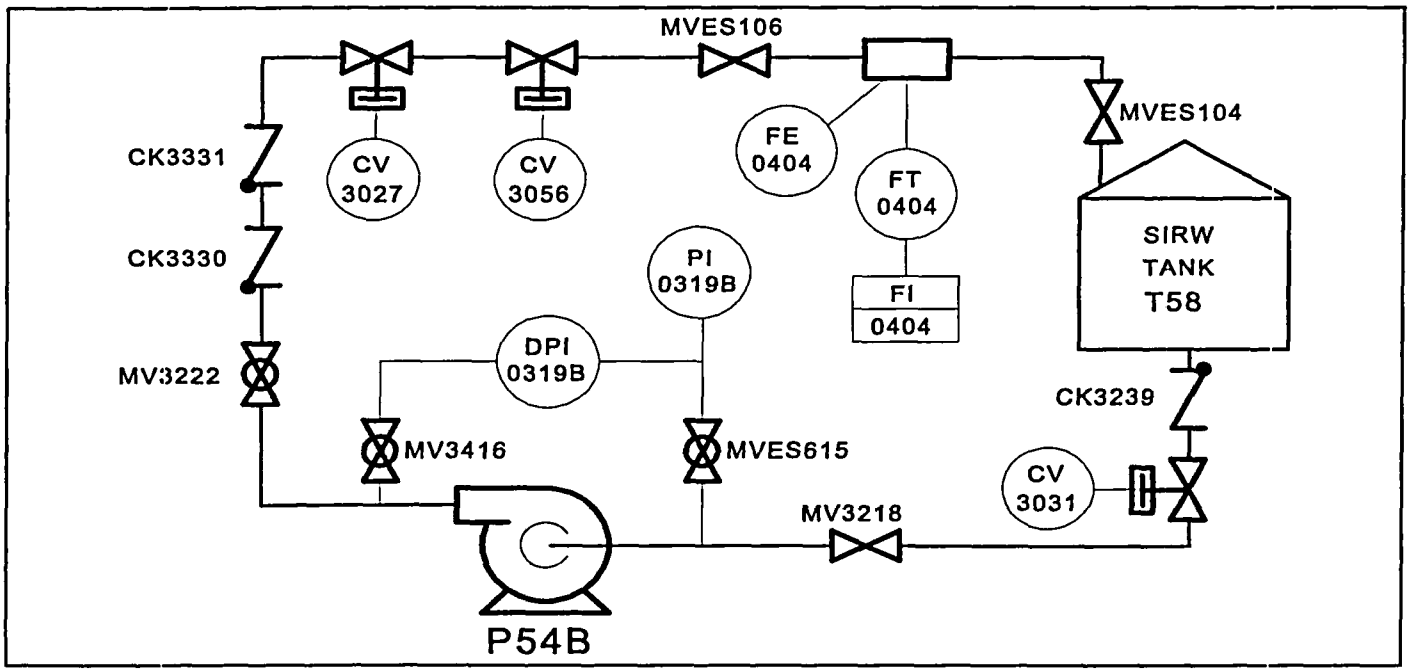
CONTAINMENT SPRAY PUMPS

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



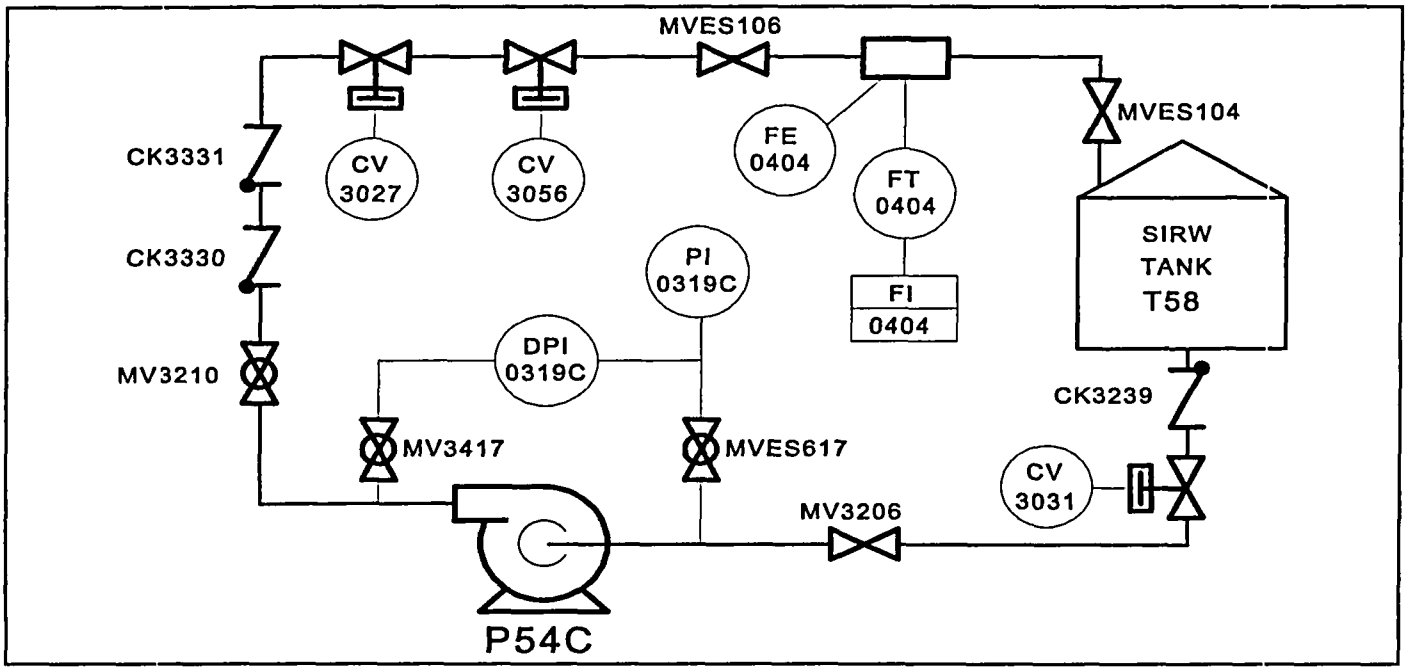
CONTAINMENT SPRAY PUMPS

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



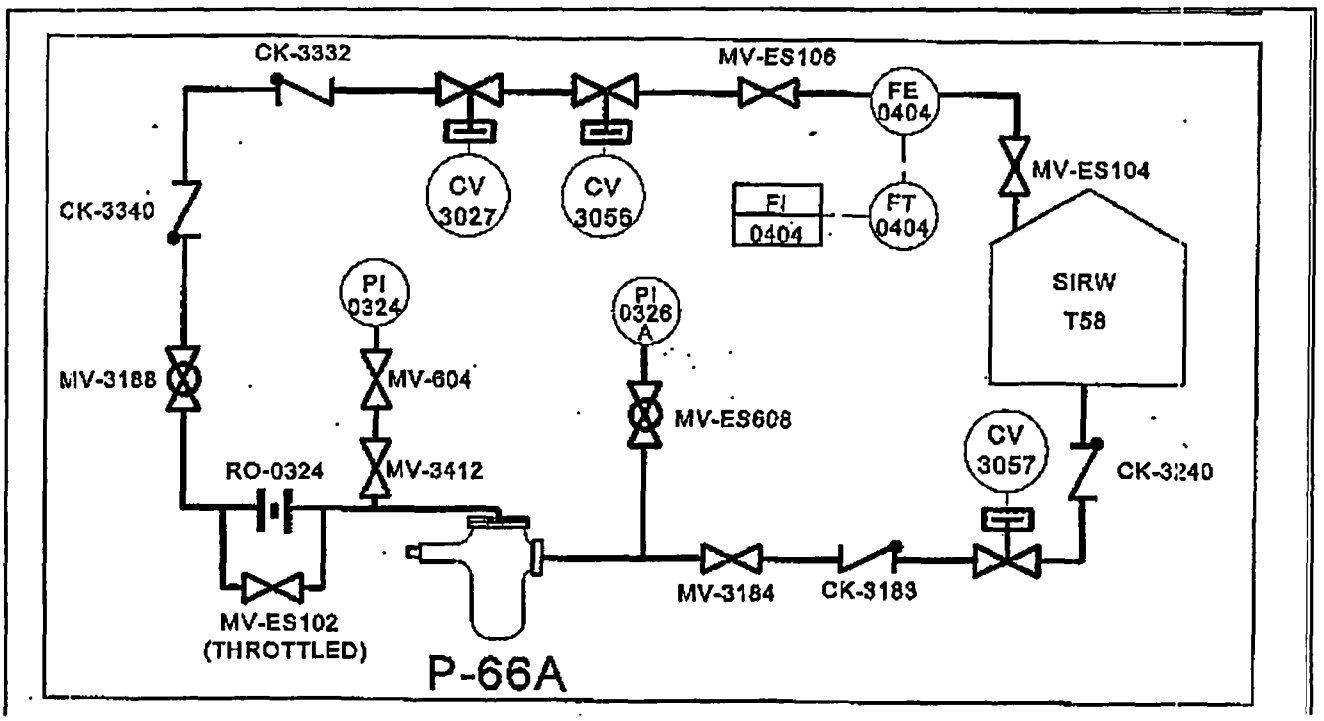
CONTAINMENT SPRAY PUMPS

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 B	TEST PROC NO QO-19	P&ID: M-204-1A/B5



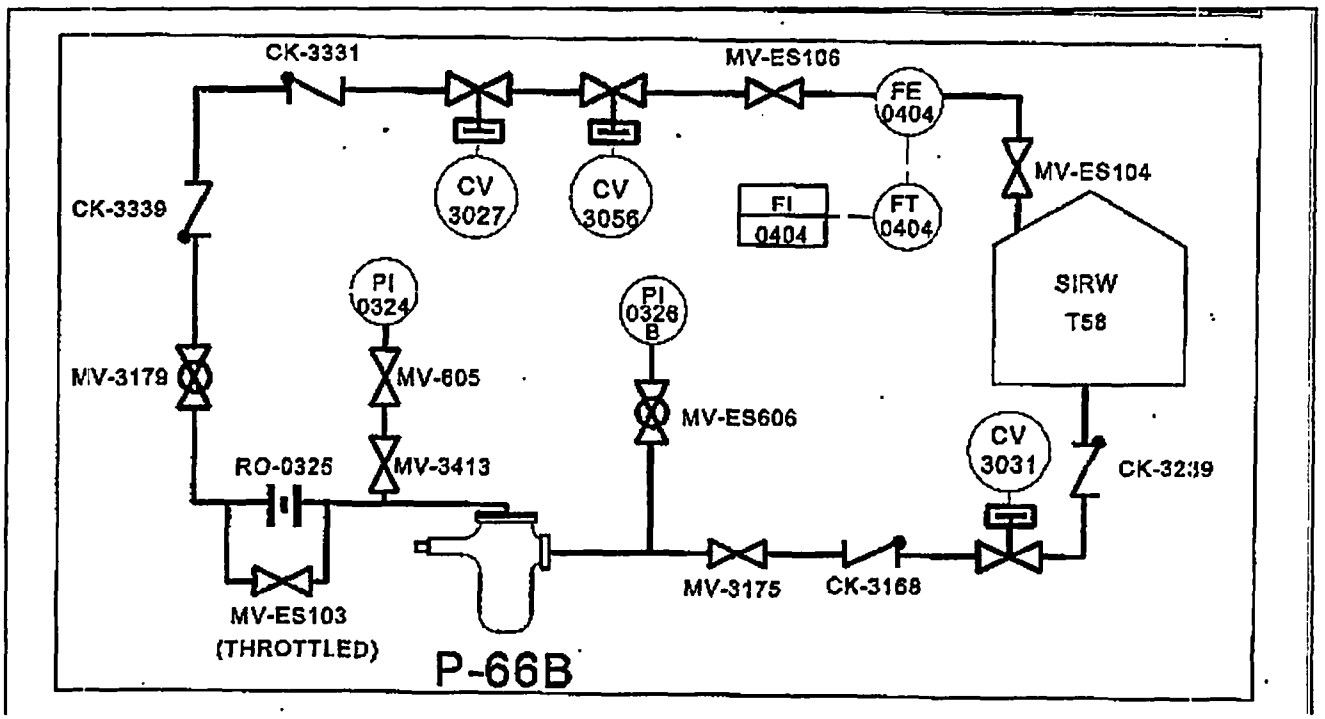
HIGH PRESSURE SAFETY INJECTION PUMPS

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	1017 PSID	CALCULATED
FLOW RATE	25 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 B	TEST PROC NO QO-19	P&ID: M-204-1/F3



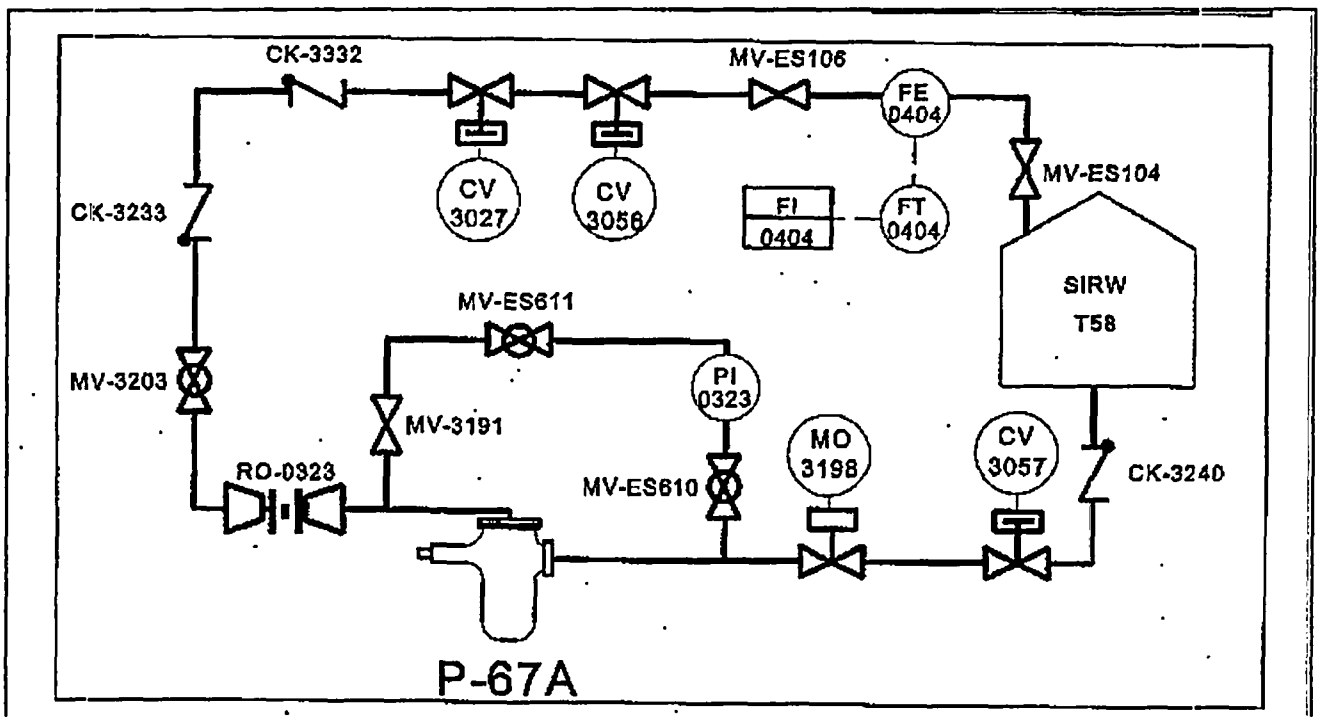
HIGH PRESSURE SAFETY INJECTION PUMPS

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	1006 PSID	CALCULATED
FLOW RATE	400 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



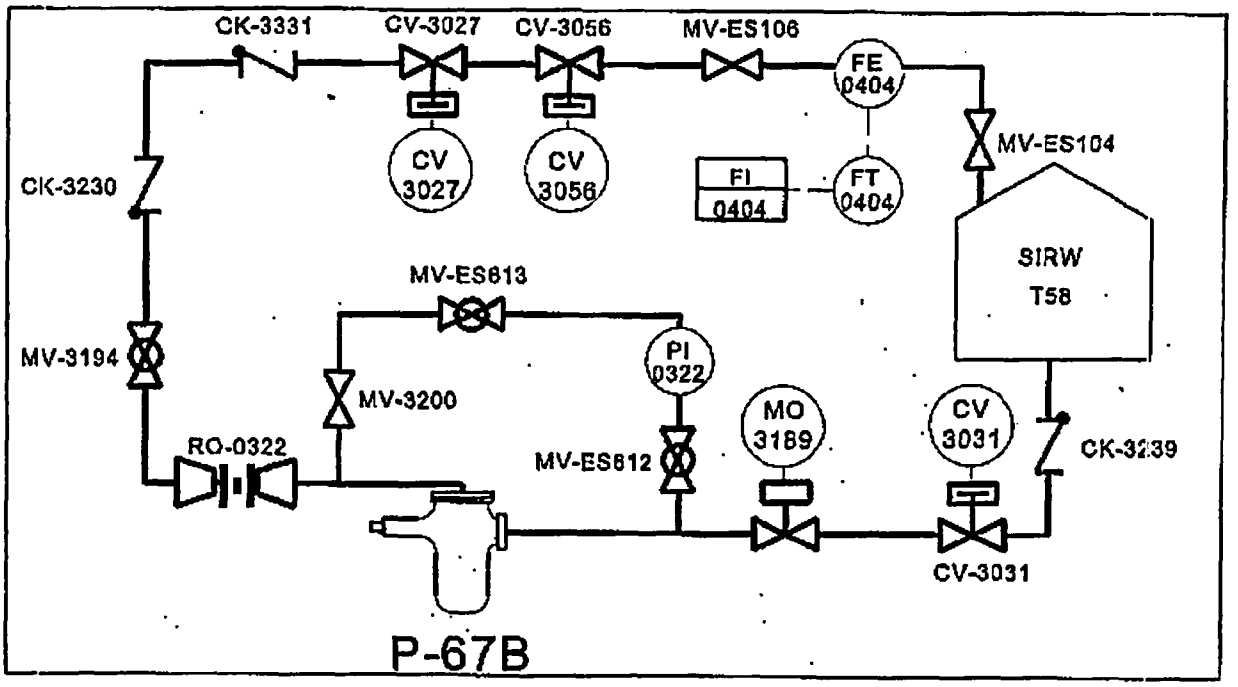
LOW PRESSURE SAFETY INJECTION PUMPS

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



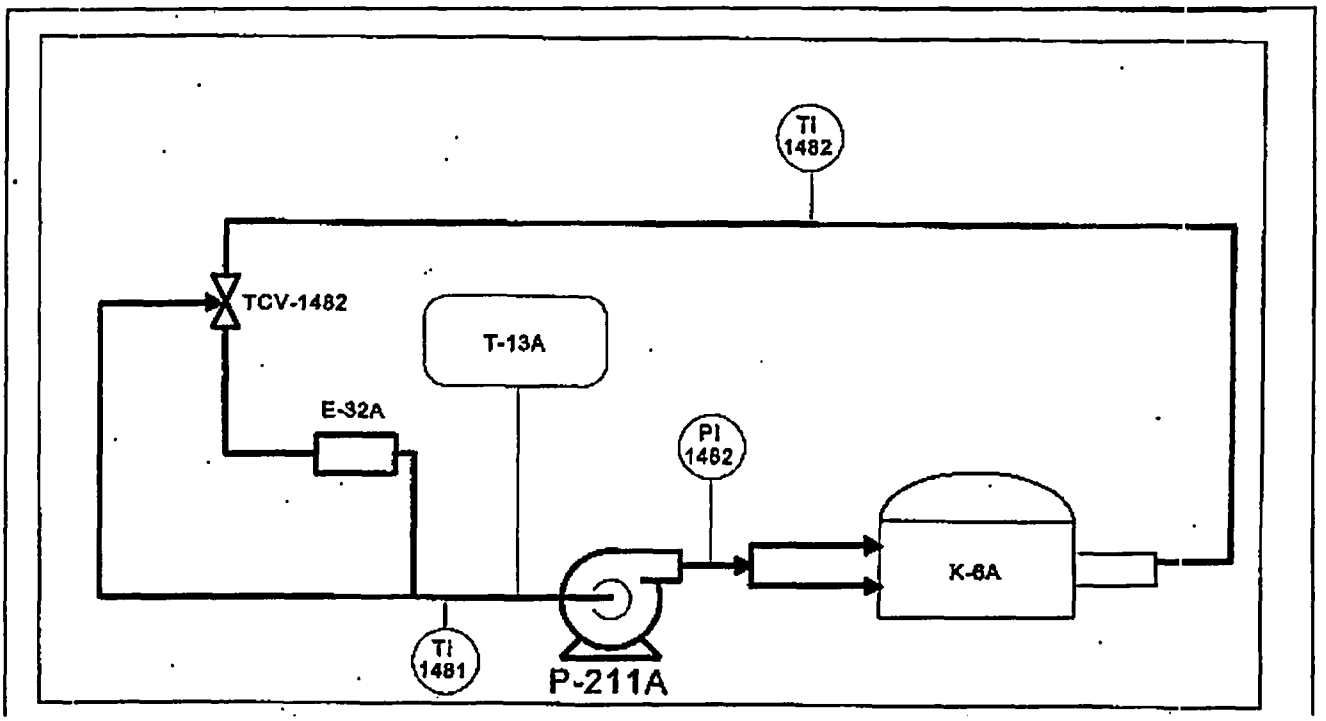
LOW PRESSURE SAFETY INJECTION PUMPS

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

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

JACKET WATER COOLING PUMPS FLOW PATH		
PUMP P-211A/ Group B	TEST PROC NO MO-7A-1	P&ID: M-214-1/45



DIESEL JACKET WATER COOLING PUMPS

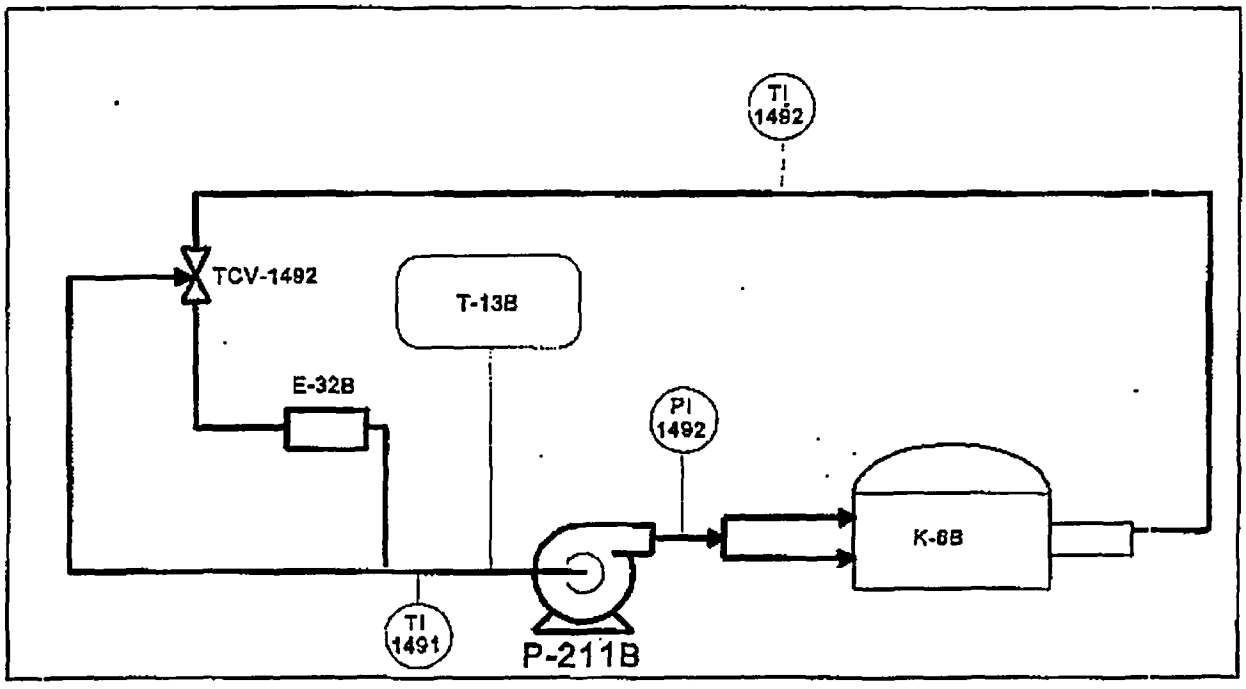
The Diesel Jacket Water Cooling Pumps provide cooling water to the emergency diesel generators. Without this cooling water, the diesel generators would not be able to function in order to shut down the reactor or to mitigate the consequences of an accident as defined in the Palisades Nuclear Plant FSAR. These pumps are driven directly from the diesels.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DISCHARGE PRESSURE (1)	10 - 50 PSIG	PI-1482
TEMPERATURE	160 - 185 DEG F	TI-1482
	90 - 185 DEG F	TI-1481

(1) Discharge pressure and temperature are recorded during performance of diesel generator testing under the skid mounted testing provisions.

GROUP A AND B PUMP TEST HYDRAULIC CIRCUITS

JACKET WATER COOLING PUMPS FLOW PATH		
PUMP P-211B/ Group B	TEST PROC NO MO-7A-2	P&ID: M-214-1/45



DIESEL JACKET WATER COOLING PUMPS

The Diesel Jacket Water Cooling Pumps provide cooling water to the emergency diesel generators. Without this cooling water, the diesel generators would not be able to function in order to shut down the reactor or to mitigate the consequences of an accident as defined in the Palisades Nuclear Plant FSAR. These pumps are driven directly from the diesels.

PARAMETER	REFERENCE SET	INSTRUMENT
SPEED	CONSTANT RPM	N/A
DISCHARGE PRESSURE (1)	10 - 50 PSIG	PI-1492
TEMPERATURE	160 -185 DEG F	TI-1492
	90 - 185 DEG F	TI-1491

(1) Discharge pressure and temperature are recorded during performance of diesel generator testing under the skid mounted testing provisions.

PALISADES NUCLEAR PLANT
ENGINEERING MANUAL PROCEDURE

TITLE: INSERVICE TESTING OF PLANT VALVES

Approved: GESchrader / 3/22/06
Procedure Sponsor **Date**

New Procedure/Revision Summary:

Revision 25

Specific Changes

– IST Program, 10 CFR 50.55a, 10-Year Program Update; PCR00816784

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ATTACHMENTS

TITLE: INSERVICE TESTING OF PLANT VALVES

USER ALERT
REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

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 Engineering Manual Procedure EM-09-18, "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 2005 Edition; which incorporates by reference the Code for Operations and Maintenance of Nuclear Power Plants, 2001 Edition with Addenda through 2003 identified in this procedure as the Code.

The requirements of these regulations and codes were implemented on March 23, 2006 and are in effect through Palisades' third 120-month interval ending March 22, 2016.

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 Engineering Aid EGAD-ISI-01, "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 the Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

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

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

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

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

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

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

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

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

3.2.5 NMC Procedures:

a. CP 0026, "Change Management Process"

b. FP-E-RTC-02, "Equipment Classification - Q-List"

c. FP-OP-OL-01, "Operability Determination"

d. FP-PA-ARP-01, "CAP Action Request Process"

e. FP-PE-PM-01, "Preventive Maintenance Program"

f. FP-WM-WOI-01, "Work Identification, Screening and Validation"

g. FP-G-DOC-04, "Procedure Processing"

h. FP-G-RM-01, "Records Management"

3.2.6 Other Procedures:

a. GOP-2, "Mode 5 to Mode 3 ≥ 525°F"

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

c. HP 6.8, "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. EGAD-ISI-01, "ASME Code Boundaries for ASME Section XI Inservice Inspection Program"

3.2.7 PPACs:

a. PPAC #SWS044, "CV-0884, Overhaul Valve and Actuator"

b. PPAC #SWS146, "CV-0885, Overhaul Valve and Actuator"

c. PPAC #X-OPS563, "Manual Stroke of Fire Water and Service Water Supplies to the Aux Feedwater Pumps" (includes MV-FW504, MV-FW750, MV-FW750A, MV-FW759, MV-FW774 and MV-FW775)

d. PPAC #X-OPS376, "Manual Isolation Valve PM Program" (includes MV-CD130 and MV-CD133)

e. PPAC #X-OPS565, "Manual Stroke of CV-2008 and CV-2010"

f. PPAC #X-OPS566, "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. 13 Week Schedule Program, "Planning and Scheduling Guidelines 2.0"

g. Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus"

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

4.0 DEFINITIONS AND RESPONSIBILITIES

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

4.2 Baseline Test - The initial test of a valve's safety function, that subsequent test will be assessed against. A Baseline Test shall only be established when/after the valve is known to be operating acceptably.

4.3 Test Shutdown Basis - Specific documents outlining the reason(s) for performing IST during Mode 2, 3, 4, 5, or 6 operations.

4.4 IST Coordinator - responsible for the development and administration of the IST program for Plant valves. This person shall also evaluate test results and identify equipment deficiencies to the System Engineer.

4.5 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. Exceeding a valve surveillance interval does not make a system/component inoperable.

3. 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.

4. If, during an extended outage, surveillance testing has been suspended, then the applicable components are considered inoperable until the surveillance test is once again performed, at which time the applicable components are considered operable and the normal surveillance schedule is resumed.

4.6 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.

4.7 Safety Classification - The classification of a valve as dependent upon its related system and safety-related function. The classifications are determined by ASME OM Code; ANSI/ANSI 51.1 - 1983; 10 CFR 50.2V; 10 CFR 50.55a(g), Footnote 2; Reg Guide 1.26.

4.8 System Engineer - Service manager for the system in question who is responsible for the maintenance and operating aspects of the tested equipment.

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

4.10 Valve Is Known To Be Operating Acceptably - It is the owner's responsibility to verify that a 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.

5.0 PROCEDURE

USER ALERT
REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

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, 2001 Edition with Addenda through 2003. 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

Presently, there are no ASME OM 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.

As expressed in the article entitled, "NRC is Making Clear That The Agency is Not Bound by the Interpretations," in the INSIDE NRC, (The McGraw Hill Companies, September 16, 1996). The article states: "In a letter to Roger Reedy, head of Reedy Engineering in Campbell, Calif, and the current chairman of the ASME Section III Committee for Nuclear Power Plant Components, NRC's safety chief William Russell says that, "ASME Code Interpretations are not part of the regulations and, therefore, the NRC is not bound by these interpretations." Russell's views, reflecting those of the NRC staff, were recently incorporated as Part 9900 of the NRC Inspection Manual."

Russell also said, "Generally, the NRC and the ASME views with regard to the meaning of Sections III and XI of the Code are in agreement. The NRC acknowledges that the ASME is the official interpreter of the Code. In most cases the interpretations are effective for providing clarifications on the meaning of a Code provision. However, the regulations transcend the ASME Code. The NRC is not bound by any ASME interpretation of the ASME Code which is contrary to NRC's regulations, or to the expressed purpose of the protection of the public health and safety. If an ASME Code interpretation either contradicts or is inconsistent with the NRC requirements such as regulations, a license condition, a technical specification, or an order, then the NRC requirements take precedence over ASME Code interpretation."

It is important to note, that in order for an NRC interpretation of the Code to be enforceable, it must be in the form of a regulation, license condition, technical specification or an order. Individual NRC staff members, in and of themselves, are not authorized to establish NRC position or interpret the ASME Code. Neither is an individual utility member authorized to establish utility positions or interpret ASME Code. Utility positions are documented in plant license and design bases documents, FSAR and Technical Specifications after review and approval in accordance with administrative procedures.

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. Presently, there are no technical position statements used in the valve inservice test program.

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 third 120-month interval and will be updated in accordance with 10 CFR 50.55a (f).

10-Year Code updates to the inservice test program shall be implemented using a NMC change management plan developed in accordance with NMC Procedure CP 0026, "Change Management Process" and shall conform to the guidance contained in Corporate Directive CD 5.5, "Inservice Testing Standard," Section 5.7.

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 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:

- Engineering Manual Procedure EM-09-02, "Inservice Testing of Plant Valves"

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

- Engineering Manual Procedure EM-09-18, "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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

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

- NMC Fleet Procedure FP-PA-ARP-01, "CAP Action Request Process"
- NMC Fleet Procedure FP-OP-OL-01, "Operability Determination"
- NMC Fleet Procedure FP-WM-WOI-01, "Work Identification, Screening and Validation"
- NMC Fleet Procedure FP-PE-PM-01, "Preventive Maintenance Program"
- Palisades Administrative Procedure 5.19, "Post Maintenance Testing"
- Palisades Administrative Procedure 9.20, "Technical Specification Surveillance and Special Test Program"
- EM-09-10, "Containment Leak Rate Testing Program"
- EM-09-18, "Check Valve Condition Monitoring and Inservice Testing Program"
- EM-28-01, "Motor Operated Valve Program"
- EM-28-02, "Check Valve Program"
- EM-28-03, "Air and Solenoid Operated Valve Program"
- EM-28-04, "Motor Operated Valve (MOV) Periodic Verification and Trending Program"
- EM-28-06, "Relief Valve Program Standard"
- Engineering Aid EGAD-ISI-01, "ASME Code Boundaries for ASME Section XI Inservice Inspection Program," including Color Coded P&IDs
- Technical Specification Surveillance Procedure RT-41, "Pressurizer Safety Valves RV-1039, RV-1040, and RV-1041"

- Technical Specification Surveillance Procedure RT-116, "Miscellaneous Systems Safety Valve Setpoint Testing"
- Technical Specification Surveillance Procedure RT-122, "Inservice Test Program - Check Valve Disassembly and Inspection Program"

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
- Operations Log

b. A listing of the procedures/processes used to test valves in scope to the inservice testing program are in Attachment 1, IST Valve Program.

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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

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. Following is an overview:

5.5.1 Category A Testing Requirements

a. The valve shall be leakage tested in accordance with ASME OM Code, Subsection ISTC-3600, "Leak Testing Requirements."

b. If the valve has an active open safety function, then the valve shall be stroked to the open position and this stroke shall be timed for power operated valves.

c. If the valve has an active close safety function, then the valve shall be stroked to the close position and this stroke shall be timed for power operated valves.

d. If the valve (active or passive) has remote position indicators, then these indicators shall be verified to depict valve position.

e. If a valve has a fail-safe actuator, then the valve shall be tested by observing the operation of the actuator upon loss of valve actuating power.

f. If the power operated valve does not have an active safety function (ie, the valve is passive), then the valve is not required to be stroke-timed.

5.5.2 Category B Testing Requirements

a. If the valve has an active open safety function, then the valve shall be stroked to the open position and this stroke shall be timed for power operated valves.

b. If the valve has an active close safety function, then the valve shall be stroked to the close position and this stroke shall be timed for power operated valves.

c. If the valve (active or passive) has remote position indicators, then these indicators shall be verified to depict valve position.

d. If a valve has a fail-safe actuator, then the valve shall be tested by observing the operation of the actuator upon loss of valve actuating power.

e. If the power operated valve does not have an active safety function (ie, the valve is passive), then the valve is not required to be stroke-timed.

5.5.3 Category C Testing Requirements

a. The check valve IST program is described in Engineering Manual Procedure EM-09-18, "Check Valve Condition Monitoring and Inservice Testing Program."

b. Safety and Relief Valves:

The types of inservice testing required for safety and relief valves are described in Mandatory Appendix I of the OM Code.

5.5.4 Category D Testing Requirements

Palisades has no valves in Category D.

5.5.5 Testing Exceptions

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 Attachment 3, "Guidelines for Relief Requests." NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives" and NUREG/CR-6369, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements" may be consulted.

5.5.6 Valve Test Type Identification/Reference

The type of tests required for each valve in scope to the inservice test program, and the Relief Requests associated with Code testing exceptions, are contained in the Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

5.6 METHODS OF TESTING VALVE FUNCTIONS

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

5.6.1 Open Safety Function

a. Category A and B power operated valves with an active safety function to open shall be full-stroked to the open position while observing an appropriate indictor(s) and timed.

b. Category C safety/relief valves with a safety function to open shall be tested in accordance with Mandatory Appendix I of the ASME OM Code.

Palisades Administrative Procedures shall govern items such as personnel and equipment qualifications, procedure formats, and test conduct.

5.6.2 Close Safety Function

a. Category A and B power operated valves with an active safety function to close shall be full-stroked to the close position while observing an appropriate indictor(s) and timed.

b. Category C safety/relief valves with a safety function to close shall be tested in accordance with ASME OM Code, Mandatory Appendix I.

Palisades Administrative Procedures shall govern items such as personnel and equipment qualifications, procedure formats, and test conduct.

5.6.3 Limited Leakage Safety Function

a. Category A valves, which are containment isolation valves, shall be tested in accordance with 10 CFR 50, Appendix J.

Engineering Manual Procedure EM-09-10, "Containment Leak Rate Testing Program," provides guidance for meeting the Appendix J requirements.

NOTE: Pressure Isolation Valves are identified in the Technical Specification Bases, Table B 3.4.14-1, "Required PCS Pressure Isolation Valves."

NOTE: Palisades does not have Category A valves, which are containment isolation valves that also provide a reactor coolant system pressure isolation function (PIV).

b. Category A valves, which are containment isolation valves, which also provide a reactor coolant system pressure isolation function (PIV), shall be tested in accordance with 10 CFR 50, Appendix J and shall additionally be tested in accordance with ASME OM Code, Subsection ISTC-3630.

c. Category A valves, which perform a function other than containment isolation, shall be tested in accordance with ASME OM Code, Subsection ISTC-3630.

5.6.4 Position Indication Function

In accordance with ASME OM Code, Subsection ISTC-3700, "Position Verification Testing," if the valve has remote position indicators, then the valve shall be observed locally to verify that valve operation is accurately indicated, both open and close.

a. Where practicable, this local observation should be supplemented by other indications such as use of flow meters or other suitable instrumentation to verify obturator position. These observations need not be concurrent.

b. Where local observation is not possible, other indications shall be used for verification of valve operation.

c. For valves having remote position indicators at multiple locations (eg, in the control room and also on a remote shutdown panel or sample panel), only the remote position indicator at the location utilized in exercising the valve and timing the stroke of the valve, typically need be verified for accurately indicating valve operation. However, Palisades has committed to the NRC that a few valves will be position indication tested at multiple locations.

5.6.5 Fail Safe Function

In accordance with ASME OM Code, Subsection ISTC-3560, "Fail-Safe Valves"; if a valve is equipped with a Fail Safe actuator, then the valve shall be tested by observing the operation of the valve when the air supply is vented or power is removed from the actuator. This is accomplished at Palisades during the course of normal valve exercising. No special provisions are necessary.

5.6.6 Testing Method Exceptions

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 Attachment 3, "Guidelines for Relief Requests." NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives" and NUREG/CR-6369, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements" may be consulted.

5.6.7 Valve Test Method Identification/Reference

The type of tests required for each valve in the scope of the inservice test program, and the Relief Requests associated with Code testing exceptions, are contained in the Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus." An index of the Relief Requests is provided in Attachment 6, "Relief Request Justification Index."

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. When setting or changing test intervals of valve testing, compliance shall be in accordance with Section 4.

Unless otherwise specified (see Relief Request 23), each inservice test surveillance requirement (SR) shall be performed within the specified time interval in accordance with Technical Specifications SR 3.0.2, which states in part; "The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency,..."

Test frequencies for valve tests are identified in the Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

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 indentify the test periodicity requirements if quarterly testing is not practicable.

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-3510. 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 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 Engineering Manual Procedure EM-09-10, "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, then a justification shall be written and documented in the IST Program for performing required testing during cold shutdowns or while entering/exiting cold shutdowns (Technical Specifications Modes 3, 4, or 5).

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.

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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus." 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).

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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus." 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 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 Attachment 3, "Guidelines for Relief Requests." NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives" and NUREG/CR-6369, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements" may be consulted.

5.8.9 Testing Interval Identification/Reference

Relief Requests associated with Code testing interval exceptions, are contained in the Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus." 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 Health Physics (HP) procedures. These procedures are scheduled in accordance with the Palisades Work Control Process, 13 Week Schedule Program Planning & Scheduling Guidelines 2.0.

5.9.3 Preventive Maintenance

Several valve inservice tests are a part of the Preventive Maintenance Program. Preventive Maintenance activities are controlled by NMC Fleet Procedure FP-PE-PM-01, "Preventive Maintenance Activities."

5.9.4 Work Orders

Valve inservice testing may also be accomplished with Work Orders. Work Orders are scheduled in accordance with NMC Fleet Procedure FP-WM-WOI-01, "Work Identification, Screening and Validation."

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 the Code, Section 6.3.

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.

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 and ISTC-5152." 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.

Motor Operated Valve Limiting Value

- The Limiting Value for valves with reference stroke times greater than 10 seconds shall 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 shall 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 shall 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 shall 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. Engineering Manual Procedure EM-09-10, "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 Attachment 3, "Guidelines for Relief Requests." NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives" and NUREG/CR-6369, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements" may be consulted.

b. Relief Requests are contained in the Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus." 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 NMC Fleet Procedure FP-PA-ARP-01, "CAP Action Request Process."

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 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 and ISTC-5153, 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.

Retest - Satisfactory

- 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.

Retest - Unsatisfactory

- If the valve is retested and the second set of data also does not meet the acceptance criteria, 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 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 Action Request should be initiated in accordance with NMC Fleet Procedure FP-PA-ARP-01, "CAP Action Request Process," and operability determined in accordance with NMC Fleet Procedure FP-OP-OL-01, "Operability Determination."

- 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.

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.

6.0 ATTACHMENTS AND RECORDS

6.1 ATTACHMENTS

6.1.1 Attachment 1, "IST Valve Program"

6.1.2 Attachment 2, "PVPlus Reporting and Trending"

6.1.3 Attachment 3, "Guidelines for Relief Requests"

6.1.4 Attachment 4, "Cold Shutdown Justification Index"

6.1.5 Attachment 5, "Refueling Outage Justification Index"

6.1.6 Attachment 6, "Relief Request Justification Index"

6.1.7 Attachment 7, "IST Administrative Process Diagram"

6.2 RECORDS

Valve records shall be maintained as lifetime plant records. These records should be processed in accordance with NMC Fleet Procedure FP-G-RM-01, "Records Management."

Valve records shall consist of the following documents, as applicable:

a. Technical Specification Surveillance Procedures

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

c. Maintenance Work Orders

d. Operations Logs

e. Corrective Action Documents

Records required by the Inservice Testing (IST) Program Code may be summarized in the IST database PvPlus, 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

The scope of this procedure does not include activities that require a 50.59 review per NMC Fleet Procedure FP-G-DOC-04, "Procedure Processing." Therefore, changes to this procedure do not require a 50.59 review.

IST VALVE PROGRAM

THE REGULATION

The Code of Federal Regulations
Title 10, Part 50, Section 55a
(10 CFR 50.55a)

THE CODE

The ASME/ANSI Code for Operation And Maintenance of Nuclear Power Plants (2001 Edition with Addenda through 2003) Subsection ISTC."	The ASME/ANSI Code for Operation And Maintenance of Nuclear Power Plants (2001 Edition with Addenda through 2003) Mandatory Appendix I."

THE LICENSE REQUIREMENTS

Technical Specifications ADMIN 5.5.7
"Inservice Testing Program"

Palisades Administrative Procedure 3.19,
"Technical Specifications Programs"

THE PROGRAM PROCEDURES

Engineering Manual Procedure EM-09-02,
"Inservice Testing of Plant Valves"

PVPLUS REPORTING AND TRENDING

PVPlus is a computerized database (this version uses a Microsoft Access database) that assists in the management of information required for Inservice Testing programs. This database is available on the Palisades Local Area Network (LAN).

- PVPlus provides the following features:
- Component information recommended by NUREG-1482 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 (ie, IST Test Table).
- Data from IST surveillance tests can be input, kept as an accurate and complete record of past test results, and trended using graphic capabilities.
- PVPlus allows for acceptance criteria (eg, flow, stroke time, differential pressure) to be assigned for each type of test.
- PVPlus allows for comments to be associated for each test.
- PVPlus allows the user to sequence the order of data entry to fit the sequence of the components in the test procedure, and select data ranges and parameters for graphing.
- Justifications for performing tests during cold shutdowns or refueling outages, and relief requests; can be input, kept, updated and reported.
- PVPlus is LAN compatible, making IST information available to multiple users connected to the LAN.
- PVPlus provides different levels of security such as read only, read and write access, and approval of data entry.
- PVPlus provides for a second level of review for changes made to IST information and provides a record of changes made to the database, including the reason for the changes and the details of the change. Changes are not written to the database until approved by a second level of review.
- PVPlus has an Owner's Manual that covers: Getting Started, System Administration, Viewing Data, Entering Data, Changing Data, and Reports.

PVPLUS REPORTING AND TRENDING

Acronyms, Abbreviations and Definitions

ACT TYPE: The type of valve actuator is indicated by the following:

- AC Air Operator - Air to Close
- AO Air Operator - Air to Open
- A3 Air Operator - 3 Way Valve
- MA Manual
- MO Motor Operator
- SA Self Actuated
- SO Solenoid Actuated

ASME Class: The safety classification (1, 2, and 3) as defined by the American Society of Mechanical Engineers.

CHP: Containment High Pressure (Signal)

CHR: Containment High Radiation (Signal)

CIV: Containment Isolation Valve

CODE DEV: The applicable justification/basis for not performing the valve test on a quarterly interval. This includes cold shutdown justifications, refueling outage justifications, relief request justifications, and grouping justifications.

FUNC A/P: The safety function of the valve, either active or passive.

- A Active valves are those valves which are required to change obturator position to accomplish a safety function.
- P Passive valves are those valves which maintain obturator position and are not required to change obturator position to accomplish a safety function.

FUNCTION: The specific valve safety function. More than one function may be delineated by a slash (/).

NORM POS: The position of the valve during normal plant operation, specified as follows:

- O Normally Open
- C Normally Closed
- O/C Is Normally Operated Either Open or Closed
- LO Locked Open
- LC Locked Closed
- ELO Electrically Locked Open
- ELC Electrically Locked Closed

PVPLUS REPORTING AND TRENDING

PIV: Pressure Isolation Valve

RCPB: Reactor Coolant Pressure Boundary

SAFE POS: The position of the valve required to enable it to perform its safety function(s), specified as follows:

- O Open Safety Position
- C Close Safety Position
- O/C Open and Close Safety Position

SIS: Safety Injection Signal

SIZE: The nominal diameter of the valve, in inches.

TBD: Testing Basis Document

TEST FREQ: The test frequency at which the above mentioned tests will be performed to fulfill the requirements of ASME OM Code, Subsection ISTC.

- CS Test performed during cold shutdown.
- DIS Disassemble and inspect check valve to verify it can stroke to both the open and/or close positions.
- FCO Test performed at "full core off-load."
- HS Test performed during hot shutdown.
- MO Test performed monthly during any operational condition.
- QO Test performed quarterly (at least once per every 92 days) during any operational condition.
- RO Test performed during reactor refueling outage (head removed with intent to load fuel).
- SO Test performed every nine months during any operational condition.
- APPJ Test performed at Appendix J, Option B frequency.
- #MO Test performed once per the designated number (#) of months.
- #Y Test performed once per the designated number (#) of years.
- *** Data obtained during this test (ie, this test type) is not required for the IST Program, at any frequency.

PVPLUS REPORTING AND TRENDING

TEST PROC: The Palisades Nuclear Plant procedure/document in which the specified valve test is performed.

TEST TYPE: The tests that will be performed to fulfill the requirements of ASME OM Code, Subsection ISTC. Test types and abbreviations are specified as follows:

- CTC Valve is exercised or examined in a manner that verifies required obturator travel to the close position.
- CTO Valve is exercised or examined in a manner that verifies required obturator travel to the open position
- FSE Valve is given a full stroke exercise (open and close) without timing. Typically this is a manual exercising of the valve.
- FST Valve with a fail safe actuator is given a fail safe test by observing the operation of the actuator upon loss of valve actuating power.
- LT Valve seat leakage test.
- NITC Valve is monitored with nonintrusive technique(s) to verify obturator travel to the close position.
- NITO Valve is monitored with nonintrusive technique(s) to verify obturator travel to the full-open position.
- PIT Valves with remote position indication are given a position indication test to verify valve position matches remote indication.
- PS Valve function is only partially verified by exercising to less than full open or less than accident require flow rate.
- RT Relief and Safety Relief Valve set point verification test.
- STC Valve full stroke close test that includes stroke timing (stroke time closed test).
- STO Valve full stroke open test that includes stroke timing (stroke time open test).
- RG Valve verified in close or open position through use of radiography.

TYPE: The type of valve is indicated by the following abbreviations:

- AG Angle
- BA Ball
- BF Butterfly
- CK Check
- GA Gate
- GL Globe
- RV Relief

PVPLUS REPORTING AND TRENDING

VALVE NUMBER: A unique identifier for each valve (eg, CV-3006). The operation of the valve is indicated by the first group of letters, which are defined as follows:

- CK Check Valve
- CV Control Valve
- MO Motor Operated Valve
- MV Manual Valve
- PCV Pressure Control Valve
- PRV Pressure Relief Valve
- RV Relief Valve
- SV Solenoid Valve

VLV CAT: The valve category based on the requirements of the ASME OM Code, Subsection ISTC-1300. Four (4) separate categories (A, B, C, and D), and combinations of these categories, may be used to describe a valve in the IST Program.

- Category A: Valves for which seat leakage is limited to a specific amount in the closed position for fulfillment of their required function(s).
- Category B: Valves for which seat leakage in the closed position is inconsequential for fulfillment of their required function(s).
- 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 their required function.
- Category D: Valves which are activated by an energy source capable of only one operation, such as rupture disks or explosively actuated valves.

GUIDELINES FOR RELIEF REQUESTS

a. Identifies or is informed of a need for an IST Valve Relief Request.
b. Develops Relief Request (may use NUREG /CR-6369 for guidance).
c. Ensures Relief Request includes the following elements as appropriate:
   1. Reasons for the impracticality of the required testing,
   2. A description of the alternate technique used and a summary of the procedure(s) being followed,
   3. A description of the method and results of the program to qualify the alternate technique,
   4. A description of the instrumentation used for alternate testing and the maintenance and calibration of the instruments,
   5. A description of the basis used to verify the baseline data used for alternate tests has been generated when the component is known to be in good working order, and
   6. A description of the basis for the acceptance criteria for the alternate testing and a description of corrective actions to be taken if the acceptance criteria are not met.
d. Forwards Relief Request to Licensing.

IST Valve Engineer

↓

a. Receives Relief Request (RR).
b. Reviews Relief Request, makes & incorporates comments as required.
c. Attaches a "Licensing Correspondence Summary" sheet to the RR.
d. Forwards Relief Request to the IST Valve Engineer.

Licensing

↓

a. Receives and reviews Relief Request.
b. Selects a technical reviewer.
c. Forwards Relief Request to the technical reviewer.

IST Valve Engineer

↓

a. Receives Relief Request.
b. Ensures all information is accurate and easily understood.
c. Makes Comments as appropriate.
d. Forwards Relief Request to the IST Valve Engineer.

Technical Reviewer

↓

GUIDELINES FOR RELIEF REQUESTS

a. Receives Relief Request.
b. Resolves/incorporates comments from technical reviewer.
c. Ensures other reviews identified on the Licensing Correspondence Summary sheet have been performed and comments resolved.
d. Forwards Relief Request to Licensing.

IST Valve Engineer

↓

a. Receives and reviews Relief Request.
b. Ensures all questions or comments are adequately resolved.
c. Submits Relief Request to the USNRC.

Licensing

↓

a. Receives and reviews Relief Request.
b. Asks licensee about comments or questions.
c. Obtains satisfactory responses to questions from licensee.
d. Approves Relief Request via letter to licensee.

USNRC

↓

a. Receives approved Relief Request from USNRC.
b. Ensures approved Relief Request is documented in DCC.
c. Forwards copy of approved Relief Request to the IST Valve Engineer.

Licensing

↓

a. Receives approved Relief Request.
b. Enters pertinent information into PVPlus.
c. Discards or files copy of Relief Request.
d. Revises program documents.

IST Valve Engineer

COLD SHUTDOWN JUSTIFICATION INDEX
(Except for Check Valves)

CS1: Cold Shutdown Exercise Testing of Reactor Vessel Vent Valves
- PRV-1067 PRV-1069 PRV-1071
- PRV-1068 PRV-1070 PRV-1072

CS2: Cold Shutdown Testing of Containment Isolation Valves for Primary Coolant Pump
- CV-2083
- CV-2099

CS4: Cold Shutdown Exercise Testing of Containment Isolation Valves for Let Down Flow
- CV-2009

CS8: Cold Shutdown Testing of Containment Spray Valves
- CV-3001
- CV-3002

CS10: Cold Shutdown Exercise Testing of SIRW Minimum Recirculation Isolation Valves
- CV-3027
- CV-3056

CS13: Cold Shutdown Exercise Testing of SIRW Tank Outlet Valves
- CV-3031
- CV-3057

CS14: Cold Shutdown Testing of Containment Sump Isolation Valves
- CV-3029
- CV-3030

CS15: Cold Shutdown Exercise Testing of the Main Steam Isolation Valves
- CV-0501
- CV-0510

CS17: Cold Shutdown Exercise Testing of Component Cooling Containment Valves
- CV-0910 CV-0940
- CV-0911 CK-CC910

CS19: Cold Shutdown Exercise Testing of Containment Purge Air Exhaust Valves
- CV-1805 CV-1807 CV-1813
- CV-1806 CV-1808 CV-1814

COLD SHUTDOWN JUSTIFICATION INDEX
(Except for Check Valves)

CS20: Cold Shutdown Exercise Testing of Service Water Containment Valves
- CV-0824
- CV-0847

CS24: Cold Shutdown Testing of PORV Block Valves
- MO-1042A
- MO-1043A

CS31: Cold Shutdown Testing of Shutdown Cooling Heat Exchanger to LPSI Valve
- CV-3006

CS33: Cold Shutdown Testing of Service Water Non-Critical Header Isolation Valve
- CV-1359

REFUELING OUTAGE JUSTIFICATION INDEX
(Except for Check Valves)

None

RELIEF REQUEST JUSTIFICATION INDEX
(Except for Check Valves)

RR-V-12: Component Cooling Water Radioactive Waste Evaporator Isolation Valves
- CV-0944
- CV-0977B

RR-V-18: Auxiliary Feedwater Flow Control Valves
- CV-0727 CV-0737A
- CV-0736A CV-0749

RR-V-20: CCW Surge Tank Vent Valve
- CV-0915

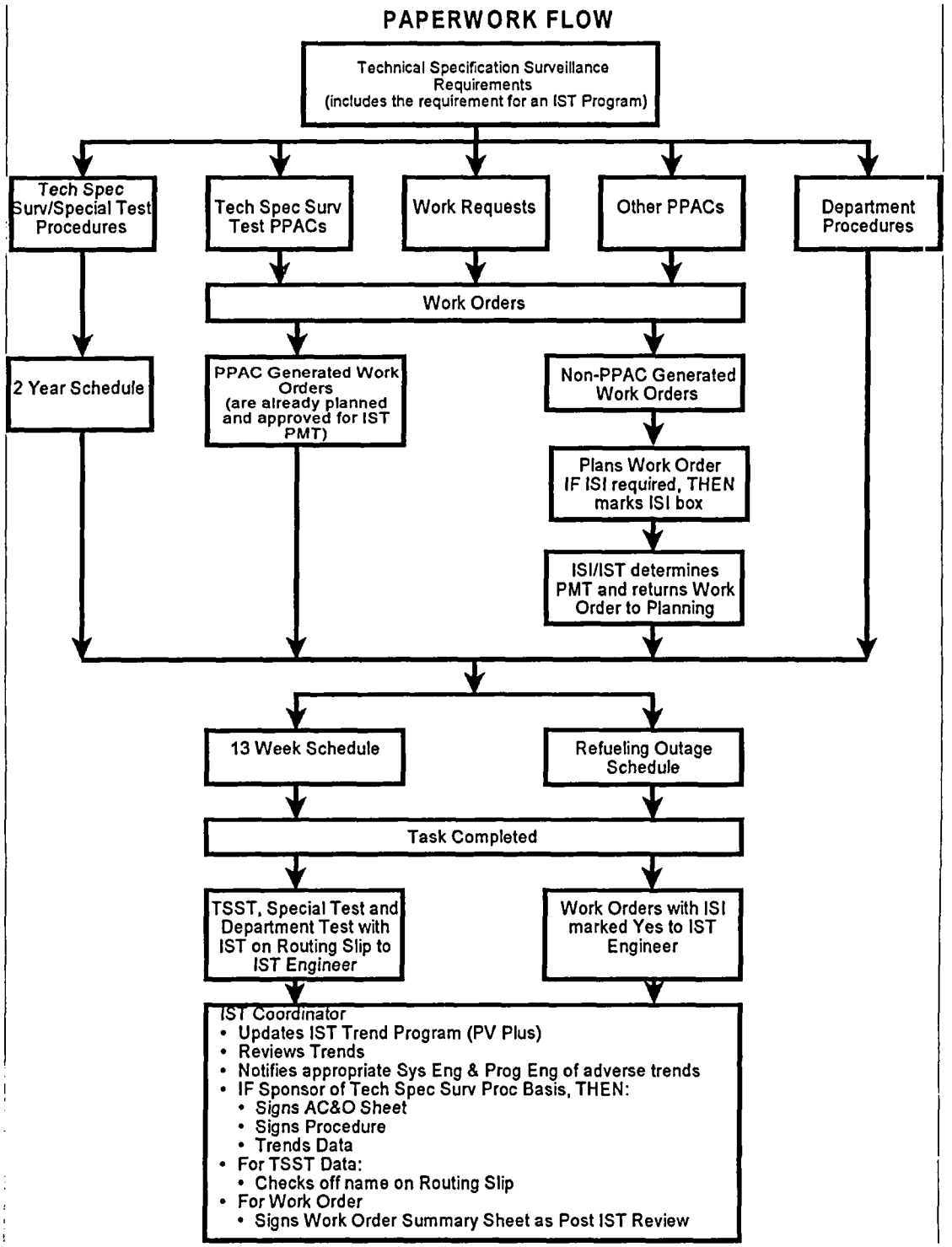
RR-V-21: SWS Control Valves
- CV-0821 CV-0822

RR-V-28: Shutdown Cooling Relief Valve
- RV-0402 RV-0954
- RV-0403 RV-0955

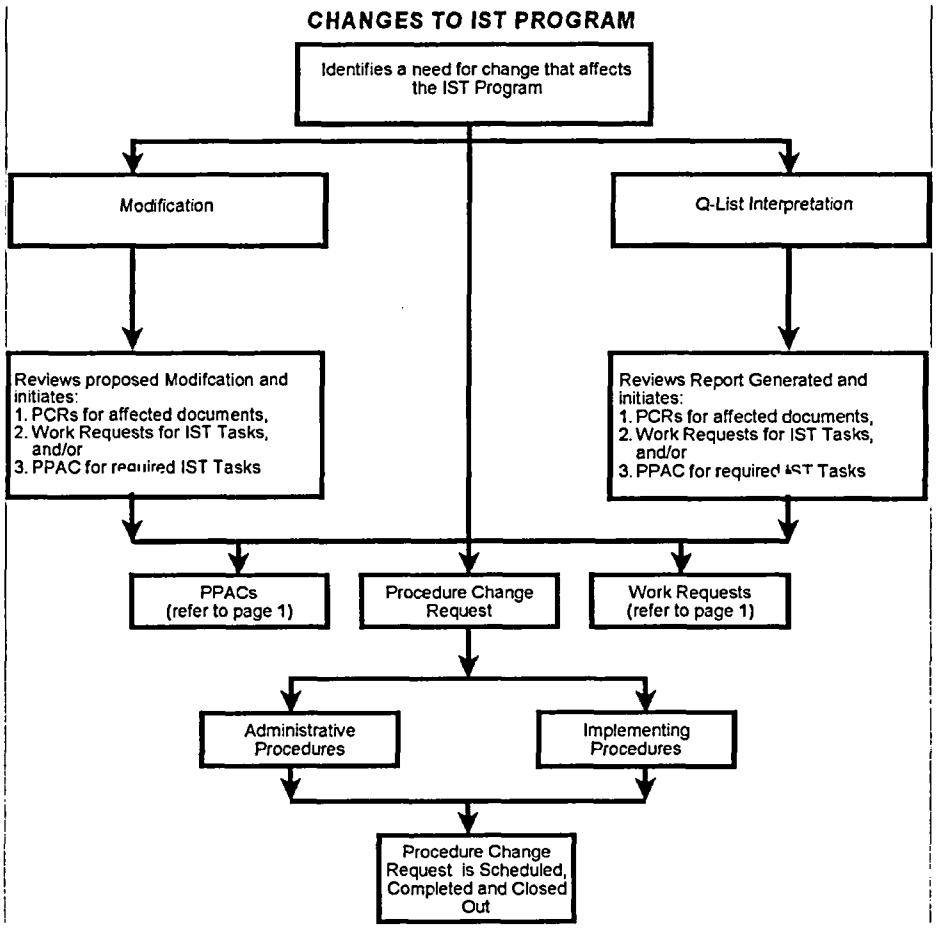
RR-V-30: Shutdown Cooling Relief Valve
- RV-0401

RR-V-31: Shutdown Cooling Discharge Relief Valves
- RV-3162
- RV-3164

IST ADMINISTRATIVE PROCESS DIAGRAM



IST ADMINISTRATIVE PROCESS DIAGRAM



5.0 EM-09-18, Check Valve Condition Monitoring and Inservice Testing Progams

46 Pages to Follow

Procedure No EM-09-18
Revision 3
Effective Date 3/24/06

PALISADES NUCLEAR PLANT
ENGINEERING MANUAL PROCEDURE

TITLE: CHECK VALVE CONDITION MONITORING AND INSERVICE TESTING PROGRAM

Approved: GESchrader / 3/23/06
Procedure Sponsor **Date**

New Procedure/Revision Summary:

Revision 3

Specific Changes

– IST Program, 10 CFR 50.55a, 10-Year Program Update; PCR00816796

TITLE: CHECK VALVE CONDITION MONITORING AND INSERVICE TESTING PROGRAM

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TITLE: CHECK VALVE CONDITION MONITORING AND INSERVICE TESTING PROGRAM

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ATTACHMENTS

TITLE: CHECK VALVE CONDITION MONITORING AND INSERVICE TESTING PROGRAM

USER ALERT
REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

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, 2001 Edition with Addenda through 2003, 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.

TITLE: 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, the March 2005 Edition; which incorporates by reference the Code for Operations and Maintenance of Nuclear Power Plants, 2001 Edition with Addenda through 2003," otherwise identified in this procedure as the Code.

The requirements of these regulations and codes became effective on March 24, 2006, which is the beginning date for the 4rth Inservice Test Interval. They will remain in effect through Palisades' fourth 120-month interval ending March 23, 2016.

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 power operated and relief valves are described in Engineering Manual Procedure EM-09-02, "Inservice Test of Plant Valves." Reference EM-09-02 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 Engineering Aid EGAD-ISI-01, "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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

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 NMC-1, "Quality Assurance Topical Report"

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 2001 Edition with Addenda Through 2003, Operations and Maintenance of Nuclear Power Plants, Subsection 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. NUREG/CR-6396, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements"

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 Procedures"

3.2.3 Engineering Manual Procedures

a. EM-09-02, "Inservice Testing of Plant Valves"

b. EM-09-10, "Containment Leak Rate Testing Program"

c. EM-28-02, "Check Valve 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, "ESS Check Valve Operability Test and LPSI Motor Operated Valve Position 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-28, "Auxiliary Feedwater System Modes 5 and 6 Testing - Inservice Test Procedure"

l. QO-32, "Closure Verification of HPSI Train 1 and 2 and LPSI Injection Check Valves"

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

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

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

p. 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"

q. RO-98, "LPSI Pump Vibration, Containment Spray Pump Vibration, and Discharge Check Valves Test"

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

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

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

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

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

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

x. RO-147, "Comprehensive Pump Test - High Pressure Safety Injection Pump P-66A and P-66B"

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

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

aa. SHO-1, "Operator Shift Items Modes 1, 2, 3, and 4"

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

3.2.6 NMC Procedures

a. CD 5.5, "Inservice Testing Standard"

b. CD 5.8, "Check Valve Program Standard"

c. CP 0026, "Change Management Process"

d. FP-OP-OL-01, "Operability Determination"

e. FP-PA-ARP-01, "CAP Action Request Process"

f. NMC Fleet Procedure FP-WM-WOI-01, "Work Identification, Validation and Screening"

g. NMC Fleet Procedure FP-WM-PLA-01, "Work Order Planning Process"

h. NMC Fleet Procedure FP-PE-PM-01, "Preventive Maintenance Program"

i. NMC Fleet Procedure FP-G-DOC-04, "Procedure Processing"

j. NMC Fleet Procedure FP-G-RM-01, "Records Management"

3.2.7 Other Procedures

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

b. EGAD-ISI-01, "ASME Code Boundaries for ASME Section XI Inservice Inspection Program"

3.2.8 Periodic Activities

a. PMID00000079, "CK-CD407, Nonintrusive Check Valve Test"

b. PMID00000233, "CK-DMW400, Nonintrusive Check Valve Test"

c. PMID00001201, "CK-ES3340, Disassemble, Inspect and Repair Check Valve"

d. PMID00001537, "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. 13 Week Schedule Program, "Planning and Scheduling Guidelines 2.0"

c. Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus"

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 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 Engineering Manual Procedure EM-09-18, "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 Engineering Manual Procedure EM-09-02, "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."

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.

TITLE: CHECK VALVE CONDITION MONITORING
AND INSERVICE TESTING PROGRAM

5.0 PROCEDURE

USER ALERT
REFERENCE USE PROCEDURE

Refer to the procedure periodically to confirm that all procedure segments of an activity will be or are being performed. Where required, sign appropriate sign-off blanks to certify that all segments are complete.

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 2001 Edition with Addenda through 2003, Appendix II, "Check Valve Condition Monitoring Program" are contained in this section.

EM-09-18 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 March 2005 Edition. 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 2001 Edition with Addenda through 2003, 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.

As expressed in the article entitled, "NRC is Making Clear That The Agency is Not Bound by the Interpretations," in the INSIDE NRC, (The McGraw Hill Companies, September 16, 1996). The article states: "In a letter to Roger Reedy, head of Reedy Engineering in Campbell, Calif, and the current chairman of the ASME Section II Committee for Nuclear Power Plant Components, NRC's safety chief William Russell says that, "ASME Code Interpretations are not part of the regulations and, therefore, the NRC is not bound by these interpretations." Russell's views, reflecting those of the NRC staff, were recently incorporated as Part 9900 of the NRC Inspection Manual."

Russell also said, "Generally, the NRC and the ASME views with regard to the meaning of Sections III and XI of the Code are in agreement. The NRC acknowledges that the ASME is the official interpreter of the Code. In most cases the interpretations are effective for providing clarifications on the meaning of a Code provision. However, the regulations transcend the ASME Code. The NRC is not bound by any ASME interpretation of the ASME Code which is contrary to NRC's regulations, or to the expressed purpose of the protection of the public health and safety. If an ASME Code interpretation either contradicts or is inconsistent with the NRC requirements such as regulations, a license condition, a technical specification, or an order, then the NRC requirements take precedence over ASME Code interpretation."

It is important to note, that in order for an NRC interpretation of the Code to be enforceable, it must be in the form of a regulation, license condition, technical specification or an order. Individual NRC staff members, in and of themselves, are not authorized to establish NRC position or interpret the ASME Code. Neither is an individual utility member authorized to establish utility positions or interpret ASME Code. Utility positions are documented in plant license and design bases documents, FSAR and Technical Specifications after review and approval in accordance with administrative procedures.

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. Presently, there are no technical position statements used in the valve inservice test program.

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), including limitations and modifications. The *latest* test Code is the Code that is referenced in 10 CFR 50.55a(b) 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 fourth 120-month interval (March 2006 through March 2016) and will be updated in accordance with 10 CFR 50.55a (f).

10-Year Code updates to the CM program shall be implemented using a NMC change management plan developed in accordance with NMC Procedure CP 0026, "Change Management Process."

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 Engineering Manual Procedure EM-09-02, "Inservice Testing of Plant Valves." NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives" and NUREG/CR-6369, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements" may be consulted.

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. NMC Fleet Procedure FP-G-DOC-04, "Procedure Processing"

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

- Engineering Manual Procedure EM-09-02, "Inservice Testing of Plant Valves"

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

- Engineering Manual Procedure EM-09-18, "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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

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. Periodic and Predetermined Activity Control (PPAC)

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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

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 II04000-1, 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 Engineering Manual Procedure EM-09-02, "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. All CMA shall be reviewed on a two year basis. This review shall be documented on the CMA.

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 for microfilming per NMC Fleet Procedure FP-G-RM-01, "Records Management," using CONMONANA in the 'Docnam' field. 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 2001 Edition with Addenda through 2003, Subsections ISTC-3510, 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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

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

Check Valve groupings for disassembly and inspection are identified in Technical Specification Surveillance Procedure RT-122, "Inservice Test Program - Check Valve Nonintrusive Test and Disassembly and Inspection Program."

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 Technical Specifications SR 3.0.2, which states in part; "The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency,..."

Test frequencies for valve tests are identified in the Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

a. Quarterly Testing Intervals

Ensuring valves can perform their open or a 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 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 Engineering Manual Procedure EM-09-10, "Containment Leak Rate Testing Program."

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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus." 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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus." 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 Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus."

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 Health Physics (HP) 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 NMC Fleet Procedure FP-PE-PM-01, "Preventive Maintenance Program."

d. Work Orders

Valve inservice testing may also be accomplished with Work Orders. Work Orders are scheduled in accordance with NMC Fleet Procedures FP-WM-WOI-01, "Work Identification, Validation and Screening," and FP-WM-PLA-01, "Work Order Planning Process."

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-3630(e) and ISTC-5221.

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 shall be in accordance with 10 CFR 50, Appendix J, for containment isolation valves. Engineering Manual Procedure EM-09-10, "Containment Leak Rate Testing Program," 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 Engineering Manual Procedure EM-09-02, "Inservice Testing of Plant Valves." NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Section 2.5, "Relief Requests and Proposed Alternatives" and NUREG/CR-6369, "Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements" may be consulted.

b. Relief Requests are contained in the Inservice Testing (IST) Pump and Valve Database Computer Program "PVPlus." 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 Action Request (AR) shall be initiated in accordance with NMC Fleet Procedure FP-PA-ARP-01, "Action Request Process."

2. Operability shall be determined in accordance with NMC Fleet Procedure FP-OP-OL-01, "Operability Determination."

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 NMC Fleet Procedure FP-PA-ARP-01, "Action Request 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

   As stated in NUREG-1482, Section 4.1.2, the types of corrective actions taken, when a test using nonintrusive testing techniques is inconclusive, or when the results indicate unacceptable functioning of the check valve, 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 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.

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 NMC Fleet Procedure FP-G-RM-01, "Records Management."

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 IST database PvPlus, 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

The scope of this procedure does not include activities that require a 50.59 review per NMC Fleet Procedure FP-G-DOC-04, "Procedure Processing." Therefore, changes to this procedure do not require a 50.59 review.

COLD SHUTDOWN JUSTIFICATION INDEX

CS17: Cold Shutdown Exercise Testing of CCS Check Valve

- CK-CC910

REFUELING OUTAGE JUSTIFICATION INDEX

There are no refueling outage justifications for the check valve 4th Inservice Test Interval.

RELIEF REQUEST JUSTIFICATION INDEX

There are no check valve relief requests presently identified for the 4th Inservice Test Interval.

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.	EM-28-02 "Check Valve Program"	
2.	EM-09-02 "Inservice Testing of Plant Valves"	
3.	IST Pump and Valve Database, Pv Plus	
4.	Etc	

Grouping Bases

Evaluation of Group:

DESIGN - Identify pertinent valve design characteristics, features, and manufacturing data. Per GL 89-04, "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.

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).

CONDITION MONITORING ANALYSIS FORM

- 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.

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.

CONDITION MONITORING ANALYSIS FORM

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?

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.*

CONDITION MONITORING ANALYSIS FORM

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 EPIX/NPRDS, Nuclear Network). 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.

  INPO's web site contains the Nuclear Plant Reliability Data System (NPRDS) and an Equipment Performance and Information Exchange System (EPIX) databases. Each of these databases 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.

CONDITION MONITORING ANALYSIS FORM

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.

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.

CONDITION MONITORING ANALYSIS FORM

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.

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: _____

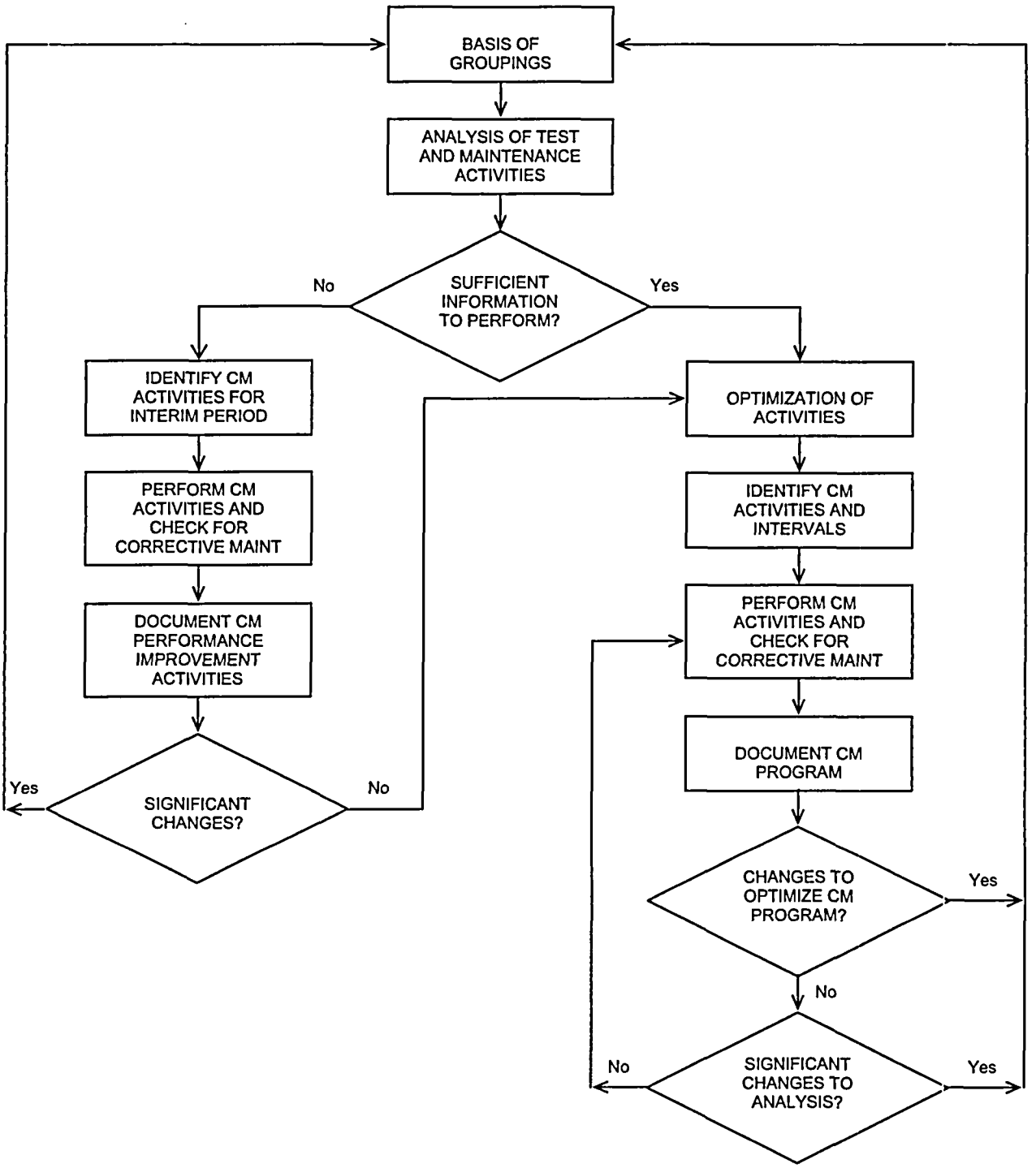
Other _____: _____

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 INPO (>'97 EPIX) or NIC Failure database	
	• INPO nuclear network searches (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



6.0 Pump Relief Requests – None for the fourth interval

7.0 Valve Relief Requests

21 Pages to Follow

VALVE RELIEF REQUEST BASIS
NUMBER 12

1.0 ASME CODE COMPONENT AFFECTED

VALVES: CV-0944, CV-0977B

SYSTEM: Component Cooling (M209-3)

CATEGORY: B CLASS: 3

FUNCTION
These valves are normally open, 10-inch, butterfly valves, which have and active safety function to close and isolate Component Cooling Water to and from the Radioactive Waste Evaporators (RWE) and Waste Gas Compressors upon receipt of a Safety Injection Signal (SIS). Valves fail closed on loss of instrument air.

These valves have no safety function in the open position.

2.0 APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda for these valves is the ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition, 2003 Addenda. Palisades is currently in the fourth ten-year inservice inspection interval.

3.0 APPLICABLE CODE REQUIREMENT

The scope of OM-2001, OMb-2003, Subsection ISTC contains requirements for inservice testing of valves in light-water reactor nuclear power plants that are required to perform a specific function in shutting down a reactor or in mitigating the consequences of an accident.

1. OMb-2003, Subsection ISTC, Paragraph ISTC-5130, Pneumatically-Operated Valves

2. OMb-2003, Subsection ISTC, Paragraph ISTC-5131; Valve Stroke Testing

4.0 IMPRACTICALITY OF COMPLIANCE

In accordance with 10 CFR 50.55a(f)(5)(iii), relief is requested from the stroke timing requirements of OMb-2003, Subsection ISTC, Paragraph ISTC-5131 since compliance with the code requirements is impractical. CV-0944 and CV-0977B are normally open valves, which close on an SIS. These valves can only be actuated via an SIS, since there is no means of manually positioning these valves. There is no position indication in the Control Room, which is the location from where the SIS activation test is initiated. The SIS

is tested once each quarter during performance of technical specification surveillance activities. Stroke time coordination of these valves is impractical for the following reasons:

1. Surveillance activities are manpower intensive and involves blocking or bypassing several automatic actuations and must, therefore, be performed in as little time as possible; because, it places the Plant in an abnormal operating condition.

2. The SIS signal is initiated from the Control Room; however, position indication for CV-0944 and CV-0977B is located at remote panel C-105. Coordination between Control Room activities and C-105 would be difficult since a dedicated operator would need to be positioned at C-105 with a stopwatch. Starting the stopwatch would be manual based on a verbal signal from the Control Room, resulting in an additional reaction time error over and above that introduced by the Control Room Operator. As a result, obtaining a consistent stroke time basis suitable for meaningful trending would be near impossible. The information obtained would be of limited use, due to the anticipated wide range of scatter of the data.

The portion of the component cooling water system isolated by these two valves is a closed loop. If both valves fail to close, water cannot be isolated to the RWEs. If either valve closes, flow to the RWEs is isolated.

5.0 BURDEN CAUSED BY COMPLIANCE

Compliance with Code requirements would require a modification to change the actuating scheme for the subject valves by adding a open and close type control switches in the control room or a temporary modification to install control switches and position indication at the valve. The chosen modification would be used in place of the controllers for inservice testing and would serve no other practical purpose beyond creating the ability to perform stroke time testing.

6.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

CV-0944 and CV-0977B will be stroke tested each quarter during performance technical specification surveillance activities. Surveillance activities will verify that CV-0944 and CV-0977B have traveled to their safety position without measuring stroke time. Also, the fail-safe capability of CV-0944 and CV-0977B will be verified on a quarterly basis.

Testing verifies the subject valves will travel to the close position. This is considered adequate for the following reasons:

1. The valves are tested in the mode in which they would be called upon to mitigate an accident.

2. If both valves fail to close, water cannot be isolated to the RWEs. If either valve closes, flow to the RWEs is isolated.

Based on statements 1 and 2 above, testing without obtaining stroke times is sufficient to assure the ability of these valves to close.

The valves and air actuators for CV-0944 and CV-0977B are within the scope of the air operated valve condition assessment program. These actuators are subjected to condition assessment following completion maintenance activities. Should assessment results indicate the need for further valve or actuator maintenance, this maintenance will be planned, scheduled and performed in accordance with administrative requirements. These actions will assure continued operability of these components.

7.0 DURATION OF PROPOSED ALTERNATIVE

NMC requests approval of the proposed alternative for the remainder of the fourth ten-year interval of the Inservice Testing Program for Palisades, which will conclude on or before March 23, 2016.

8.0 PRECEDENT

This request was previously approved per TAC No. M94952, "Palisades Plant – Evaluation of Relief Requests for the Third 120 Month Interval Inservice Testing Program," dated August 30, 1996.

VALVE RELIEF REQUEST BASIS
NUMBER 18

1.0 ASME CODE COMPONENT AFFECTED

VALVES: CV-0727, CV-0736A, CV-0737A, CV-0749

SYSTEM: Component Cooling (M207-2)

CATEGORY: B CLASS: 3

FUNCTION:
These valves regulate Auxiliary Feedwater flow from the Auxiliary Feedwater Pumps to the Steam Generators. These valves actuate on an Auxiliary Feedwater Actuation Signal (AFAS).

2.0 APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda for these valves is the ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition, 2003 Addenda. Palisades is currently in the fourth ten-year inservice inspection interval.

3.0 APPLICABLE CODE REQUIREMENT

The scope of OM-2001, OMb-2003, Subsection ISTC contains requirements for inservice testing of valves in ligh-water reactor nuclear power plants that are required to perform a specific function in shutting down a reactor or in mitigating the consequences of an accident.

1. OMb-2003, Subsection ISTC, Paragraph ISTC-5130, Pneumatically-Operated Valves

2. OMb-2003, Subsection ISTC, Paragraph ISTC-5131; Valve Stroke Testing

4.0 IMPRACTICALITY OF COMPLIANCE

In accordance with 10 CFR 50.55a(f)(5)(iii), relief is requested from the stroke timing requirements of OMb-2003, Subsection ISTC, Paragraph ISTC-5131 since compliance with the code requirements is impractical.

Control valves CV-0727, CV-0736A, CV-0737A, and CV-0749 are four identical valves, which provide automatic flow control during normal shutdown and emergency shutdown operation. The safety related auxiliary feedwater system is designed to provide feedwater to the steam generators during start-up operations and to remove primary system sensible and decay heat during initial stages of shutdown operations. The AFW system also supplies water to the secondary side of the steam generators when normal feedwater sources are unavailable. These four, pneumatically controlled flow control valves are used

to maintain steam generator level. The operation of these valves is essential for the system to meet its design objectives.

Control Valves CV-0736 and CV-0737 are bypass flow control valves around CV-0736A and CV-0737A in the P-8C AFW train. They provide AFW flow control during normal startup operation and hot shutdown. The subject valves are required to regulate feedwater flow to the steam generators. They are not required to go to the full open or closed position for Plant safety. Because of this, stroke time testing is not an appropriate indicator of valve performance.

These control valves are located in the separate discharge lines to each steam generator. Flow indicating controllers are used to regulate flow of water to the steam generator requiring makeup inventory. The flow indicating controllers are set at predetermined flow setpoints during normal operation so that when an AFAS is actuated, the operator must take action to dial in a reduced flow to match boiloff once normal level has been restored. Hand indicating controllers provide control of water to both steam generators. Indication of AFW isolation to each steam generator is provided via panel lights.

5.0 BURDEN CAUSED BY COMPLIANCE

Compliance with Code requirements would require a modification to change the actuating scheme for the subject valves by adding a open and close type control switches in the control room or a temporary modification to install control switches and position indication at the valve. The chosen modification would be used in place of the controllers for inservice testing and would serve no other practical purpose beyond creating the ability to perform stroke time testing.

6.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

In lieu of the specified requirements, Palisades will demonstrate the valves regulating capability quarterly in accordance with Palisades Technical Specification Surveillance Procedures.

Ensuring the ability to open upon a pump start and to achieve flowrates in the test band tests the flow control valves. At the end of each pump test, the valves are manually closed to isolate flow to the steam generators.

The valves and air actuators for CV-0727, CV-0736A, CV-0737A and CV-0749 are within the scope of the air operated valve condition assessment program. These actuators are subjected to periodic condition assessment within this program. Should assessment results indicate the need for valve or actuator maintenance, this maintenance will be planned, scheduled and performed in accordance with administrative requirements. These actions will assure continued operability of these components.

7.0 DURATION OF PROPOSED ALTERNATIVE

NMC requests approval of the proposed alternative for the remainder of the fourth ten-year interval of the Inservice Testing Program for Palisades, which will conclude on or before March 23, 2016.

8.0 PRECEDENT

This request was previously approved per TAC No. M94952, "Palisades Plant – Evaluation of Relief Requests for the Third 120 Month Interval Inservice Testing Program," dated August 30, 1996.

VALVE RELIEF REQUEST BASIS
NUMBER 20

1.0 ASME CODE COMPONENT AFFECTED

VALVES: CV-0915

SYSTEM: Component Cooling (M209-3)

CATEGORY: B CLASS: 3

FUNCTION:
This valve is a 2-inch, three-way Component Cooling Water Surge Tank T-3 Vent. The surge tank is normally vented to the auxiliary building atmosphere; but, when a high radiation signal is received, CV-0915 has an active safety function to switch the vent path from the auxiliary building to the vent gas collection header. This valve fails vented to the vent gas collection header.

This valve does not have a safety function to vent to the auxiliary building.

2.0 APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda for these valves is the ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition, 2003 Addenda. Palisades is currently in the fourth ten-year inservice inspection interval.

3.0 APPLICABLE CODE REQUIREMENT

The scope of OM-2001, OMb-2003, Subsection ISTC contains requirements for inservice testing of valves in light-water reactor nuclear power plants that are required to perform a specific function in shutting down a reactor or in mitigating the consequences of an accident.

1. OMb-2003, Subsection ISTC, Paragraph ISTC-5130, Pneumatically-Operated Valves

2. OMb-2003, Subsection ISTC, Paragraph ISTC-5131; Valve Stroke Testing

4.0 IMPRACTICALITY OF COMPLIANCE

In accordance with 10 CFR 50.55a(f)(5)(iii), relief is requested from the stroke timing requirements of OMb-2003, Subsection ISTC, Paragraph ISTC-5131 since compliance with the code requirements is impractical. The surge tank is normally vented through CV-0915 to the auxiliary building atmosphere, but when a CCW high radiation signal is received, CV-0915 (three-way valve) changes position and vents the surge tank to the vent gas collection header. This valve can only be actuated via a high radiation signal, since

there is no means of manual positioning. This valve does have position indication in the control room.

The high radiation signal is initiated in the Control Room; however, position indication for CV-0915 is located on another control room, control panel located out of sight from the location of the actuating signal. Coordination between Control Room activities for actuation and observation of position indication would be difficult and involve starting the stopwatch based on a verbal signal. As a result, obtaining a consistent stroke time basis suitable for meaningful trending would be nearly impossible. The information obtained would be of limited use, due to the anticipated wide range of scatter of the data.

5.0 BURDEN CAUSED BY COMPLIANCE

Compliance with Code requirements would require a modification to change the actuating scheme for the subject valves by adding an open and close type control switch in the control room or a temporary modification to install control switches and position indication at the valve. The chosen modification would be used in place of the inserted radiation signal for inservice testing and would serve no other practical purpose beyond creating the ability to perform stroke time testing.

6.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

CV-0915 will be stroke tested once each quarter, without stroke timing the valve. Verification of valve motion will be performed at the lights in the main Control Room. Verification of performance (position change) of CV-0915 constitutes an acceptable test.

A value of less than 10 seconds for indication CV-0915 changed position has been established. However, this value is not considered to be stroke timing as defined by OMb-2003, Subsection ISTC because the time of initiation of the actuating signal is not known. If CV-0915 does not move to the desired position, then it will be declared inoperable. This is considered adequate because the valve is tested in the mode in which it would be called upon to mitigate a radiation release.

The valve and air actuator for CV-0915 is within the scope of the air operated valve condition assessment program. The actuator is subjected to condition assessment within post maintenance testing program. Should assessment results indicate the need for further valve or actuator maintenance, this maintenance will be planned, scheduled and performed in accordance with administrative requirements. These actions will assure continued operability of these components.

7.0 DURATION OF PROPOSED ALTERNATIVE

NMC requests approval of the proposed alternative for the remainder of the fourth ten-year interval of the Inservice Testing Program for Palisades, which will conclude on or before March 23, 2016.

8.0 PRECEDENT

This request was previously approved per TAC No. M94952, "Palisades Plant – Evaluation of Relief Requests for the Third 120 Month Interval Inservice Testing Program," dated August 30, 1996.

VALVE RELIEF REQUEST BASIS
NUMBER 21

1.0 ASME CODE COMPONENT AFFECTED

VALVES: CV-0821, CV-0822

SYSTEM: Service Water (M208-1A)

CATEGORY: B CLASS: 3

FUNCTION:
These valves regulate Service Water flow from the Service Water System (SWS) through the Component Cooling Water (CCW) Heat Exchangers. Control valves CV-0821 and CV-0822 are normally open, 4-inch, butterfly valves with an active safety function to close on safety injection/refueling water tank low level associated with a RAS. These valves fail close on loss of instrument air.

2.0 APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda for these valves is the ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition, 2003 Addenda. Palisades is currently in the fourth ten-year inservice inspection interval.

3.0 APPLICABLE CODE EDITION AND ADDENDA

The scope of OM-2001, OMb-2003, Subsection ISTC contains requirements for inservice testing of valves in ligh-water reactor nuclear power plants that are required to perform a specific function in shutting down a reactor or in mitigating the consequences of an accident.

1. OMb-2003, Subsection ISTC, Paragraph ISTC-5130, Pneumatically-Operated Valves

2. OMb-2003, Subsection ISTC, Paragraph ISTC-5132; Stroke Test Acceptance Criteria

4.0 IMPRACTICALITY OF COMPLIANCE

In accordance with 10 CFR 50.55a(f)(5)(iii), relief is requested from the stroke timing requirements of OMb-2003, Subsection ISTC, Paragraph ISTC-5132 since compliance with the code requirements is impractical for Service Water valves CV-0821 and CV-0822.

VALVE RELIEF REQUEST BASIS
NUMBER 21

Two solenoid actuated control valves (CV-0823 and CV-0826) in the discharge line of each CCW heat exchanger are used to provide full flow to the CCW heat exchangers during RAS. These valves are typically closed during normal operation and flow through the CCW heat exchangers is through temperature control valves CV-0821 and CV-0822. These valves may be opened manually using the control switches or by a RAS based on SIRW tank low level.

For normal CCW temperature control, two valves control the flow of service water through each CCW heat exchanger. Locally mounted manual pneumatic controllers provide gross temperature control, which controls the position of CV-0823 and CV-0826. Fine (automatic) CCW temperature control is provided by CV-0821 and CV-0822, which bypass CV-0823 and CV-0826.

Control valves CV-0821 and CV-0822 are automatically positioned by a common temperature-indicating controller or by a common control switch. Therefore, stroke times must be measured locally at the valve and both valves stroke when the control switch is repositioned. To prevent preconditioning, the stroke time of both valves must be measured simultaneously. The stroke time shall be the total time from the beginning of valve motion to the end of valve motion.

The function of these valves is to vary SWS flow through the CCW heat exchangers and regulate CCW temperature by throttling the discharge flow. The position of the valves at any particular time is set by manipulation of actuators air regulator based on the temperature of the water source (Lake Michigan). Because stroke testing will be initiated from the throttled position, it is not practical to full-stroke the valves or to achieve consistent stroke time data. Therefore, the stroke time will be measured to verify that it falls within the 25-second limiting stroke time requirement.

5.0 BURDEN CAUSED BY COMPLIANCE

Compliance with Code requirements would require a placing CV-0821 and CV-0822 in the full close position prior to performing stroke time testing. Performance of these activities would cause significant temperature control upsets that would have adverse affects on equipment cooled by the CCW system.

6.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

In lieu of the specified requirements, Palisades will demonstrate the valves fail-safe capability quarterly in accordance with Palisades Technical Specification Surveillance Procedures.

VALVE RELIEF REQUEST BASIS
NUMBER 21

These valves will be partial-stroke tested on a quarterly basis. The stroke time will be compared against the 25-second limiting stroke time for the purpose of determining operability. This 25-second limit is well below the RAS analysis assumed performance of 70-seconds. Performance of surveillance testing will satisfy the fail-safe actuator test requirements of the Code. Testing will also be used to verify proper operation of the remote position indicators at least once every 2 years in accordance with ISTC-3700, "Position Verification Testing." Testing verifies the subject valve will travel to its desired position.

The valves and air actuators for CV-0821 and CV-0822 are within the scope of the air operated valve condition assessment program. These actuators are subjected to periodic condition assessment within this program. Should assessment results indicate the need for valve or actuator maintenance, this maintenance will be planned, scheduled and performed in accordance with administrative requirements. These actions will assure continued operability of these components.

7.0 DURATION OF PROPOSED ALTERNATIVE

NMC requests approval of the proposed alternative for the remainder of the fourth ten-year interval of the Inservice Testing Program for Palisades, which will conclude on or before March 23, 2016.

8.0 PRECEDENT

This request was previously approved per TAC No. M94952, "Palisades Plant – Evaluation of Relief Requests for the Third 120 Month Interval Inservice Testing Program," dated August 30, 1996.

VALVE RELIEF REQUEST BASIS
NUMBER 28

1.0 ASME CODE COMPONENT AFFECTED

System: Engineering Safeguards
Component Cooling

Valves: RV-0402, RV-0403, RV-0954 and RV-0955

Category: C Class: 2 and 3

2.0 APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda for these valves is the ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition, 2003 Addenda. Palisades is currently in the fourth ten-year inservice inspection interval.

3.0 APPLICABLE CODE REQUIREMENT

ASME OM-2001, OMb-2003, Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," I-1390, "Test Frequency, Class 2 and 3 Pressure Relief Devices That Are Used for Thermal Relief Application," requires periodic testing of Class 2 and Class 3 thermal pressure relief devices, at least, once per 10-year period.

4.0 REASON FOR REQUEST

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(ii) from the requirement to perform set point verification on a 10-year frequency on the basis that compliance with OM Code requirements is a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

While Technical Specifications allow testing for each valve at specific operating modes, meeting the inservice test code requirement for Class 2 relief valves to test one valve on a 10-year frequency, continues to represent a hardship or unusual difficulty without a compensating increase in the level of quality or safety due to the complex system outages required for relief valve removal.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

Relief valves RV-0402, RV-0403, RV-0954, and RV-0955 are designed to protect the shutdown cooling heat exchangers from thermal expansion of water when the exchangers are isolated for maintenance or inspection. These thermal relief valves have no active safety function when the heat exchangers are in service. They have a passive safety function to maintain the Class 2 system pressure boundary. The associated heat exchangers must be isolated to remove these thermal relief valves. However, the shutdown cooling heat exchangers cannot be isolated during power operations, nor isolated when there is fuel in the reactor vessel.

Table 1 below provides information about each specific valve.

VALVE RELIEF REQUEST BASIS
NUMBER 28

Table 1

Valve Number	Service Description	System	Safety Class	Vendor Info.	Connection	Set Point (psig)	Approx. Sys. Pressure (psig)
RV-0402	Shutdown Cooling Heat Exchanger E-60A Tube Side	Engineered Safeguards	2	TELEDYNE FARRIS ENGG 2740 PKD/S4	Welded connections	500	270
RV-0403	Shutdown Cooling Heat Exchanger E-60B Tube Side	Engineered Safeguards	2	TELEDYNE FARRIS ENGG 2740 PKD/S4	Welded connections	500	270
RV-0954	Shutdown Cooling Heat Exchanger E-60A West End	Component Cooling	3	TELEDYNE FARRIS ENGG 2741 PKD	Flanged connections	150	80
RV-0955	Shutdown Cooling Heat Exchanger E-60B West End	Component Cooling	3	TELEDYNE FARRIS ENGG 2741 PKD	Flanged connections	150	80

Due to the location of the relief valves, removal, testing and reinstallation would cause an increase of radiation exposure to plant staff. RV-0402, RV-0403, RV-0954 and RV-0955 do not provide overpressure protection when the associated heat exchanger is in service, nor do they serve a safety function during plant operation to ensure the reactor can be safely shutdown or to mitigate the consequences of an accident. These relief valves are only needed when the associated heat exchanger is isolated. Therefore, the useful life of these relief valves can be assumed to be somewhat extended. Furthermore, because the valves are generally not in service, they do not experience significant challenges resulting in wear. Therefore, a one-cycle extension of the IST for these relief valves will not adversely affect the system function.

In order to assure the seat leakage does not impact system operability, Palisades will continue to perform examinations in accordance with the site's ASME Section XI pressure test program. Additionally, the requirements of the site's boric acid corrosion control program will be followed to assure leakage does not adversely impact other components that may be in leak path.

A review of plant specific and industry experience for Teledyne-Farris relief valves contained in the Electric Power Research Institute EPIX database indicates that the type of relief valve installed for thermal overpressure protection are reliable. Failures are generally associated with test results outside of acceptable set point ranges or failure to close sufficiently to assure leak tight integrity. The thermal protection function of these valves was maintained even though specific performance criteria were not met.

These valves will be tested at the next full-core offload scheduled for refueling outage 19 in 2007 and once per full-core offload, thereafter, but not more often than required by the Code.

Relief is requested in accordance with 10CFR50.55a(a)(3)(ii) from testing RV-0402, RV-0403, RV-0954 and RV-0955, on the basis that compliance with the OM Code requirements is a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

6.0 DURATION OF PROPOSED ALTERNATIVE

NMC requests approval of the proposed alternative for the remainder of the fourth ten-year interval of the Inservice Testing Program for Palisades, which will conclude on or before March 23, 2016.

7.0 PRECEDENT

This request was previously approved per TAC No. MC6545 dated August 17, 2005, for the Palisades Third 10-Year Inservice Testing Interval. This relief request is presently authorized until the completion of the 2007 refueling outage.

VALVE RELIEF REQUEST BASIS
NUMBER 30

1.0 ASME CODE COMPONENT AFFECTED

System: Shutdown Cooling System

Valve: RV-0401

Category: C Class: 1

2.0 APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda for these valves is the ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition, 2003 Addenda. Palisades is currently in the fourth ten-year inservice inspection interval.

3.0 APPLICABLE CODE REQUIREMENT

ASME OM-2001, OMb-2003, Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," I-1340, "Test Frequency, Class 1 Pressure Relief Devices That Are Used for Thermal Relief Application," requires periodic testing as follows;

a. All valves shall be tested at least once every 5-year period.

b. A minimum of 20% of the valves shall be tested within any 24 months.

4.0 REASON FOR REQUEST

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(ii) from the requirement to perform set point verification on either a 5-year or a 24-month frequency on the basis that compliance with OM Code requirements is a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Testing cannot be performed during cold shutdown with Shutdown Cooling in service because Palisades has no alternate letdown paths for Shutdown Cooling. Shutdown Cooling cannot be isolated unless there is a full core off load. Based on this fact, RV-0401 can only be tested during full core off loads.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

Relief valve RV-0401 has a safety function to provide overpressure protection to the shutdown cooling return header between valves two motor operated valves.

VALVE RELIEF REQUEST BASIS
NUMBER 30

Table 1 below provides information about relief valve RV-0401.

Table 1

Valve Number	Service Description	System	Safety Class	Vendor Info.	Connection	Set Point (psig)	Approx. Sys. Pressure (psig)
RV-0401	SHUTDOWN COOLING RELIEF	Engineered Safeguards	1	TELEDYNE FARRIS ENGG 2741 PKD/S4	Flanged Connections	2485	270 to 2045

Relief valve RV-0401 is located in the letdown from the primary coolant system (PCS) to the shutdown cooling system. Testing cannot be performed with the PCS greater than cold shutdown because RV-0401 provides the second isolation barrier for the PCS. Failure of the first isolation barrier would result in uncontrollable and highly contaminated PCS leakage.

In order to assure the leakage does not impact system operability, Palisades will continue to monitor system parameters and perform examinations in accordance with the site's ASME Section XI pressure test program. Additionally, the requirements of the site's boric acid corrosion control program will be followed to assure leakage does not adversely impact other components that may be in leak path.

A historical review of set point testing for RV-0401 indicates set point has drifted from 2482 psig to 2450 psig. Even with set point drift, system operability and safety requirements were maintained with no reduction of safety margin.

A review of industry experience for Teledyne-Farris relief valves contained in the Electric Power Research Institute EPIX database indicates that the type of relief valve, installed for thermal overpressure protection, is reliable. Failures are generally associated with test results outside of acceptable set point ranges or failure to close sufficiently to assure leak tight integrity. In all cases but one, failure occurred after more than ten years of service. In the remaining case, failure was maintenance induced. The thermal protection function of these valves was maintained even though specific performance criteria were not met.

This valve will be tested at the next full-core offload scheduled for refueling outage 19 in 2007 and once per full-core offload, thereafter, but not more often than required by the Code.

Relief is requested in accordance with 10CFR50.55a(a)(3)(ii) from testing RV-0401, on the basis that compliance with OM Code requirements is a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

6.0 DURATION OF PROPOSED ALTERNATIVE

NMC requests approval of the proposed alternative for the remainder of the fourth ten-year interval of the Inservice Testing Program for Palisades, which will conclude on or before March 23, 2016.

7.0 PRECEDENT

This request was previously approved per TAC No. MC6545 dated August 17, 2005, for the Palisades Third 10-Year Inservice Testing Interval. The relief request is presently authorized until the conclusion of the 2007 refueling outage.

VALVE RELIEF REQUEST BASIS
NUMBER 31

1.0 ASME CODE COMPONENT AFFECTED

System: Shutdown Cooling System

Valves: RV-3162 and RV-3164

Category: C Class: 2

2.0 APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda for these valves is the ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition, 2003 Addenda. Palisades is currently in the fourth ten-year inservice inspection interval.

3.0 APPLICABLE CODE REQUIREMENT

ASME OM-2001, OMb-2003, Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," I-1390, "Test Frequency, Class 2 and 3 Pressure Relief Devices That Are Used for Thermal Relief Application," requires periodic testing of Class 2 and Class 3 thermal pressure relief devices, at least, once per 10-year period.

4.0 REASON FOR REQUEST

Relief is requested in accordance with 10 CFR 50.55a(a)(3)(ii) from the requirement to perform set point verification on a 10-year frequency on the basis that compliance with OM Code requirements is a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

While Technical Specifications may allow testing of relief valve RV-3164 at specific operating modes, they do not allow testing of RV-3162 at any normal operating mode. Therefore, meeting the inservice test code requirement for Class 2 relief valves to test each valve every 10-years, continues to represent a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

5.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

Relief valve RV-3162 has a safety function to provide overpressure protection for the shutdown cooling discharge header. Overpressure protection is required due to small amounts of back leakage from the primary coolant system (PCS). Relief valve RV-3164 has a safety function to provide overpressure protection for the shutdown cooling supply line. Overpressure protection is required during plant heatup and failure in this operating scenario could render the line inoperable during plant cooldown.

VALVE RELIEF REQUEST BASIS
NUMBER 31

Table 1 below provides information about each specific valve.

Table 1

Valve Number	Service Description	System	Safety Class	Vendor Info.	Connection	Set Point (psig)	Approx. Sys. Pressure (psig)
RV-3162	LOW PRESSURE INJECTION RELIEF VALVE	Engineered Safeguards	2	TELEDYNE FARRIS ENGG 26FB12-141	Flanged connections	500	270
RV-3164	SHUTDOWN COOLING RELIEF	Engineered Safeguards	2	TELEDYNE FARRIS ENGG 26GB12L-141/S3	Flanged connections	300	270

Testing cannot be performed with the reactor critical because removal of these valves from service would render more low-pressure safety injection system components inoperable than allowed by plant Technical Specifications.

Maintenance and testing of RV-3162 located on the common low pressure safety injection discharge header would require the removal from service of all functions associated with this system. Presently, there are no allowances in technical specifications that would provide a window for this work at any plant operating Mode. Testing during the period between cold shutdown and reactor critical requires the draining of a safety system and the removal of the relief valve for set point testing. Testing cannot be performed during cold shutdown with shutdown cooling in service because this valve is located in a non-redundant portion of the shutdown cooling system. Palisades has no alternate discharge paths for shutdown cooling and the relief valve cannot be isolated unless there is a full core off load. Based on this fact, RV-3162 and can only be tested during full core off loads.

Maintenance and testing of RV-3164 located on the common low pressure safety injection inlet header would require the removal from service of all functions associated with shutdown cooling. This valve can be isolated from the primary coolant system; however, it discharges to the primary system drain tank from which it cannot be isolated. Maintenance and testing is allowed by technical specifications at Mode 5 with forced PCS circulation in service.

The portions of the shutdown cooling system where RV-3162 and RV-3164 are located are static except during periodic inservice testing and when providing core cooling. Therefore, RV-3162 and RV-3164 are not exposed to excessive system vibration or pressure fluctuations, which contribute to valve wear and set point fluctuation.

In order to assure the seat leakage does not impact system operability, Palisades will continue to perform examinations in accordance with the site's ASME Section XI

pressure test program. Additionally, the requirements of the site's boric acid corrosion control program will be followed to assure leakage does not adversely impact other components that may be in leak path.

A review industry experience for Teledyne-Farris relief valves contained in the Electrical Power Research Institute EPIX database indicates that the type of relief valve installed for thermal overpressure protection are reliable. Failures are generally associated with test results outside of acceptable setpoint ranges or failure to close sufficiently to assure leak tight integrity. In all cases but one failure occurred after more than ten years of service. In the remaining case, failure was maintenance induced. The thermal protection function of these valves was maintained even though specific performance criteria were not met.

A historical review of available Palisades set point testing data for RV-3162 and RV-3164 was conducted. This review shows RV-3162 and RV-3164 remained within set point tolerance from the time of initial installation until the performance of setpoint testing in 1995. Additionally, following indications of a ruptured valve bellows, RV-3164 was replaced and tested in May of 2001. Despite the degraded valve bellows, RV-3164 setpoint test results met acceptance criteria. System operability and safety requirements were maintained with no reduction in safety margin.

These valves will be tested at the next full-core offload scheduled for refueling outage 19 in 2007 and once per full-core offload, thereafter, but not more often than required by the Code.

Relief is requested in accordance with 10CFR50.55a(a)(3)(ii) from testing RV-3162 and RV-3164 on the basis that compliance with OM Code requirements is hardship or unusual difficulty without a compensating increase in the level of quality and safety.

6.0 DURATION OF PROPOSED ALTERNATIVE

NMC requests approval of the proposed alternative for the remainder of the fourth ten-year interval of the Inservice Testing Program for Palisades, which will conclude on or before March 23, 2016.

7.0 PRECEDENT

This request was previously approved per TAC No. MC6545 dated August 17, 2005, for the Palisades Third 10-Year Inservice Testing Interval. The relief request is presently authorized until the conclusion of the 2007 refueling outage.

Palisades Pump and Valve Inservice Testing (IST) Program
COLD SHUTDOWN JUSTIFICATION
CS-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:

1. Reactor Coolant Pressure Boundary Isolation Valves.

2. Reactor Vessel vent valves, Primary Coolant System high point vent valves (from Pressurizer), added per NUREG 0737.

TEST REQUIREMENT:

ASME OMb-2003 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.

ACCEPTANCE CRITERIA:

The performance of these valves will be determined by recording and trending stroke time values in the open and close direction. Valve position is determined by observing the valve position indicating lights located in the Control Room.

Remote Position Indication verification consists of opening and closing the vent valves, and verifying the vent line pressure increases and decreases to indicate flow through the valves. Correct Remote Indication Light is verified with pressure increase or decrease.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time or postion indication acceptance criteria, corrective action per ASME OMb-2003 ISTC-5153 will be taken.

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 an ACTIVE safety function to CLOSE for Containment isolation of the primary coolant pump seal controlled bleedoff line to volume control tank.

TEST REQUIREMENT:

ASME OMb-2003 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 (ie, 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 10CFR50.55, Appendix J, Local Leak Rate Test Program.

ACCEPTANCE CRITERIA:

Operability of these valves will be determined by observing and recording the stroke time from the open to closed position. Valve position is determined by observing the valve position and indicating lights located on control panel EC-11. Leak tightness shall meet the acceptance criteria of Local Leak Rate Test Program.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time or postion indication acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 will be taken.

Component ID	Class	Cat.	System	Label
CV-2009	2	A	CVC	Containment Letdown Isolation

FUNCTION:

This valve has an ACTIVE safety function to CLOSE for Containment isolation of letdown flow.

TEST REQUIREMENT:

ASME OMb-2003 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 10CFR50.55, Appendix J, Local Leak Rate Test Program.

ACCEPTANCE CRITERIA:

Operability of this valve shall be determined by observing/recording stroke time from open to closed position. Valve position is determined by observing the valve position indicating lights located on EC-12. Leak testing shall meet acceptance criteria of the Local Leak Rate Test Program.

CORRECTIVE ACTION:

Should this valve fail to meet the stroke time, position indication or leak rate requirements acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 will be taken.

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:

Valves serve as system isolation valves and have an ACTIVE safety function to OPEN during accident conditions to initiate containment spray, and an ACTIVE safety function to CLOSE to properly aligh Shutdown Cooling.

TEST REQUIREMENT:

ASME OMb-2003 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 CPCo Internal Correspondence DJV2600-80 dated May 5, 1980 and E-PAL-80-012 (0619/1497), to mitigate the pressure transient associated with a MSLB. 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.

ACCEPTANCE CRITERIA:

Performance of these valves will be determined by measuring and trending stroke times in both the open and closed directions.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time or position indication acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 will be taken.

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:

These normally open air operated gate valves have a PASSIVE safety function in the OPEN position to admit ECCS pump minimum flow to the SIRW tank. This flow is required following a Safety Injection Signal (SIS) to prevent pump damage.

CV-3027 and CV-3056 have an ACTIVE safety function in the CLOSED position to prevent pumping the Containment Sump to the SIRW tank following a Recirculation Actuation Signal (RAS). These valves close automatically upon receipt of a RAS. These valves also prevent leakage back to the SIRW tank that could lead to releases of radionuclides in excess of allowable limits.

TEST REQUIREMENT:

ASME OMb-2003 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.

ACCEPTANCE CRITERIA:

The performance of these valves shall be determined by recording and trending stroke time values from the open to the closed position. Valve position indication is verified by comparing local valve position to indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time or position indication acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 will be taken.

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 are normally OPEN air operated gate valves. They have a PASSIVE safety funciton in the OPEN position to admit SIRW Tank flow to the ECCS pumps. ECCS pumps are required following a Safety Injection Signal (SIS).

These valves have an ACTIVE safety function in the CLOSED position to prevent leakage back to the SIRW Tank during a Recirculation Actuation Signal (RAS) that could lead to releases of radionuclides. CV-3031 and CV-3057 automatically CLOSE in response to a RAS.

TEST REQUIREMENT:

ASME OMb-2003 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.

ACCEPTANCE CRITERIA:

The performance of these valves shall be determined by recording and trending the stroke time values from the open to the close postion. Valve position is determined by observing the valve positon indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time or position indication acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 will be taken.

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 an ACTIVE safety function in the OPEN position to provide a suction flow path to the ECCS pumps during a Recirculation Acturatuion Signal (RAS). These valves have a PASSIVE safety function in the CLOSED position to ensure ECCS pump suction from the SIRW Tank during initial LOCA conditions.

TEST REQUIREMENT:

ASME OMb-2003 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 10CFR100 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 additioonal 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.

ACCEPTANCE CRITERIA:

The performance of these valves shall be determined by recording and trending the stroke time values from the close to the open position. Valve position is determined by observing the valve postion indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet the stroke time or position indication acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 will be taken.

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:

The Main Steam Isolation Valves have an ACTIVE safety function to CLOSE upon receipt of a steam generator low pressure signal from a MSLB to limit the PCS Cooldown rate and the resultant reactivity insertion. Technical Specifications specify a maximum closing time of five seconds.

TEST REQUIREMENT:

ASME OMb-2003 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.

ACCEPTANCE CRITERIA:

The performance of these valves shall be determined by recording and trending stroke time values from the open to the close position. Valve position is determined by observing the valve position indicating lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 will be taken.

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 an ACTIVE safety function to CLOSE in the event of a line break inside of containment.

Valves CV-0910, CV-0911 and CV-0940 have an ACTIVE safety function to CLOSE upon receipt of a CHP signal.

These valves perform NO safety function in the Open position.

TEST REQUIREMENT:

ASME OMb-2003 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-2003 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.

ACCEPTANCE CRITERIA:

The performance of control valves shall be determined by recording and trending stroke time values in the close direction. Valve position is determined by observing the valve position indicating lights located in the Control Room.

For CK-CC910, closure capability is verified by applying reverse pressure across the seat.

CORRECTIVE ACTION:

Should any valve fail to meet the stroke time acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 or ISTC-5224 as applicable.

Component ID	Class	Cat.	System	Label
CV-1805	2	A	VAS	Containment Purge Air Exhaust Valve
CV-1806	2	A	VAS	Containment Purge Air Exhaust Valve
CV-1807	2	A	VAS	Containment Purge Air Exhaust Valve
CV-1808	2	A	VAS	Containment Purge Air Exhaust Valve
CV-1813	2	A	VAS	Air Space Purge Supply Fan V-46 Discharge Valve
CV-1814	2	A	VAS	Air Space Purge Supply Fan V-46 Discharge Valve

FUNCTION:

Containment Purge Air Exhaust Isolation Valves have an ACTIVE safety function to CLOSE and isolate containment penetrations MZ-3A, MZ-3C and MZ-68.

These valves have NO safety function in the OPEN position.

TEST REQUIREMENT:

ASME OMb-2003 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 the above valves during power operation is not practical, since these valves are normally closed to provide containment integrity. These valves may be open during refueling and required to close to maintain containment integrity (ie, refueling accident). These valves will be exercised during cold shutdowns when containment integrity is not required.

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.

ACCEPTANCE CRITERIA:

The performance of these valves shall be determined by recording and trending stroke time values in the close direction. Valve position is determined by observing the valve position indicating lights located in the Control Room. Leak tightness shall be determined in accordance with the Local Leak Rate Test Program.

CORRECTIVE ACTION:

Should any valve fail to meet acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 or ISTC-3630(f) will be taken as applicable.

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 are normally OPEN air operated butterfly valves. They have an ACTIVE safety function in the CLOSED position to provide isolation of the Containment Air Coolers (CAC) from the SW return header in the event of a pipe failure in the CAC piping. The CACs provide a redundant safety function to that of Containment Spray system and therefore may be isolated along with the remainder of the B SW header during a leak isolation evolution. No containment isolation function (per Appendix J) is performed because flow through this line would be required to mitigate any accident where containment isolation would be required.

These valves have a PASSIVE safety function in the OPEN position to allow CAC SW return flow to pass.

TEST REQUIREMENT:

ASME OMb-2003 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 Contianment 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 secodary 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. The accumulated stroke times alone (i.e., not allowing any time between valve strokes) for these valves is greater than 10 seconds, eliminating this possibility from consideration; reference stroke times are: CV-1359 = 10 seconds; CV-0824 = 4 seconds; and CV-0847 = 2 seconds.

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 storke-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.

ACCEPTANCE CRITERIA:

The performance of these valves will be determined by recording and trending stroke time values in the close direction. Valve position is determined by observing the valve position indicting lights located in the Control Room.

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 will be taken.

COLD SHUTDOWN JUSTIFICATION
CS-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 an ACTIVE safety function to CLOSE and provide isolation capability for the PORV system.

Power Operated Relief Valve (PORV) Block Valves MO-1042A and MO-1043A have an ACTIVE safety function to OPEN and provide a flow path for feed and bleed of the pressurizer.

TEST REQUIREMENT:

ASME OMb-2003 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.

ACCEPTANCE CRITERIA:

The performance of these valves will be determined by recording and trending stroke time values in the open and close direction. Valve position is determined by observing the valve position indicting lights located in the Control Room. Acceptable operation shall be indicated when the valve successfully moves from the closed to the open position and from the open to the closed position.

CORRECTIVE ACTION:

Should either valve fail to meet acceptance criteria, corrective action per ASME OMb-2003 ISTC-5123 will be taken.

COLD SHUTDOWN JUSTIFICATION
CS-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 an ACTIVE 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 PASSIVE safety function in the OPEN position to support Low Pressure Safety Injection.

TEST REQUIREMENT:

ASME OMb-2003 ISTC-3521(c); 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. Thus, stroke close testing of this valve during normal operation would not provide any additional assurance of quality and safety. Therefore, CV-3006 will be tested while placing the Plant in the shutdown cooling mode at the beginning of each 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.

ACCEPTANCE CRITERIA:

The performance of CV-3006 will be determined by recording and trending stroke time values in the open and close direction.

CORRECTIVE ACTION:

Should CV-3006 fail to stroke during manual operation or power operation, corrective action per ASME OMb-2003 ISTC-5210 or ISTC-5133 will be taken as applicable.

Component ID	Class	Cat.	System	Label
CV-1359	3	B	SWS	Non-Critical Service Water Isolation

FUNCTION:

This valve has an ACTIVE 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.

TEST REQUIREMENT:

ASME OMb-2003 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.

ACCEPTANCE CRITERIA:

The performance of this valve will be determined by recording and trending stroke time values in the close direction. Valve position is determined by observing the valve position indicting lights located in the Control Room.

CORRECTIVE ACTION:

Should the valve fail to meet acceptance criteria, corrective action per ASME OMb-2003 ISTC-5133 will be taken.

9.0 Inservice Testing Program, Pump Test Tables

5 Pages to Follow

Pump Matrix

SYSTEM: CCS - Component Cooling System

Component	PID(Coord)	Code Class	Test Parameters: Disc. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
P-052A Component Cooling Water Pump	M209-3 (C-4)	3	No	Yes	Yes	Yes	No	QO-15	Q		Group A pump.
P-052B Component Cooling Water Pump	M209-3 (B-4)	3	No	Yes	Yes	Yes	No	QO-15	Q		Group A pump.
P-052C Component Cooling Water Pump	M209-3 (A-4)	3	No	Yes	Yes	Yes	No	QO-15	Q		Group A pump.

Pump Matrix

SYSTEM: EPS - Emergency Power System

Component	PID(Coord)	Code Class	Test Parameters: Disc. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
P-211A 'A' Diesel Generator Jacket Water Cooling Pump	M214-1 (B-3)	3	No	No	No	No	No	MO-7A-1	MO		Classified as skid-mounted equipment.
P-211B 'B' Diesel Generator Jacket Water Cooling Pump	M214-1 (B-3)	3	No	No	No	No	No	MO-7A-2	MO		Classified as skid-mounted equipment.

Pump Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Code Class	Test Parameters: Disc. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
P-054A Containment Spray Pump B	M204-1A (D-5)	2	No	No	Yes	No	No	QO-16	Q		Group B pump.
P-054B Containment Spray Pump B	M204-1 (B-3)	2	No	No	Yes	No	No	QO-16	Q		Group B pump.
P-054C Containment Spray Pump C	M204-1 (D-3)	2	No	No	Yes	No	No	QO-16	Q		Group B pump.
P-066A HPSI Pump A	M204-1A (B-5)	2	No	No	Yes	No	No	QO-19	Q		Group B pump.
P-066B HPSI Pump B	M204-1 (F-3)	2	No	No	Yes	No	No	QO-19	Q		Group B pump.
P-067A LPSI Pump A	M204-1A (E-5)	2	No	Yes	Yes	Yes	No	QO-20	Q		Group A pump.
P-067B LPSI Pump B	M204-1 (E-3)	2	No	Yes	Yes	Yes	No	QO-20	Q		Group A pump.

Pump Matrix

SYSTEM: FWS - Feedwater System

Component	PID(Coord)	Code Class	Test Parameters: Disc. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
P-008A Motor Driven Auxiliary Feedwater Pump	M207-2 (E-6)	3	No	No	Yes	No	No	QO-21	Q		Group B pump.
P-008B Steam Driven Auxiliary Feedwater Pump	M207-2 (H-6)	3	No	No	Yes	No	Yes	QO-21	Q		Group B pump.
P-008C Motor Driven Auxiliary Feedwater Pump	M207-2 (B-6)	3	No	Yes	Yes	Yes	No	QO-21	Q		Group A pump.

Pump Matrix

SYSTEM: SWS - Service Water System

Component	PID(Coord)	Code Class	Test Parameters: Disc. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
P-007A SW Pump	M213 (F-4)	3	No	Yes	Yes	Yes	No	QO-14	Q		Group A pump.
P-007B SW Pump	M213 (F-2)	3	No	Yes	Yes	Yes	No	QO-14	Q		Group A pump.
P-007C SW Pump	M213 (F-1)	3	No	Yes	Yes	Yes	No	QO-14	Q		Group A pump.

10.0 Inservice Testing Program, Valve Test Tables

47 Pages to Follow

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: CAS - Instrument Air and Service Air

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-CA400 Instrument Air Containment Isolation Valve	M212-4 (E-2)	A	2	CK	SA	A/C	2	O	N/A	RO-032-65 RO-032-65 RO-032-65 RT-122	CTC CTO LT DIS	RO RO RO 10 YR		
CV-1211 Penetration 65 Instrument Air Containment Isolation Valve	M212-4 (E-2)	P	2	GL	AC	A	2	O	FO	RO-032-65 QO-06 QO-06 QO-06	LT FST STC PIT	RO CS CS 18MO		
MV-CA122 Service Air Containment Isolation Valve	M212-1 (A-3)	P	2	GA	MA	A	2	C	N/A	RO-032-10	LT	RO		
MV-CA728 Service Air Containment Isolation Valve	M212-1 (A-3)	P	2	GA	MA	A	2	C	N/A	RO-032-10	LT	RO		
MV-CIS500 Penetration MZ-51 Equipment Hatch Test Tap	M232-2 (F-6)	P	2	GA	MA	N/A	0.25	C	N/A	RO-032-51	LT	RO		

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: CCS - Component Cooling System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-CC401	M209-2 (C-7)	A	3	CK	SA	C	3	O	N/A	RT-122	NITC	3 YR		
CCW Return Line From West Engineered Safeguards Pump Room										QO-16	CTO	12 MO		
CK-CC402	M209-2 (B-7)	A	3	CK	SA	C	3	C	N/A	RT-122	NITC	3 YR		
CCW Return Line From East Engineered Safeguards Room										QO-16	CTO	12 MO		
CK-CC910	M209-1 (E-1)	A	2	CK	SA	C	10	O	N/A	QO-06	CTC	RO		
Component Cooling Water Inlet Containment Isolation Valve										RT-122	DIS	12 YR		
											CTO	***		Open position is verified continuously when at power.
CK-CC941	M209-3 (C-4)	A	3	CK	SA	C	16	O/C	N/A	QO-15	CTC	QO		
Component Cooling Water Pump P-52A Discharge Check Valve										QO-15	PS	QO		
										QO-15	NITO	9 MO		
										QO-15	NITC	***		
CK-CC943	M209-3 (B-4)	A	3	CK	SA	C	16	O/C	N/A	QO-15	CTC	QO		
Component Cooling Water Pump P-52B Discharge Check Valve										QO-15	PS	QO		
										QO-15	NITO	9 MO		
										QO-15	NITC	***		
CK-CC944	M209-3 (A-4)	A	3	CK	SA	C	16	O/C	N/A	QO-15	CTC	QO		
Component Cooling Water Pump P-52C Discharge Check Valve										QO-15	PS	QO		
										QO-15	NITO	9 MO		
										QO-15	NITC	***		
CV-0910	M209-1 (E-2)	N/A	2	BF	AC	N/A	10	O	FO	QO-06	FST	CS	CS - 17	
Component Cooling Water Inlet Containment Isolation Valve										QO-06	STC	CS	CS - 17	
										QO-06	PIT	18MO		
CV-0911	M209-1 (B-2)	A	2	BF	AC	B	10	O	FO	QO-06	FST	CS	CS - 17	
Component Cooling Water Return Containment Isolation Valve										QO-06	STC	CS	CS - 17	
										QO-06	PIT	18MO		
CV-0913	M209-2 (F-3)	P	3	GL	AC	B	4	O	FO	QO-06	PIT	18MO		
ESS Pumps Seal Cooling Service Water Supply														

Valve Matrix

SYSTEM: CCS - Component Cooling System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-0915	M209-3 (H-4)	A	3	GL	A3	B	2	O	N/A	HP 6.8	FST	QO		
Component Cooling Surge Tank T-3 Vent										HP 6.8	STC	QO		RR-V - 2(
										HP 6.8	PIT	18MO		
CV-0937	M209-3 (G-7)	A	3	BF	AC	B	18	C	FO	QO-05	FST	QO		
Shutdown Cooling Heat Exchanger E-60A/B Inlet Valve										QO-05	STO	QO		
										QO-05	PIT	18MO		
CV-0938	M209-3 (G-7)	A	3	BF	AC	B	18	C	FO	QO-05	FST	QO		
Shutdown Cooling Heat Echanger E-60A/B Inlet Valve										QO-05	STO	QO		
										QO-05	PIT	18MO		
CV-0939	M221-1 (D-2)	A	2	GL	AO	A	1.5	O	FC	RO-032-11	LT	RO		
MZ-11 Shield Cooling Surge TK T-62 Inlet Isolation										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-0940	M209-1 (B-1)	N/A	2	BF	AC	B	10	O	FO	QO-06	FST	CS	CS - 17	
Component Cooling Water Return Containment Isolation Valve										QO-06	STC	CS	CS - 17	
										QO-06	PIT	18MO		
CV-0944	M209-3 (E-8)	A	3	BF	AO	B	10	O	FC	QO-01	FST	QO		
Rad Waste Evaporator Cooling Water Supply										QO-01	STC	QO		RR-V - 1(
										QO-01	PIT	18MO		
CV-0944A	M209-3 (E-7)	A	3	BF	AO	B	14	O	FC	QO-05	FST	QO		
Spent Fuel Pool and Rad Waste Evaporator Cooling Water Supply										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-0945	M209-3 (E-5)	P	3	BF	AC	B	16	O	FO	QO-06	PIT	18MO		
Component Cooling Heat Exchanger E-54A Inlet Valve														
CV-0946	M209-3 (F-5)	P	3	BF	AC	B	16	O	FO	QO-06	PIT	18MO		
Component Cooling Heat Exchanger E-54B Inlet Valve														
CV-0947	M209-2 (E-4)	P	3	GL	AC	B	3	ELO	FO	QO-06	PIT	18MO		
ESG Pump Seal Cooling Water Isolation														

Valve Matrix

SYSTEM: CCS - Component Cooling System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-0948	M209-2 (B-4)	P	3	GL	AC	B	3	ELO	FO	QO-06	PIT	18MO		
ESG Pump Seal Cooling Water Isolation														
CV-0949	M209-2 (D-3)	P	3	GL	AC	B	4	ELO	FO	QO-06	PIT	18MO		
ESG Pump Seal Cooling Water Isolation														
CV-0950	M209-2 (D-7)	P	3	GL	AC	B	4	O	FO	QO-06	PIT	QO		
ESG Pump Seal Cooling Water Outlet Isolation														
CV-0951	M209-2 (C-7)	P	3	GL	AO	B	4	C	FC	QO-06	PIT	QO		
ESG Pump Seal Cooling Service Water Isolation														
CV-0977B	M209-3 (D-1)	A	3	BF	AO	B	10	O	FC	QO-01	FST	QO		
Rad Waste Evaporator Cooling Water Return Isolation Valve										QO-01	STC	QO	?R-V - 1?	
										QO-01	PIT	18MO		
RV-0915	M209-3 (G-3)	A	3	RV	SA	C	2	C	N/A	RT-116	RT	48MO		
Component Cooling Surge Tank T-3 Relief														
RV-0952	M209-3 (H-1)	P	3	RV	SA	C	1	C	N/A					
Waste Gas Comp. C-50B Cooling Water Outlet														
RV-0954	M209-2 (G-6,7	A	3	RV	SA	C	1	C	N/A	RT-116	RT	10 YR	?R-V - 2?	
Shutdown Cooling Heat Exchanger Supply Relief														
RV-0955	M209-2 (F-6,7	A	3	RV	SA	C	1	C	N/A	RT-116	RT	10 YR	?R-V - 2?	
Shutdown Cooling Heat Exchanger Supply Relief														
RV-2109	M221-2 (D,E-?	A	3	RV	SA	C	1	C	N/A	RT-116	RT	10 YR	?R-V - 2?	
Spent Fuel Pool Heat Exchanger Relief Valve														

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: CDS - Condensate System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-CD401	M221-1 (D-2)	A	2	CK	SA	A/C	1.5	O	N/A	RT-122	DIS	5 YR	I - CIS-S	
Penetration MZ-11 Shield Cooling Surge TK T-62 Inlet										RO-032-11	LT	5 YR		
CK-CD407	M220-1 (B-4)	A	3	CK	SA	C	3	O/C	N/A	RT-122	NITC	QO		
S/G Recirc Line to Condensate Storage Tank T-2										RT-122	NITO	QO		
MV-CD130	M207-1B (C-3	N/A	3	GA	MA	B	6	O	N/A	00003118	FSE	SO		
Manual Isolation Valve Adjacent to CV-0731														
MV-CD132	M207-1B (B,C	N/A	3	GA	MA	B	3	O	N/A	00003118	FSE	2 YR		
Hotwell 3" Makeup CV-0732 Inlet														
MV-CD133	M207-1B (C-3	N/A	NC	GA	MA	N/A	3	O	N/A	00003118	FSE	SO		
Manual Isolation Valve Adjacent to CV-0732														
MV-CD135	M207-1B (B-3	N/A	3	GA	MA	B	6	O	N/A	00003118	FSE	SO		
Hotwell 6" Make-up Inlet Valve														
MV-CD136	M207-1B (B-3	N/A	NC	GA	MA	N/A	6	O	N/A	00003118	FSE	SO		
Manual Isolation Valve Adjacent to CV-0729														
MV-CD138	M207-1B (B-3	N/A	3	GA	MA	B	12	O	N/A	00003118	FSE	SO		
Manual Isolation Valve Adjacent to CV-0733														

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: CVC - Chemical and Volume Control

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-CVC2110	M202-1B (E-5	A	2	CK	SA	C	2	O	N/A	RO-143	CTO	RO	- CVC-S	
Charging Line Containment Isolation Check										RO-143	NITC	7.5 YR		
										RO-143	NITO	7.5 YR		
										RT-122	DIS	15 YR		
CK-CVC2112	M202-1B (C-7	A/A	1	CK	SA	C	2	C	N/A	RO-143	CTC	RO		
Charging Line Loop-1A Relief Check Valve										RO-143	CTO	RO	- CVC-S	
										RO-143	NITC	7.5 YR		
										RO-143	NITO	7.5 YR		
CK-CVC2114	M202-1B (C-7	A	1	CK	SA	C	2	O	N/A	RO-143	CTO	RO	- CVC-S	
Charging Line Loop 1A Check Valve										RO-143	NITC	7.5 YR		
										RO-143	NITO	7.5 YR		
CK-CVC2116	M202-1B (B-7	A	1	CK	SA	C	2	O	N/A	RO-143	CTO	RO	- CVC-S	
Charging Line Loop 2A Check Valve										RO-143	NITC	7.5 YR		
										RO-143	NITO	7.5 YR		
CK-CVC2118	M202-1B (A-7	A	1	CK	SA	C	2	C	N/A	RO-143	CTO	RO	- CVC-S	
Pressurizer Aux Spray Line Check										RO-143	NITC	7.5 YR		
										RO-143	NITO	7.5 YR		
CV-2001	M202-1B (C-7	N/A	1	GL	AC	B	2	O	FO	QO-06	AFST	QO		
Regenerative Heat Exchanger E-56 Letdown Stop Valve										QO-06	ASTC	QO		
										QO-06	ASTO	QO		
										QO-06	APIT	18MO		
CV-2002	M202-1B (E-8	A	1	GL	AO	B	1.5	C	FC	QO-06	FST	QO		
Letdown Orifice Bypass Valve										QO-06	STC	QO		
										QO-06	PIT	18MO		
CV-2003	M202-1B (E-7	A	1	GL	AO	B	1	O/C	FC	QO-06	FST	QO		
Letdown Orifice Stop Valve										QO-06	STC	QO		
										QO-06	PIT	18MO		
CV-2004	M202-1B (E-7	A	1	GL	AO	B	1	O/C	FC	QO-06	FST	QO		
Letdown Orifice Stop Valve										QO-06	STC	QO		
										QO-06	PIT	18MO		

Valve Matrix

SYSTEM: CVC - Chemical and Volume Control

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-2005	M202-1B (E-6	A	1	GL	AO	B	1	O/C	FC	QO-06	FST	QO		
Letdown Orifice Stop Valve										QO-06	STC	QO		
										QO-06	PIT	18MO		
CV-2009	M202-1 (E-8)	A	2	GL	AO	A	2.0	O	FC	RO-032-36	LT	RO		
Containment Letdown Isolation										QO-06	ASTO	CS	CS - 04	
										QO-06	FST	CS		
										QO-06	STC	CS	CS - 04	
										QO-06	PIT	18MO		
CV-2083	M202-1 (G-4)	A	2	GL	AO	A	0.75	O	FC	RO-032-44	LT	RO		
Primary Coolant Pumps Controlled Bleedoff Containment Isolation										QO-06	FST	CS	CS - 02	
										QO-06	STC	CS	CS - 02	
										QO-06	PIT	18MO		
CV-2099	M202-1 (G-4)	A	2	GL	AO	A	0.75	O	FC	RO-032-44	LT	RO		
PCP P-50A.B.C&D Controlled Bleedoff										QO-06	FST	CS	CS - 02	
										QO-06	STC	CS	CS - 02	
										QO-06	PIT	18MO		
CV-2111	M202-1B (E-5	A	2	GL	AC	B	2	O	FO	QO-06	FST	CS		
Charging Line Stop Valve										QO-06	STC	CS		
										QO-06	APIT	18MO		
CV-2113	M202-1B (B-7	N/A	1	GL	AC	N/A	2	O	FO	QO-06	APIT	RO		
Charging Loop 1A Stop Valve										QO-05	AFST	QO		
										QO-05	ASTC	QO		
										QO-05	ASTO	QO		
CV-2115	M202-1B (B-7	N/A	1	GL	AC	N/A	2	O	FO	QO-06	APIT	RO		
Charging Loop 2A Stop Valve										QO-05	AFST	QO		
										QO-05	ASTC	QO		
										QO-05	ASTO	QO		

Valve Matrix

SYSTEM: CVC - Chemical and Volume Control

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-2117 Pressurizer Auxiliary Spray Valve	M202-1B (A-7	N/A	1	AG	AO	N/A	2	C	FC	QO-06 QO-06 QO-06 QO-06	AFST ASTC ASTO APIT	CS CS CS 18MO		
CV-2130 Boric Acid Storage TK T-53A Recirc Inlet	M202-1A (F-2	N/A	NC	GL	AO	N/A	2	O	FC	QO-05 QO-05	AFST ASTC	QO QO		
CV-2136 Boric Acid Storage TK T-53B Recirc Inlet	M202-1A (F-4	N/A	NC	GL	AO	N/A	2	O	FC	QO-05 QO-05	AFST ASTC	QO QO		
CV-2155 Boric Acid Blender Outlet Control Valve	M202-1A (E-7	N/A	NC	AG	AO	N/A	3	O/C	FC	QO-05 QO-05 QO-05	AFST ASTC APIT	QO QO 18MO		
MO-2087 Volume Control Tank Outlet Isol Valve	M202-1A (E-7	N/A	NC	GA	MO	N/A	4	O	N/A	QO-06 QO-06	ASTC APIT	CS 18MO		
MO-2140 Boric Acid Pump Feed Isolation	M202-1A (C-5	N/A	NC	GA	MO	N/A	3	C	N/A	QO-06 QO-06	ASTO APIT	CS 18MO		
MO-2160 SIRW Tank to Charging Pumps Isolation	M202-1A (D-6	A	2	GA	MO	B	3	C	N/A	QO-06 QO-06 QO-06	ASTO STC PIT	CS CS 18MO		
MO-2169 Boric Acid Tank Gravity Feed Iso	M202-1A (D-2	N/A	NC	GA	MO	N/A	4	C	N/A	QO-06 QO-06	ASTO APIT	CS 18MO		
MO-2170 Boric Acid Tank Gravity Feed Isol Valve	M202-1A (D-3	N/A	NC	GA	MO	N/A	4	C	N/A	QO-06 QO-06	ASTO APIT	CS 18MO		
MV-CVC2083 PCP Controlled Bleedoff Penetration 44 Test Tap	M202-1 (G-4,5	P	2	GL	MA	B	1.0	C	N/A	RO-032-44	LT	RO		
RV-2006 Letdown Heat Exch E-58 Inlet Safety Relief	M202-1B (G-7	A/P	3	RV	SA	C	2	C	N/A	RT-116	RT	48MO		

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: DMW - Demineralized Makeup Water

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-DMW400	M220-1 (D-3)	A/A	3	CK	SA	C	4	O/C	N/A	RT-122	NITC	QO		
Condensate Tank Inlet Check										RT-122	NITO	QO		
CV-2008	M220-1 (E-4)	N/A	NC	GL	AO	N/A	3	C	FC	00000793	AFSE	2 YR		
Primary System Makeup Tank T-81 Control														
CV-2010	M220-1 (E-3)	A	3	GL	AO	B	3	C	FC	00000793	FSE	QO		
Demineralizers to CST T-2 Inlet Control										QO-05	PIT	18MO		

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-ES3101 PCS Loop Check Valve (Loop 1A)	M203-1 (C-7)	A	1	CK	SA	A/C	12	C	N/A	SO-9	LT	SO		
										RO-105	CTO	RO	- ESS-S	
										GOP-13	CTC	QO	- ESS-S	
										RO-105	NITO	6YR	- ESS-S	
										RO-105	NITC	***	- ESS-S	
CK-ES3102 Safety Injection Tank T-82A Check Valve	M203-1 (D-7)	A	1	CK	SA	C	12	C	N/A	RO-105	CTO	RO	- ESS-S	
										RO-105	NITC	6YR	- ESS-S	
										RO-105	NITO	6YR	- ESS-S	
										SHO-1	CTC	***/QO		
CK-ES3103 Low Pressure Injection Check Valve	M203-2 (F-8)	A	1	CK	SA	A/C	6	C	N/A	SO-9	LT	SO	- ESS-S	
										QO-32	CTC	QO	- ESS-S	
										QO-08B	CTO	CS	- ESS-S	
CK-ES3104 High Pressure Injection Check Valve	M203-2 (G-8)	A	1	CK	SA	A/C	2	C	N/A	SO-9	CTC	SO	- ESS-S	
										SO-9	LT	SO	- ESS-S	
										RO-65	CTO	RO	- ESS-S	
CK-ES3116 PCS Loop Check Valve (Loop 1B)	M203-1 (B-7)	A	1	CK	SA	A/C	12	C	N/A	SO-9	LT	SO		
										RO-105	CTO	RO	- ESS-S	
										GOP-13	CTC	QO	- ESS-S	
										RO-105	NITO	6YR	- ESS-S	
										RO-105	NITC	***	- ESS-S	
CK-ES3117 Safety Injection Tank T-82B Check Valve	M203-1 (D-5)	A	1	CK	SA	C	12	C	N/A	RO-105	CTO	RO	- ESS-S	
										RO-105	NITC	6YR	- ESS-S	
										RO-105	NITO	6YR	- ESS-S	
										SHO-1	CTC	***/QO		
CK-ES3118 Low Pressure Injection Check Valve	M203-2 (D-8)	A	1	CK	SA	A/C	6	C	N/A	SO-9	LT	SO	- ESS-S	
										QO-32	CTC	QO	- ESS-S	
										QO-08B	CTO	CS	- ESS-S	
CK-ES3119 High Press Injection Check Valve	M203-2 (F-8)	A	1	CK	SA	A/C	2	C	N/A	SO-9	CTC	SO	- ESS-S	
										SO-9	LT	SO	- ESS-S	
										RO-65	CTO	RO	- ESS-S	

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-ES3131 PCS Loop Check Valve (Loop 2A)	M203-1 (B-7)	A	1	CK	SA	A/C	12	C	N/A	SO-9	LT	SO		
										RO-105	CTO	RO	- ESS-S	
										GOP-13	CTC	QO	- ESS-S	
										RO-105	NITO	6YR	- ESS-S	
										RO-105	NITC	***	- ESS-S	
CK-ES3132 Safety Injection Tank T-82C Check Valve	M203-1 (D-3)	A	1	CK	SA	C	12	C	N/A	RO-105	CTO	RO	- ESS-S	
										RO-105	NITC	6YR	- ESS-S	
										RO-105	NITO	6YR	- ESS-S	
										SHO-1	CTC	***/QO		
CK-ES3133 Low Pressure Injection Check Valve	M203-2 (C-8)	A	1	CK	SA	A/C	6	C	N/A	SO-9	LT	SO	- ESS-S	
										QO-32	CTC	QO	- ESS-S	
										QO-08B	CTO	CS	- ESS-S	
CK-ES3134 High Pressure Injection Check Valve	M203-2 (D-8)	A	1	CK	SA	A/C	2	C	N/A	SO-9	CTC	SO	- ESS-S	
										SO-9	LT	SO	- ESS-S	
										RO-65	CTO	RO	- ESS-S	
CK-ES3146 PCS Loop Check Valve (Loop 2B)	M203-1 (B-7)	A	1	CK	SA	A/C	12	C	N/A	SO-9	LT	SO		
										RO-105	CTO	RO	- ESS-S	
										GOP-13	CTC	QO	- ESS-S	
										RO-105	NITO	6YR	- ESS-S	
										RO-105	NITC	***	- ESS-S	
CK-ES3147 Safety Injection Tank T-82D Check Valve	M203-1 (D-2)	A	1	CK	SA	C	12	C	N/A	RO-105	CTO	RO	- ESS-S	
										RO-105	NITC	6YR	- ESS-S	
										RO-105	NITO	6YR	- ESS-S	
										SHO-1	CTC	***/QO		
CK-ES3148 Low Pressure Injection Check Valve	M203-2 (A-8)	A	1	CK	SA	A/C	6	C	N/A	SO-9	LT	SO	- ESS-S	
										QO-32	CTC	QO	- ESS-S	
										QO-08B	CTO	CS	- ESS-S	
CK-ES3149 High Pressure Injection Check Valve	M203-2 (B-8)	A	1	CK	SA	A/C	2	C	N/A	SO-9	CTC	SO	- ESS-S	
										SO-9	LT	SO	- ESS-S	
										RO-65	CTO	RO	- ESS-S	

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-ES3166	M204-1A (D-3	A	2	CK	SA	C	24	C	N/A	RO-141	CTC	RO		
Containment Sump Outlet Check Valve West										RO-141	CTO	RO		
CK-ES3168	M204-1B (C-7	A	2	CK	SA	C	8	C	N/A	RO-65	CTO	RO		
HPSI Pump P-66B Intake Check										RO-65	NITC	36 MO	- ESS-S	
										RO-65	NITO	36 MO	- ESS-S	
CK-ES3177	M204-1 (G-4)	A	2	CK	SA	C	3	C	N/A	RO-65	NITC	36 MO	- ESS-S	
High Pressure Pump P-66B Discharge Check Valve										RO-65	NITO	36 MO	- ESS-S	
										RT-122	DIS	20 YR		
										RO-65	CTO	18 MO		
CK-ES3181	M204-1A (E-3	A	2	CK	SA	C	24	C	N/A	RO-141	CTC	RO		
Containment Sump Outlet Check Valve East										RO-141	CTO	RO		
CK-ES3183	M204-1A (C-4	A	2	CK	SA	C	6	C	N/A	RO-65	CTO	RO		
HPSI Pump P-66A Intake Check Valve										RO-65	NITC	36 MO	- ESS-S	
										RO-65	NITO	36 MO	- ESS-S	
CK-ES3186	M204-1A (C-6	A	2	CK	SA	C	3	C	N/A	RO-65	NITC	36 MO	- ESS-S	
HPSI Pump P-66A Discharge Check Valve										RO-65	NITO	36 MO	- ESS-S	
										RT-122	DIS	20 YR		
										RO-65	CTO	18 MO		
CK-ES3192	M204-1 (E-4)	A	2	CK	SA	C	10	C	N/A	QO-08B	CTC	CS	- ESS-S	
Low Press Pump P-67B Discharge Check Valve										QO-08B	CTO	CS		
										QO-08B	NITC	36 MO	- ESS-S	
										QO-08B	NITO	36 MO	- ESS-S	
CK-ES3201	M204-1A (E-6	A	2	CK	SA	C	10	C	N/A	QO-08B	CTC	CS	- ESS-S	
LPSI Pump P-67A Discharge Check										QO-08B	CTO	CS	- ESS-S	
										QO-08B	NITC	36 MO	- ESS-S	
										QO-08B	NITO	36 MO	- ESS-S	
CK-ES3208	M204-1 (D4)	A	2	CK	SA	C	8	C	N/A	RO-98	CTC	RO	- ESS-S	
Containment Spray Pump P-54C Discharge Check Valve										RO-98	CTO	RO	- ESS-S	
										RO-98	NITC	RO	- ESS-S	
										RO-98	NITO	RO	- ESS-S	

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-ES3216 Containment Spray Check Valve	M203-2 (B-3)	A	2	CK	SA	C	8	C	N/A	RO-98	PS	RO		
										RT-122	DIS	10 YR		
										RT-122	NITC	10 YR		
CK-ES3220 Containment Spray Pump P-54B Discharge Check Valve	M204-1 (B-4)	A	2	CK	SA	C	8	C	N/A	RO-98	CTC	RO	- ESS-S	
										RO-98	CTO	RO	- ESS-S	
										RO-98	NITC	RO	- ESS-S	
										RO-98	NITO	RO	- ESS-S	
CK-ES3226 Containment Spray Check Valve	M203-2 (C-3)	A	2	CK	SA	C	8	C	N/A	RO-98	PS	RO		
										RT-122	DIS	10 YR		
										RT-122	NITC	10 YR		
CK-ES3230 Containment Spray Pump P-54A Discharge Check Valve	M204-1A (D-5	A	2	CK	SA	C	8	C	N/A	RO-98	CTC	RO	- ESS-S	
										RO-98	CTO	RO	- ESS-S	
										RO-98	NITC	RO	- ESS-S	
										RO-98	NITO	RO	- ESS-S	
CK-ES3233 Pump P-67A Miniflow Check Valve	M204-1A (F-4)	A	2	CK	SA	C	3	C	N/A	QO-16	CTO	QO	- CCW-C	
										QO-16	NITC	36 MO		
										QO-16	NITO	36 MO		
										RT-122	DIS	20 YR		
CK-ES3239 SIRW Tank T-58 Discharge Check (Train B)	M204-1B (D-6	A	2	CK	SA	A/C	18	C	N/A	RT-71L	CTC	RO	- ESS-S	
										RT-71L	LT	RO		
										QO-19	CTO	QO		
										RT-122	DIS	20 YR		
CK-ES3240 SIRW Tank T-58 Discharge Check (Train A)	M204-1B (D-6	A	2	CK	SA	A/C	18	C	N/A	RT-71L	CTC	RO	- ESS-S	
										RT-71L	LT	RO		
										QO-19	CTO	QO		
										RT-122	DIS	20 YR		
CK-ES3250 High Pressure Injection Check Valve	M203-2 (G-8)	A	1	CK	SA	C	2	C	N/A	QO-32	CTC	RO	- ESS-S	
										RO-65	CTO	RO	- ESS-S	
CK-ES3251 High Pressure Injection Check Valve	M203-2 (E-8)	A	1	CK	SA	C	2	C	N/A	QO-32	CTC	RO	- ESS-S	
										RO-65	CTO	RO	- ESS-S	

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-ES3252	M203-2 (C-8)	A	1	CK	SA	C	2	C	N/A	QO-32	CTC	RO	- ESS-S	
High Pressure Injection Check Valve										RO-65	CTO	RO	- ESS-S	
CK-ES3253	M203-2 (B-8)	A	1	CK	SA	C	2	C	N/A	QO-32	CTC	RO	- ESS-S	
High Pressure Injection Check Valve										RO-65	CTO	RO	- ESS-S	
CK-ES3330	M204-1 (F-2)	A	2	CK	SA	C	3	C	N/A	QO-16	CTO	QO	- ESS-S	
LPSI/CS Pump Miniflow Check Valve										QO-16	NITC	36 MO		
										QO-16	NITO	36 MO		
										RT-122	DIS	20 YR		
CK-ES3331	M204-1 (H-2)	A	2	CK	SA	C	4	C	N/A	QO-16	CTO	QO		
HPSI/LPSI Pump Miniflow Check Valve										QO-16	NITC	36 MO	- ESS-S	
										QO-16	NITO	36 MO	- ESS-S	
CK-ES3332	M204-1 (H-2)	A	2	CK	SA	C	4	C	N/A	QO-16	CTO	QO		
HPSI/LPSI/CS Pump Miniflow Check Valve										QO-16	NITC	36 MO	- ESS-S	
										QO-16	NITO	36 MO	- ESS-S	
CK-ES3339	M204-1 (G-3)	A	2	CK	SA	C	2	C	N/A	QO-19	CTO	QO		
HPSI Pump P-66B Miniflow Check										RT-122	DIS	3 YR		
										QO-19	NITC	24 MO	- ESS-S	
										QO-19	NITO	24 MO	- ESS-S	
CK-ES3340	M204-1A (C-4	A	2	CK	SA	C	2	C	N/A	QO-19	CTO	QO		
Pump P-66A Miniflow Check Valve										RT-122	DIS	3 YR		
										QO-19	NITC	24 MO	- ESS-S	
										QO-19	NITO	24 MO	- ESS-S	
CK-ES3408	M203-2 (E-5)	A	1	CK	SA	C	2	C	N/A	RO-65	CTC	RO	- ESS-S	
Hot Leg Injection Check Valve										RO-65	CTO	RO	- ESS-S	
CK-ES3409	M203-2 (E-5)	A	1	CK	SA	C	2	C	N/A	RO-65	CTC	RO	- ESS-S	
Hot Leg Injection Check Valve										RO-65	CTO	RO	- ESS-S	
CK-ES3410	M201-1 (C-3)	A	1	CK	SA	C	2	C	N/A	RO-65	CTO	RO	- ESS-S	
HPSI Hot Leg Injection Check Valve										QO-19	CTC	QO	- ESS-S	

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-ES3411	M204-1A (C-6	A	2	CK	SA	C	3	C	N/A	QO-19	CTO	QO		
Hot Leg Injection Check Valve										QO-19	NITC	3YR		
										QO-19	NITO	3YR		
										RT-122	DIS	20 YR		
CV-3001	M203-2 (C-3)	A/A	2	GL	AO	B	6	C	FO	QO-06	FST	CS	CS - 08	
Containment Spray Header Isolation Valve										QO-06	STC	CS	CS - 08	
										QO-06	STO	CS	CS - 08	
										QO-06	PIT	18MO		
CV-3002	M203-2 (B-3)	A/A	2	GL	AO	B	6	C	FO	QO-06	FST	CS	CS - 08	
Containment Spray Header Isolation Valve										QO-06	STC	CS	CS - 08	
										QO-06	STO	CS	CS - 08	
										QO-06	PIT	18MO		
CV-3006	M204-1 (A-6)	P/A	2	GL	AC	B	12	ELO	FO	QO-43	FST	CS		
LPSI Shutdown CLG Heat Exchangers Bypass										QO-43	STC	CS	CS - 31	
										QO-43	STO	CS	CS - 31	
										QO-43	FSE	18MO		
CV-3018	M204-1A (G-7	P	2	GA	AO	B	4	ELC	FC	QO-05	PIT	18MO		
HPSI train cross connnect isolation valve														
CV-3025	M204-1 (B-7)	A/P	2	GL	AO	B	10	ELC	FC	QO-42	FST	QO		
Shutdown Cooling Heat Exchanger To LPSI isolation valve										QO-42	STC	QO		
										QO-42	STO	QO		
										QO-42	FSE	18MO		
CV-3027	M204-1B (G-7	P/A	2	GA	AO	A	6	O	N/A	QO-02	STC	CS	CS - 10	
SIRW Tank T-58 Recirculation										RO-119	LT	24MO		
										QO-02	PIT	18MO		
CV-3029	M204-1A (E-3	A/P	2	GA	AO	B	24	C	N/A	QO-02	FST	CS		
Containment Sump Isolation to East Engineered Safeguards Room										QO-02	STO	CS	CS - 14	
										QO-02	PIT	18MO		

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-3030	M204-1A (D-3	A/P	2	GA	AO	B	24	C	N/A	QO-02	FST	CS		
Containment Sump Isolation to West Engineered Safeguards Room										QO-02	STO	CS	CS - 14	
										QO-02	PIT	18MO		
CV-3031	M204-1B (D-6	P/A	2	GA	AO	A	18	O	N/A	RT-71L	LT	RO		
SIRW Tank T-58 Outlet Isolation										QO-02	STC	CS	CS - 13	
										QO-02	PIT	18MO		
CV-3036	M204-1A (C-6	P	2	GA	AC	B	3	ELO	FO	QO-05	PIT	18MO		
P-66A to HPSI Train 2 Isolation Valve														
CV-3037	M204-1A (C-6	P	2	GA	AO	B	3	ELC	FC	QO-05	PIT	18MO		
P-66A to HPSI Train 1 Isolation Valve														
CV-3038	M203-1 (D-2)	A	1	GL	AO	B	1	O/C	FC	QO-05	FST	QO		
Safety Inject Tank T-82D Pressure Control										QO-05	STC	QO		
										QO-06	PIT	18MO		
CV-3040	M203-1 (G-6)	P	2	GL	AO	B	1	C	FC	QO-06	PIT	18MO		
Safety Injection Tank T-82A Nitrogen Fill														
CV-3042	M203-1 (D-7)	A	1	GL	AO	B	1	O/C	FC	QO-05	FST	QO		
Safety Injection Tank T-82A Pressure Control										QO-05	STC	QO		
										QO-06	PIT	18MO		
CV-3044	M203-1 (G-5)	P	2	GL	AO	B	1	C	FC	QO-06	PIT	18MO		
Safety Injection Tank T-82B Nitrogen Fill														
CV-3046	M203-1 (D-5)	A	1	GL	AO	B	1	O/C	FC	QO-05	FST	QO		
Safety Inject Tank T-82B Pressure Control										QO-05	STC	QO		
										QO-06	PIT	18MO		
CV-3047	M203-1 (D-4)	A	1	GL	AO	B	1	O/C	FC	QO-05	FST	QO		
Safety Inject Tank T-T82C Pressure Control										QO-05	STC	QO		
										QO-06	PIT	18MO		
CV-3048	M203-1 (G-3)	P	2	GL	AO	B	1	C	FC	QO-06	PIT	18MO		
Safety Injection TK T-82C Nitrogen Supply														

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-3050 Safety Injection Tank T-82D Nitrogen Fill	M203-1 (G-2)	P	2	GL	AO	B	1	C	FC	QO-06	PIT	18MO		
CV-3051 Safety Injection Tank T-82D Vent Valve	M203-1 (F-2)	P	2	GL	AO	B	1	C	FC	QO-06	PIT	18MO		
CV-3055 Shutdown Cooling Inlet To Shutdown HX	M204-1 (C-5)	A/P	2	GA	AO	B	12	ELC	N/A	QO-42 QO-42 QO-42 QO-42	FST STC STO PIT	QO QO QO 18MO		
CV-3056 SIRW Tank T-58 Recirculation Shutoff	M204-1B (G-7	P/A	2	GA	AO	A	6	O	N/A	QO-02 RO-119 QO-02	STC LT PIT	CS 24MO 18MO	CS - 10	
CV-3057 SIRW Tank T-58 Discharge Shutoff Valve	M204-1B (C-6	P/A	2	GA	AO	A	18	O	N/A	RT-71L QO-02 QO-02	LT STC PIT	RO CS 18MO	CS - 13	
CV-3059 P-66B to HPSI Train 1 Isolation Valve	M204-1A (G-6	P	2	GA	AC	B	4	ELO	FO	QO-05	PIT	18MO		
CV-3063 Safety Injection Tank T-82C Vent Valve	M203-1 (F-4)	P	2	GL	AO	B	1	C	FC	QO-06	PIT	18MO		
CV-3065 Safety Injection Tank T-82B Vent Valve	M203-1 (F-5)	P	2	GL	AO	B	1	C	FC	QO-06	PIT	18MO		
CV-3067 Safety Injection Tank T-82A Vent Valve	M203-1 (F-7)	P	2	GL	AO	B	1	C	FC	QO-06	PIT	18MO		
CV-3069 SI Tank Drain To Primary System Drain Tank	M203-1 (C-7)	N/A	NC	GL	AO	N/A	2	O/C	FC	QO-05 QO-05 QO-06	FST STC PIT	QO QO 18MO		
CV-3070 HPSI Pump P-66B Subcooling Isolation Valve	M204-1 (H-6)	A/P	2	GA	AO	B	4	C	FC	QO-05 QO-05 QO-05	FST STO PIT	QO QO 18MO		

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-3071	M204-1A (B-4	A/P	2	GA	AO	B	4	C	FC	QO-05	FST	QO		
High Press Safety Inject P-66A Subcooling										QO-05	STO	QO		
										QO-05	PIT	18MO		
CV-3084	M201-1 (B-3)	A	1	GL	AO	B	1	O/C	FC	QO-05	FST	QO		
HPSI Hot Leg Drain Isolation										QO-05	STC	QO		
										QO-06	PIT	18MO		
CV-3085	M201-1 (B-3)	A	F	GL	AO	B	1	O/C	FC	QO-05	FST	QO		
HPSI Hot Leg Drain Isolation										QO-05	STC	QO		
										QO-06	PIT	18MO		
CV-3212	M204-1 (B-6)	P	2	GA	AO	B	10	ELO	N/A	QO-42	PIT	18MO		
Shutdown Cooling Heat Exchanger E-60B Inlet Valve														
CV-3213	M204-1 (D-6)	P	2	GA	AO	B	10	ELO	N/A	QO-42	PIT	18MO		
Shutdown Cooling Heat Exchanger E-60B Outlet Valve														
CV-3223	M204-1 (G-6)	P	2	GA	AO	B	10	ELO	N/A	QO-42	PIT	18MO		
Shutdown Cooling Heat Exchanger E-60A Inlet Valve														
CV-3224	M204-1 (E-6)	P	2	GA	AO	B	10	ELO	N/A	QO-42	PIT	18MO		
Shutdown Cooling Heat Exchanger E-60A Outlet Valve														
MO-3007	M203-2 (G-8)	A	2	GL	MO	B	2	C	N/A	QO-05	STO	QO		
HPSI To Reactor Coolant Loop 1A Train 1										QO-05	PIT	18MO		
MO-3008	M203-2 (F-7)	A	2	GL	MO	B	6	C	N/A	QO-05	STO	QO		
LPSI To Reactor Coolant Loop 1A										QO-05	PIT	18MO		
MO-3009	M203-2 (F-7)	A	2	GL	MO	B	2	C	N/A	QO-05	STO	QO		
HPSI To Reactor Coolant Loop 1B										QO-05	PIT	18MO		
MO-3010	M203-2 (D-7)	A	2	GL	MO	B	6	C	N/A	QO-05	STO	QO		
LPSI To Reactor Coolant Loop 1B										QO-05	PIT	18MO		
MO-3011	M203-2 (D-7)	A	2	GL	MO	B	2	C	N/A	QO-05	STO	QO		
HPSI To Reactor Coolant Loop 2A										QO-05	PIT	18MO		

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
MO-3012	M203-2 (C-7)	A	2	GL	MO	B	6	C	N/A	QO-05	STO	QO		
LPSI To Reactor Coolant Loop 2A										QO-05	PIT	18MO		
MO-3013	M203-2 (B-7)	A	2	GL	MO	B	2	C	N/A	QO-05	STO	QO		
HPSI To Reactor Coolant Loop 2B										QO-05	PIT	18MO		
MO-3014	M203-2 (A-7)	A	2	GL	MO	B	6	C	N/A	QO-05	STO	QO		
LPSI To Reactor Coolant Loop 2B										QO-05	PIT	18MO		
MO-3015	M204-1 (G-1)	P	1	GA	MO	B	12	ELC	N/A	QO-43	STC	CS	CS - 32	
Shutdown Cooling From Reactor Coolant Loop 2										QO-43	STO	CS	CS - 32	
										QO-43	PIT	18 MO		
MO-3016	M204-1 (F-1)	P	1	GA	MO	B	12	ELC	N/A	QO-43	STC	CS	CS - 32	
Shutdown CLG From Reactor Coolant Loop 2										QO-43	STO	CS	CS - 32	
										QO-43	PIT	18 MO		
MO-3041	M203-1 (E-6)	P	2	GA	MO	B	12	ELO	N/A	RO-105	PIT	18MO		
Safety Injection Tank T-82A Outlet Isolation Valve														
MO-3045	M203-1 (E-5)	P	2	GA	MO	B	12	ELO	N/A	RO-105	PIT	18MO		
Safety Injection Tank T-82B Outlet Isolation Valve														
MO-3049	M203-1 (E-4)	P	2	GA	MO	B	12	ELO	N/A	RO-105	PIT	18MO		
Safety Injection Tank T-82C Outlet Isolation Valve														
MO-3052	M203-1 (E-2)	P	2	GA	MO	B	12	ELO	N/A	RO-105	PIT	18MO		
Safety Injection Tank T-82D Discharge Isolation Valve														
MO-3062	M203-2 (B-7)	A	2	GL	MO	B	2	C	N/A	QO-05	STO	QO		
HPSI Train 2 to Reactor Coolent Loop 2B										QO-05	PIT	18MO		
MO-3064	M203-2 (C-7)	A	2	GL	MO	B	2	C	N/A	QO-05	STO	QO		
HPSI Train 2 to Reactor Coolant Loop 2A										QO-05	PIT	18MO		
MO-3066	M203-2 (E-7)	A	2	GL	MO	B	2	C	N/A	QO-05	STO	QO		
HPSI Train 2 to Reactor Coolant Loop 1B										QO-05	PIT	18MO		
MO-3068	M203-2 (G-7)	A	2	GL	MO	B	2	C	N/A	QO-05	STO	QO		
HPSI Train 2 to Reactor Coolant Loop 1A										QO-05	PIT	18MO		

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
MO-3072	M204-1A (C-8	P	2	GL	MO	B	2	ELC	N/A	QO-06	STC	CS		
From Charging PP Line to SI Test Line Isol										QO-06	STO	CS		
										QO-06	PIT	18MO		
MO-3080	M203-2 (F-5)	P/A	2	GA	MO	B	6	ELO	N/A	QO-05	STC	QO		
HPSI Hot Leg Injection Mode Select Valve										QO-06	PIT	18MO		
MO-3081	M203-2 (F-5)	P/A	2	GA	MO	B	6	ELO	N/A	QO-05	STC	QO		
HPSI Hot Leg Injection Mode Select Valve										QO-06	PIT	18MO		
MO-3082	M203-2 (F-5)	A/P	2	GL	MO	B	2	ELC	N/A	QO-05	ASTC	QO		
HPSI Hot Leg Injection Mode Select Valve										QO-05	STO	QO		
										QO-06	PIT	18MO		
MO-3083	M203-2 (F-5)	A/P	2	GL	MO	B	2	ELC	N/A	QO-05	ASTC	QO		
HPSI Hot Leg Injection Mode Select Valve										QO-05	STO	QO		
										QO-06	PIT	18MO		
MO-3189	M204-1A (F-4'	P/A	2	GA	MO	B	14	ELO	N/A	QO-05	STC	QO		
LPSI Pump P-67B Inlet from SIRW Tank										QO-05	STO	QO		
										QO-05	PIT	18MO		
MO-3190	M204-1 (D-2)	P	2	GA	MO	B	14	ELC	N/A	QO-05	STC	QO		
LPSI pump P-67B Shutdown Cooling inlet										QO-05	STO	QO		
										QO-05	PIT	18MO		
MO-3198	M204-1A (G-4	P/A	2	GA	MO	B	14	ELO	N/A	QO-05	STC	QO		
LPSI Pump P-67A Inlet from SIRW Tank										QO-05	STO	QO		
										QO-05	PIT	18MO		
MO-3199	M204-1A (F-4'	P	2	GA	MO	B	14	ELC	N/A	QO-05	ASTO	QO		
LPSI Pump P-67A Inlet from Shutdown Cooling										QO-05	STC	QO		
										QO-05	PIT	18MO		
MV-ES3234	M204-1 (H-8)	P	2	GA	MA	A	2	C	N/A	RO-032-33	LT	RO		
Safety Injection Tank Drain Line Isolation Valve														
MV-ES3234A	M204-1 (H-8)	P	2	GA	MA	A	2	C	N/A	RO-032-33	LT	RO		
Safety Injection Tank Drain Line Isolation Valve														

Valve Matrix

SYSTEM: ESS - Engineering Safeguard

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
RV-0401 Shutdown Cooling Relief	M204-1 (G-1)	A/P	1	RV	SA	C	0.75	C	N/A	RT-116	RT	10 YR	RR-V - 3(	
RV-0402 Shutdown Cooling Heat Exch E-60A Tube Side	M204-1 (F,G-(	A/P	2	RV	SA	C	0.75	C	N/A	RT-116	RT	10 YR	RR-V - 2(	
RV-0403 Shutdown Cooling Heat Exch E-60B	M204-1 (B-6)	A/P	2	RV	SA	C	0.75	C	N/A	RT-116	RT	10 YR	RR-V - 2(	
RV-3113 Safety Injection Tank T-82A Relief Valve	M203-1 (G-7)	A/P	2	RV	SA	C	1	C	N/A	RT-116	RT	10 YR		
RV-3128 Safety Injection Tank T-82B Relief Valve	M203-1 (G-5)	A/P	2	RV	SA	C	1	C	N/A	RT-116	RT	10 YR		
RV-3143 Safety Injection Tank T-82C Relief Valve	M203-1 (G-4)	A/P	2	RV	SA	C	1	C	N/A	RT-116	RT	10 YR		
RV-3158 Safety Injection Tank T-82D Relief Valve	M203-1 (G-2)	A/P	2	RV	SA	C	1	C	N/A	RT-116	RT	10 YR		
RV-3162 Low Pressure Injection Relief Valve	M203-2 (E-6)	A/P	2	RV	SA	C	2	C	N/A	RT-116	RT	10 YR	RR-V - 3'	
RV-3164 Shutdown Cooling Relief	M204-1 (E-1)	A/P	2	RV	SA	C	1.5	C	N/A	RT-116	RT	10 YR	RR-V - 3'	
RV-3165 High Press Safety Injection Relief Valve Train 1	M203-2 (H-6)	A/P	2	RV	SA	C	0.5	C	N/A	RT-116	RT	10 YR		
RV-3264 HP Safety Injection Relief - Train 2	M203-2 (G-6)	A/P	2	RV	SA	C	0.5	C	N/A	RT-116	RT	48MO		
RV-3266 HP Pumps Discharge Header Relief	M204-1A (H-6	A/P	2	RV	SA	C	0.5	C	N/A	RT-116	RT	10 YR		
RV-3267 P-66A Discharge Relief	M204-1A (C-6	A/P	2	RV	SA	C	0.5	C	N/A	RT-116	RT	10 YR		

Consumers Energy *Palisades Pump and Valve Inservice Testing (IST) Program*

Valve Matrix

SYSTEM: FPS - Fire Protection

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
MV-FP130 Critical SW Header B & Fire SYS Crosstie	M213 (H-1)	P	3	GA	MA	B	12	C	N/A	RO-52	FSE	RO		
MV-FP131 Critical SW Header A & Fire SYS Crosstie	M213 (G-4)	P	3	GA	MA	B	12	C	N/A	RO-52	FSE	RO		

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: FWS - Feedwater System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-FW411	M207-2 (G-6)	A	3	CK	SA	C	2	C	N/A	QO-21	CTO	QO		
Auxiliary Feedwater Line From P-8B to T-2										QO-21	NITC	3Y		
										QO-21	NITO	3Y		
										RT-122	DIS	12 YR		
CK-FW412	M207-2 (E-6)	A	3	CK	SA	C	2	C	N/A	QO-21	CTO	QO		
Auxiliary Feedwater Line From P-8A to T-2										QO-21	NITC	3Y		
										QO-21	NITO	3Y		
										RT-122	DIS	12 YR		
CK-FW701	M207-1A (G-5	A	2	CK	SA	C	18	O	N/A	QO-24	CTC	HS	- FWS-C	
Feedwater Containment Isolation Valve Loop B										SHO-1	CTO	***	- FWS-C	Open position is verified continuously when at power.
CK-FW702	M207-1A (G-6	A	2	CK	SA	C	18	O	N/A	QO-24	CTC	HS	- FWS-C	
Feedwater Containment Isolation Valve Loop A										SHO-1	CTO	***	- FWS-C	Open position is verified continuously when at power.
CK-FW703	M207-2 (C-3)	A	2	CK	SA	C	6	C	N/A	QO-21	CTO	QO	- FWS-S	
Auxiliary Feedwater Line From P-8C to E-50B										QO-28	CTO	CS		
										QO-21	NITC	3 YR	- FWS-S	
										QO-21	NITO	3 YR	- FWS-S	
CK-FW704	M207-2 (A-3)	A	2	CK	SA	C	6	C	N/A	QO-21	CTO	QO		
Auxiliary Feedwater Line From P-8C to E-50A										QO-28	CTO	CS	- FWS-S	
										QO-21	NITC	3 YR	- FWS-S	
										QO-21	NITO	3 YR	- FWS-S	
CK-FW725	M207-2 (B-7)	A	3	CK	SA	C	6	C	N/A	QO-21	CTO	QO		
Auxiliary Feedwater P-8C Suction From Cond Storage Tank										RT-122	NITC	2 YR		
CK-FW726	M207-2 (B-5)	A	3	CK	SA	C	6	C	N/A	QO-21	CTO	QO		
Auxiliary Feedwater Pump P-8C Discharge Check										RT-122	NITC	2 YR		
CK-FW727	M207-2 (C-5)	A	3	CK	SA	C	2	C	N/A	QO-21	CTO	QO		
Recirc Line From P-8C To Cond Storage Tank										RT-122	DIS	6 YR		

Valve Matrix

SYSTEM: FWS - Feedwater System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-FW728	M207-2 (E-2)	A	2	CK	SA	C	4	C	N/A	QO-21	CTO	QO	- FWS-S	
Auxiliary Feedwater Line From P-8A. P-8B to E-50B										QO-28	CTO	CS	- FWS-S	
										QO-21	NITC	3 YR	- FWS-S	
										QO-21	NITO	***	- FWS-S	
CK-FW729	M207-2 (D-3)	A	2	CK	SA	C	4	C	N/A	QO-21	CTO	QO	- FWS-S	
Auxiliary Feedwater Line From P-8A. P-8B to E-50A										QO-28	CTO	CS	- FWS-S	
										QO-21	NITC	3 YR	- FWS-S	
										QO-21	NITO	***	- FWS-S	
CK-FW741	M207-2 (E-6)	A	3	CK	SA	C	6	C	N/A	QO-21	CTC	QO		
Auxiliary Feedwater Pump P-8A Discharge										QO-21	CTO	QO		
CK-FW743	M207-2 (H-6)	A	3	CK	SA	C	6	C	N/A	QO-21	CTC	QO		
Auxiliary Feedwater Pump P-8B Discharge										QO-21	CTO	QO		
CV-0701	M207-1A (C-6	A	NC	AG	AO	B	12	O	FAI	QO-41	FST	CS		
Feedwater Regulating Valve to Steam Generator E-50A										QO-41	STC	CS		
										QO-41	PIT	18MO		
CV-0703	M207-1A (C-5	A	NC	AG	AO	B	12	O	FAI	QO-41	FST	CS		
Feedwater Regulating Valve to Steam Generator E-50B										QO-41	STC	CS		
										QO-41	PIT	18MO		
CV-0727	M207-2 (G-4)	A/A	3	GL	AC	B	4	C	FO	QO-21	CTC	QO		
Auxiliary Feedwater Flow to Steam Generator E-50B from P-8A and P-8B										QO-21	CTO	QO		
										QO-21	FST	QO	?R-V - 1?	
										RO-127	PIT	18MO	?R-V - 1?	
CV-0734	M207-1A (C-5	A	NC	GL	AO	B	6	O/C	FAI	QO-05	FST	QO		
Main Feedwater to SG E-50B Bypass Feed Reg Valve										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-0735	M207-1A (C-6	A	NC	GL	AO	B	6	O/C	FAI	QO-05	FST	QO		
Main Feedwater to SG E-50A Bypass Feed Reg Valve										QO-05	STC	QO		
										QO-05	PIT	18MO		

Valve Matrix

SYSTEM: FWS - Feedwater System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-0736	M207-2 (C-4)	P	3	GL	AO	B	1.5	C	FC	RO-127	PIT	18 MO		
Auxiliary Feedwater Flow Control Bypass to E-50B														
CV-0736A	M207-2 (C-4)	A/A	3	GL	AC	B	4	C	FO	QO-21	CTC	QO		
Auxiliary Feedwater Pump P-8C Flow Control to Steam Generator E-50B										QO-21	CTO	QO		
										00000794	FSE	QO		
										QO-21	FST	QO	?R-V - 1?	
										RO-127	PIT	18MO	?R-V - 1?	
CV-0737	M207-2 (A-4)	P	3	GL	AO	B	1.5	C	FC	RO-127	PIT	18 MO		
Auxiliary Feedwater Flow Control Bypass to E-50A														
CV-0737A	M207-2 (A-4)	A/A	3	GL	AC	B	4	C	FO	QO-21	CTC	QO		
Auxiliary Feedwater Pump P-8C Flow Control to Steam Generator E-50A										QO-21	CTO	QO		
										00000794	FSE	QO		
										QO-21	FST	QO	?R-V - 1?	
										RO-127	PIT	18MO	?R-V - 1?	
CV-0749	M207-2 (E-4)	A/A	3	GL	AC	B	4	C	FO	QO-21	CTC	QO		
Auxiliary Feedwater Flow to Steam Generator E-50A from P-8A and P-8B										QO-21	CTO	QO		
										QO-21	FST	QO	?R-V - 1?	
										RO-127	PIT	18MO	?R-V - 1?	
MV-FW211	M205-2 (C-8)	A	3	3-way	MA	B	1.5	N	N/A	T-186	FSE	18 MO		
Auxiliary Feedwater Pump Turbine Cooling Water Outlet 3-Way Valve														
MV-FW504	M207-2 (H-8)	A	3	GA	MA	B	1	O	N/A	00000791	FSE	18 MO		
Leak Test Valve Between Auxiliary Feedwater Pump Fire Water Valve														
MV-FW750	M207-2 (A-7)	A/P	3	GA	MA	B	4	LC	N/A	00000791	FSE	18 MO		
Service Water to Auxiliary Feedwater Pump P-8C Isolation														
MV-FW750A	M207-2 (B-7)	A/P	3	GA	MA	B	4	LC	N/A	00000791	FSE	18 MO		
Service Water to Auxiliary Feedwater Pump P-8C Isolation														
MV-FW759	M207-2 (B-7)	A	3	GL	MA	B	1	O	N/A	00000791	FSE	18 MO		
Service Water to Auxiliary Feedwater Pump P-8C Vent														
MV-FW774	M207-2 (H-7)	A/P	3	GA	MA	B	4	LC	N/A	00000791	FSE	18 MO		
Auxiliary Feedwater Pumps P-8A/B Fire Water Supply Downstream Isolation														

Valve Matrix

SYSTEM: FWS - Feedwater System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
MV-FW775	M207-2 (H-7)	A/P	NC	GA	MA	B	4	LC	N/A	00000791	FSE	18 MO		
Auxiliary Feedwater Pumps P-8A/B Fire Water Supply Isolation														
RV-0521A	M205-2 (E-2)	A	3	RV	SA	C	3	C	N/A	RT-116	RT	10 YR		
Steam Supply To Auxiliary Feed Pump														
RV-0521B	M205-2 (E-1)	A	3	RV	SA	C	4	C	N/A	RT-116	RT	10 YR		
Steam Supply To Auxiliary Feed Pump														
RV-0783	M207-2 (F-5)	A/P	3	RV	SA	C	2.5	C	N/A	RT-116	RT	48MO		
Auxiliary Feedwater Pumps P-8A/B Discharge														

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: MGS - Miscellaneous Gas System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-N2/400	M222-1 (D-3)	A	2	CK	SA	A/C	1	O/C	N/A	RO-032-26	LT	60 MO		
Nitrogen Supply Containment Isolation Valve										XO-11	CTO	24 MO	I - CIS-S	
										XO-11	NITC	24 MO	I - CIS-S	
										RT-122	DIS	10 YR	I - CIS-S	
CK-N2/462	M222-3 (E-4)	A	2	CK	SA	A/C	0.5	O/C	N/A	RO-032-North	CTC	5 YR		
North Electrical Penetration N2 Supply Check										RO-032-North	CTO	5 YR		
										RO-032-North	LT	5 YR		
										RT-122	DIS	10 YR		
CK-N2/465	M222-3 (G-6,7	A	2	CK	SA	A/C	).375	O/C	N/A	RO-032-South	CTC	5 YR		
South Electrical Penetration N2 Supply Check										RO-032-South	CTO	5 YR		
										RO-032-South	LT	5 YR		
										RT-122	DIS	10 YR		
CV-1358	M222-1 (D-3)	A	2	GL	AO	A	1	O/C	FC	RO-032-26	LT	RO		
Nitrogen Supply Containment Isolation Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
SV-2412A	M224-2 (C-8)	A/P	2	GL	SO	A	0.5	C	FC	RO-032-40B	LT	RO		
Containment Hydrogen Monitoring Suction CIV (Right Channel)										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	STO	QO		
										RI-81B	PIT	18MO		
SV-2412B	M224-2 (C-7)	A/P	2	GL	SO	A	0.5	C	FC	RO-032-40B	LT	RO		
Containment Hydrogen Monitoring Suction CIV (Right Channel)										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	STO	QO		
										RI-81B	PIT	18MO		

Valve Matrix

SYSTEM: MGS - Miscellaneous Gas System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
SV-2413A	M224-2 (F-8)	A/P	2	GL	SO	A	0.5	C	FC	RO-032-21A	LT	RO		
Containment Hydrogen Monitoring Suction CIV (Left Channel)										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	STO	QO		
										RI-81A	PIT	18MO		
SV-2413B	M224-2 (F-7)	A/P	2	GL	SO	A	0.5	C	FC	RO-032-21A	LT	RO		
Containment Hydrogen Monitoring Suction CIV (Left Channel)										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	STO	QO		
										RI-81A	PIT	18MO		
SV-2414A	M224-2 (D-8)	A/P	2	GL	SO	A	0.5	C	FC	RO-032-40A	LT	RO		
Containment Hydrogen Monitoring Discharge CIV (Right Channel)										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	STO	QO		
										RI-81B	PIT	18MO		
SV-2414B	M224-2 (D-7)	A/P	2	GL	SO	A	0.5	C	FC	RO-032-40A	LT	RO		
Containment Hydrogen Monitoring Discharge CIV (Right Channel)										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	STO	QO		
										RI-81B	PIT	18MO		
SV-2415A	M224-2 (G-8)	A/P	2	GL	SO	A	0.5	C	FC	RO-032-21	LT	RO		
Containment Hydrogen Monitoring Discharge CIV (Left Channel)										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	STO	QO		
										RI-81A	PIT	18MO		
SV-2415B	M224-2 (G-7)	A/P	2	GL	SO	A	0.5	C	FC	RO-032-21	LT	RO		
Containment Hydrogen Discharge CIV (Left Channel)										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	STO	QO		
										RI-81A	PIT	18MO		

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: MSS - Main Steam

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-MS402	M205-2 (F-7)	A	3	CK	SA	C	4	C	N/A	QO-21	CTO	QO		
Steam Supply from E-50A to Auxiliary Feedwater Pump P-8B Check Valve										RT-122	DIS	3 YR		
CV-0501	M205-1 (G-8)	A	2	CK	AO	B	30	O	FC	QO-37	FST	CS	CS - 15	
Main Steam Isolation Valve SG E-50B to HP Turbine										QO-37	STC	CS	CS - 15	
										QO-37	PIT	18MO		
CV-0510	M205-1 (G-7)	A	2	CK	AO	B	30	O	FC	QO-37	FST	CS	CS - 15	
Main Steam Isolation Valve SG E-50A to HP Turbine										QO-37	STC	CS	CS - 15	
										QO-37	PIT	18MO		
CV-0522B	M205-2 (F-7)	A/P	2	GL	AO	B	4	C	FC	QO-05	FST	QO		
Steam Supply From E-50A To Auxiliary Feed Pump Turbine										QO-05	STO	QO		
										QO-05	PIT	18MO		
CV-0738	M226-1 (C-7)	A	2	AG	AO	B	2	O/C	FC	QO-05	FST	QO		
Steam Generator B Blowdown Valve										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-0739	M226-1 (D-7)	A	2	AG	AO	B	2	O/C	FC	QO-05	FST	QO		
Steam Generator A Blowdown Valve										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-0767	M226-1 (F-8)	A	2	AG	AO	B	2	O/C	FC	QO-05	FST	QO		
Steam Generator E-50A Bottom Blowdown Valve										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-0768	M226-1 (E-8)	A	2	AG	AO	B	2	O/C	FC	QO-05	FST	QO		
Steam Generator E-50B Bottom Blowdown Valve										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-0770	M226-1 (E-7)	N/A	NC	AG	AO	N/A	2	O/C	FC	QO-05	AFST	QO		
Steam Generator E-50B Bottom Blowdown Valve										QO-05	ASTC	QO		
										QO-05	APIT	18MO		
CV-0771	M226-1 (F-7)	N/A	N	AG	AO	N/A	2	O/C	FC	QO-05	AFST	QO		
Steam Generator E-50A Bottom Blowdown Valve										QO-05	ASTC	QO		
										QO-05	APIT	18MO		

Valve Matrix

SYSTEM: MSS - Main Steam

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-0779 Steam Generator E-50B Atmospheric Dump	M207-1 (F-4)	P	2	GL	AO	B	8	C	FC	QO-06	PIT	18MO		
CV-0780 Steam Generator E-50B Atmospheric Dump	M207-1 (F-4)	P	2	GL	AO	B	8	C	FC	QO-06	PIT	18MO		
CV-0781 Steam Generator E-50A Atmospheric Dump	M207-1 (F-5)	P	2	GL	AO	B	8	C	FC	QO-06	PIT	18MO		
CV-0782 Steam Generator E-50A Atmospheric Dump	M207-1 (F-5)	P	2	GL	AO	B	8	C	FC	QO-06	PIT	18MO		
MO-0501 Steam Generator E-50B MSIV Bypass Valve	M205-1 (G-7)	P	2	GA	MO	B	3	C	N/A	QO-37 QO-37	STC PIT	CS 18MO		
MO-0510 Steam Generator E-50A MSIV Bypass Valve	M205-1 (G-7)	P	2	GA	MO	B	3	C	N/A	QO-37 QO-37	STC PIT	CS 18MO		
RV-0701 Steam Generator E-50B Main Steam Header Relief	M207-1 (H-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0702 Steam Generator E-50B Main Steam Header Relief	M207-1 (G-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0703 Steam Generator E-50A Main Steam Header Relief	M207-1 (H-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0704 Steam Generator E-50A Main Steam Header Relief	M207-1 (H-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0705 Steam Generator E-50A Main Steam Header Relief	M207-1 (H-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0706 Steam Generator E-50A Main Steam Header Relief	M207-1 (G-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0707 Steam Generator E-50B Main Steam Header Relief	M207-1 (H-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0708 Steam Generator E-50B Main Steam Header Relief	M207-1 (H-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		

Valve Matrix

SYSTEM: MSS - Main Steam

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
RV-0709 Steam Generator E-50B Main Steam Header Relief	M207-1 (G-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0710 Steam Generator E-50B Main Steam Header Relief	M207-1 (G-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0711 Steam Generator E-50B Main Steam Header Relief	M207-1 (G-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0712 Steam Generator E-50B Main Steam Header Relief	M207-1 (G-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0713 Steam Generator E-50A Main Steam Header Relief	M207-1 (G-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0714 Steam Generator E-50A Main Steam Header Relief	M207-1 (G-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0715 Steam Generator E-50A Main Steam Header Relief	M207-1 (G-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0716 Steam Generator E-50A Main Steam Header Relief	M207-1 (G-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0717 Steam Generator E-50A Main Steam Header Relief	M207-1 (G-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0718 Steam Generator E-50A Main Steam Header Relief	M207-1 (G-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0719 Steam Generator E-50B Main Steam Header Relief	M207-1 (G-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0720 Steam Generator E-50B Main Steam Header Relief	M207-1 (G-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0721 Steam Generator E-50B Main Steam Header Relief	M207-1 (G-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0722 Steam Generator E-50B Main Steam Header Relief	M207-1 (G-3)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		

Valve Matrix

SYSTEM: MSS - Main Steam

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
RV-0723 Steam Generator E-50A Main Steam Header Relief	M207-1 (G-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		
RV-0724 Steam Generator E-50A Main Steam Header Relief	M207-1 (G-6)	A/P	2	RV	SA	C	6	C	N/A	RM-29	RT	5Y		

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: PCS - Primary Coolant System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-PC155B	M201-2 (G-7)	A	2	CK	SA	A/C	2	C	N/A	RO-032-42	LT	60 MO		
Quench Tank T-73 Makeup Water Isolation Valve										XO-11	CTO	24 MO	I - CIS-S	
										XO-11	NITC	24 MO	I - CIS-S	
CV-0101	M201-1 (G-5)	P	2	GL	AO	B	0.5	C	FC	QO-05	PIT	18MO		
Flange Leak Drain														
CV-0155	M201-2 (G-7)	A	2	GL	AO	A	2	O/C	FC	RO-032-42	LT	RO		
Quench Tank T-73 Makeup Water Isolation Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1910	M219-1B (C-8	A	1	GL	AO	A	0.5	O	FC	RO-032-40	LT	RO		
Primary System Sampling Isolation Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1911	M219-1B (B-8	A	2	GL	AO	A	0.5	O	FC	RO-032-40	LT	RO		
Primary System Sampling Isolation Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
MO-1042A	M201-2 (D-6)	A/A	1	GA	MO	B	4	C	N/A	QO-06	STC	CS	CS - 24	
Power Relief Valve Isolation Valve										QO-06	STO	CS	CS - 24	
										QO-06	PIT	18MO		
MO-1043A	M201-2 (D-7)	A/A	1	GA	MO	B	4	C	N/A	QO-06	STC	CS	CS - 24	
Power Relief Valve Isolation Valve										QO-06	STO	CS	CS - 24	
										QO-06	PIT	18MO		
PRV-1042B	M201-2 (E-6)	A/A	1	GL	SO	B	4	C	FC	QO-44	FST	CS		
Power Operated Relief Valve										QO-44	STC	CS		
										QO-44	STO	CS		
										RI-115	PIT	18MO		
										RI-115	STO	18MO		

Valve Matrix

SYSTEM: PCS - Primary Coolant System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
PRV-1043B Power Operated Relief Valve	M201-2 (E-7)	A/A	1	GL	SO	B	4	C	FC	QO-44	FST	CS		
										QO-44	STC	CS		
										QO-44	STO	CS		
										RI-115	PIT	18MO		
										RI-115	STO	18MO		
PRV-1067 Reactor Head Vent Valve	M201-2 (A-6)	A/P	1	GL	SO	B	1	C	FC	QO-06	FST	CS	CS - 01	
										QO-06	STO	CS	CS - 01	
										RO-112	PIT	18MO		
PRV-1068 Reactor Head Vent Valve	M201-2 (A-6)	A/P	1	GL	SO	B	1	C	FC	QO-06	FST	CS	CS - 01	
										QO-06	STO	CS	CS - 01	
										RO-112	PIT	18MO		
PRV-1069 Pressurizer Head Vent Valve	M201-2 (A-7)	A/P	1	GL	SO	B	1	C	FC	QO-06	FST	CS	CS - 01	
										QO-06	STO	CS	CS - 01	
										RO-112	PIT	18MO		
PRV-1070 Pressurizer Head Vent Valve	M201-2 (A-7)	A/P	1	GL	SO	B	1	C	FC	QO-06	FST	CS	CS - 01	
										QO-06	STO	CS	CS - 01	
										RO-112	PIT	18MO		
PRV-1071 Reactor Head and Pressurizer Head Combined Vent Valve	M201-2 (B-8)	A/P	1	GL	SO	B	1	C	FC	QO-06	FST	CS	CS - 01	
										QO-06	STO	CS	CS - 01	
										RO-112	PIT	18MO		
PRV-1072 Reactor Head and Pressurizer Head Combined Vent Valve	M201-2 (B-7)	A/P	1	GL	SO	B	1	C	FC	QO-06	FST	CS	CS - 01	
										QO-06	STO	CS	CS - 01	
										RO-112	PIT	18MO		
RV-1039 Pressurizer Relief Valve	M201-2 (D-5)	A/P	1	RV	SA	C	3	C	N/A	RT-041	RT	5Y		
RV-1040 Pressurizer Relief Valve	M201-2 (D-5)	A/P	1	RV	SA	C	3	C	N/A	RT-041	RT	5Y		
RV-1041 Pressurizer Relief Valve	M201-2 (D-4)	A/P	1	RV	SA	C	3	C	N/A	RT-041	RT	5Y		

Valve Matrix

SYSTEM: RWS - Radwaste Systems

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-CRW403	M210-2 (E-5)	A	2	CK	SA	A/C	1.5	O	N/A	RO-032-37	LT	60 MO		
Primary System Drain Tank Recirculation Valve										XO-11	CTO	24 MO	I - CIS-S	
										XO-11	NITC	24 MO		
										RT-122	DIS	10 YR		
CK-CRW407	M210-1A (H-8	A	2	CK	SA	A/C	3	O/C	N/A	RO-032-41	LT	60 MO		
Degasifier Pump Discharge Check Valve										XO-11	CTO	24 MO	I - CIS-S	
										XO-11	NITC	24 MO	I - CIS-S	
CK-CRW408	M210-1A (B-5	A	2	CK	SA	A/C	3	O/C	N/A	RO-032-67	LT	30 MO		
Clean Waste Receiver Tanks Recirculation Valve										XO-11	CTO	24 MO	I - CIS-S	
										XO-11	NITC	24 MO	I - CIS-S	
CV-1001	M210-2 (E-5, (	A	2	GL	AO	A	1.5	O/C	FC	RO-032-37	LT	RO		
Primary System Drain Tank Recirculation Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1002	M210-2 (C-7)	A	2	GL	AO	A	4	O/C	FC	RO-032-47	LT	RO		
Primary System Drain Tank Outlet Isolation Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1004	M210-1A (H-8	A	2	GL	AO	A	3	O/C	FC	RO-032-41	LT	RO		
Degasifier Pump Discharge Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1007	M210-2 (B-7)	A	2	GL	AO	A	4	O/C	FC	RO-032-47	LT	RO		
Primary System Drain Tank Outlet Isolation Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1036	M210-1A (B-6	A	2	GL	AO	A	6	O	FC	RO-032-49	LT	RO		
Pump P-70 Inlet Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		

Valve Matrix

SYSTEM: RWS - Radwaste Systems

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-1037 Clean Waste Tank Recirculation	M210-1A (B-4	A	2	GL	AO	A	3	O	FC	RO-032-67	LT	RO		
										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1038 Pump P-70 Inlet Isolation Valve	M210-1A (B-7	A	2	GL	AO	A	6	O	FC	RO-032-49	LT	RO		
										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1044 Pump P-69A/B Suction Valve	M210-1B (F-1	A	2	GL	AO	A	4	O	FC	RO-032-69	LT	RO		
										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1045 Pump P-69A/B Suction Valve	M210-1B (G-1	A	2	GL	AO	A	4	O	FC	RO-032-69	LT	RO		
										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1064 Clean Waste Tank Vent Isolation Valve	M210-1A (F-1	A	2	GL	AO	A	2	O	FC	RO-032-25	LT	RO		
										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1065 Clean Waste Tank Vent Isolation Valve	M210-1A (F-1	A	2	GL	AO	A	2	O	FC	RO-032-25	LT	RO		
										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1103 Containment Sump Drain Isolation	M211-1 (F-7)	A	2	BA	AO	A	4	O/C	FC	RO-032-52	LT	RO		
										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		

Valve Matrix

SYSTEM: RWS - Radwaste Systems

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-1104 Containment Sump Drain Isolation	M211-1 (F-7)	A	2	BA	AO	A	4	O/C	FC	RO-032-52 QO-05 QO-05 QO-05	LT FST STC PIT	RO QO QO 18MO		
MV-DRW618C Test Connection To LT-0382	M232-2A (B-1	P	2	GL	MA	A	).37E	C	N/A	RO-032-52A	LT	RO		
MV-DRW618D Test Connection To LT-0382	M232-2A (B-1	P	2	GL	MA	A	).37E	C	N/A	RO-032-52A	LT	RO		
MV-DRW618E Seal Pot To LT-0382	M232-2A (C-1	P	2	GL	MA	A	).37E	C	N/A	RO-032-52A	LT	RO		
MV-DRW618F Seal Pot To LT-0382	M232-2A (C-1	P	2	GL	MA	A	).37E	C	N/A	RO-032-52A	LT	RO		
MV-DRW618G Seal Pot To LT-0382	M232-2A (C-1	P	2	GL	MA	A	).37E	C	N/A	RO-032-52A	LT	RO		
MV-DRW618H Seal Pot To LT-0382	M232-2A (C-1	P	2	GL	MA	A	).37E	C	N/A	RO-032-52A	LT	RO		
MV-DRW619C Test Connection To LT-0383	M232-2A (B-2	P	2	GL	MA	A	).37E	C	N/A	RO-032-52B	LT	RO		
MV-DRW619D Test Connection To LT-0383	M232-2A (B-2	P	2	GL	MA	A	).37E	C	N/A	RO-032-52B	LT	RO		
MV-DRW619E Seal Pot To LT-0383	M232-2A (C-2	P	2	GL	MA	A	).37E	C	N/A	RO-032-52B	LT	RO		
MV-DRW619F Seal Pot To LT-0383	M232-2A (C-2	P	2	GL	MA	A	).37E	C	N/A	RO-032-52B	LT	RO		
MV-DRW619G Seal Pot To LT-0383	M232-2A (C-2	P	2	GL	MA	A	).37E	C	N/A	RO-032-52B	LT	RO		
MV-DRW619H Seal Pot To LT-0383	M232-2A (C-3	P	2	GL	MA	A	).37E	C	N/A	RO-032-52B	LT	RO		

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: SFP - Spent Fuel Pool Cooling

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
MV-SFP117 MZ-72 Reactor Cavity Drain & Recirc Inlet	M221-2 (C-2)	P	2	GA	MA	A	8	LC	N/A	RO-032-72	LT	RO		
MV-SFP118 MZ-72 Reactor Cavity Drain & Recirc Outlet	M221-2 (C-4)	P	2	GA	MA	A	8	LC	N/A	RO-032-72	LT	RO		
MV-SFP120 MZ-64 Reactor Cavity Fill & Recirc Inlet	M221-2 (D-2)	P	2	GA	MA	A	6	LC	N/A	RO-032-64	LT	RO		
MV-SFP121 MZ-64 Reactor Cavity Fill & Recirc Outet	M221-2 (D-2)	P	2	GA	MA	A	6	LC	N/A	RO-032-64	LT	RO		

Valve Matrix

SYSTEM: SWS - Service Water System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CK-SW401	M213 (F-4)	A	3	CK	SA	C	16	O/C	N/A	QO-14	CTC	QO		
Service Water Pump P-7A Discharge Check										QO-14	CTO	QO		
										QO-14	NITC	9 MO		
										QO-14	NITO	9 MO		
CK-SW402	M213 (F-3)	A	3	CK	SA	C	16	O/C	N/A	QO-14	CTC	QO		
Service Water Pump P-7B Discharge Check										QO-14	CTO	QO		
										QO-14	NITC	9 MO		
										QO-14	NITO	9 MO		
CK-SW403	M213 (F-2)	A	3	CK	SA	C	16	O/C	N/A	QO-14	CTC	QO		
Service Water Pump P-7C Discharge Check										QO-14	CTO	QO		
										QO-14	NITC	9 MO		
										QO-14	NITO	9 MO		
CK-SW410	M208-1B (F-7	A	3	CK	SA	C	8	O	N/A	RT-122	DIS	5 YR		
Containment Air Cooler VHX-4 Outlet										RT-122	CTC	18 MO		
										RT-122	CTO	18 MO		- SWS-S
CV-0821	M208-1A (B-7	A	3	GL	AO	B	4	O	FC	QO-05	FST	QO		
CCW Heat Exchanger E-54A Temperature Control Valve										QO-05	STC	QO		RR-V - 2
										QO-05	PIT	18MO		
CV-0822	M208-1A (A-7	A	3	GL	AO	B	4	O	FC	QO-05	FST	QO		
CCW Heat Exchanger E-54B Temperature Control Valve										QO-05	STC	QO		RR-V - 2
										QO-05	PIT	18MO		
CV-0823	M208-1A (B-7	A	3	BF	AC	B	16	C	FO	QO-05	FST	QO		
CCW Heat Exchanger E-54A Service Water Outlet										QO-05	STO	QO		
										QO-05	PIT	18MO		
CV-0824	M208-1B (D-3	P/A	2	BF	AC	B	16	ELO	FO	QO-06	FST	CS	CS - 20	
Containment Air Coolers Service WTR Return										QO-06	STC	CS	CS - 20	
										QO-06	PIT	18MO		
CV-0825	M208-1A (E-6	P	3	GA	AC	B	3	ELO	FO	QO-06	PIT	18MO		
East ESG Room Cooler Service Water Inlet (VHX-27A)														

Valve Matrix

SYSTEM: SWS - Service Water System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-0826	M208-1A (A-7	A	3	BF	AC	B	16	C	FO	QO-05	FST	QO		
CCW Heat Exchanger E-54B Service Water Outlet										QO-05	STO	QO		
										QO-05	PIT	18MO		
CV-0844	M208-1A (G-4	P	3	BF	AC	B	24	O	FO	QO-06	ASTC	CS		
Critical Header 'B' Isolation										QO-06	FST	CS		
										QO-06	PIT	18MO		
CV-0845	M208-1A (F-5	P	3	BF	AC	B	24	O	FO	QO-06	ASTC	CS		
Critical Header 'A' Isolation										QO-06	FST	CS		
										QO-06	PIT	18MO		
CV-0846	M208-1A (A-5	P	3	BF	AC	B	24	O	FO	QO-06	FST	CS		
Critical Header 'A' & 'B' Cross-Tie										QO-06	STC	CS		
										QO-06	PIT	18MO		
CV-0847	M208-1B (C-2	P/A	2	BF	AC	B	16	ELO	FO	QO-06	FST	CS	CS - 20	
Containment Air Coolers Service Water Supply										QO-06	STC	CS	CS - 20	
										QO-06	PIT	18MO		
CV-0857	M208-1A (A,B	P	3	BF	AC	B	24	O	FO	QO-06	ASTC	CS		
Critical Header 'A' & 'B' Cross-Tie										QO-06	FST	CS		
										QO-06	PIT	18MO		
CV-0861	M208-1B (F-5	A	3	BF	AC	B	8	O/C	FO	QO-05	FST	QO		
Containment Air Cooler VHX-1 Service Water Outlet										QO-05	STO	QO		
										QO-05	PIT	18MO		
CV-0862	M208-1B (E-6	P	3	BF	AC	B	8	ELO	FO	QO-05	PIT	18MO		
Containment Air Cooler VHX-1 Service Water Inlet														
CV-0864	M208-1B (A-5	A	3	BF	AC	B	8	O/C	FO	QO-05	FST	QO		
Containment Air Cooler VHX-2 Service Water Outlet										QO-05	STO	QO		
										QO-05	PIT	18MO		
CV-0865	M208-1B (C-6	P	3	BF	AC	B	8	ELO	FO	QO-05	PIT	18MO		
Containment Air Cooler VHX-2 Service Water Inlet														

Valve Matrix

SYSTEM: SWS - Service Water System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-0867 Containment Air Cooler VHX-4 Service Water Outlet	M208-1B (F-7	A	3	BF	AC	B	8	O/C	FO	QO-05 QO-05 QO-05	FST STO PIT	QO QO 18MO		
CV-0869 Containment Air Cooler VHX-4 Service Water Inlet	M208-1B (D-7	A	3	BF	AO	B	8	O	FC	QO-05 QO-05 QO-05	FST STC PIT	QO QO 18MO		
CV-0870 Containment Air Cooler VHX-3 Service Water Inlet	M208-1B (D-7	P	3	BF	AC	B	8	ELO	FO	QO-05	PIT	18MO		
CV-0873 Containment Air Cooler VHX-3 Service Water Outlet	M208-1B (B-7	A	3	BF	AC	B	8	O/C	FO	QO-05 QO-05 QO-05	FST STO PIT	QO QO 18MO		
CV-0876 Diesel Generator 1 & 2 and VC-10 Cooling Supply	M208-1A (F-4	P	3	BF	AC	B	6	O	FO	QO-05	PIT	18MO		
CV-0877 Diesel Generator 1 & 2 and VC-11 Cooling Supply	M208-1A (F-4	P	3	BF	AC	B	6	O	FO	QO-05	PIT	18MO		
CV-0878 West ESG Room Cooler Service Water Inlet (VHX-27B)	M208-1A (C-5	P	3	GA	AC	B	3	ELO	FO	QO-06	PIT	18MO		
CV-0879 ESS Pump Seal Cooling Alternate Service Water Supply	M208-1A (E-4	P	3	GL	AO	B	4	C	FC	QO-06	PIT	18MO		
CV-0880 ESS Pump Seal Cooling Alternate Service Water Supply	M208-1A (D-6	P	3	GL	AO	B	4	C	FC	QO-06	PIT	18MO		
CV-0884 Service Water To Emergency Diesel Gen K-6A	M208-1A (G-3	A	3	BF	AC	B	6	C	FO	MO-7A-1 00002772	FST FSE	MO 5Y		Classified as skid-mounted equipment.
CV-0885 Service Water To Emergency Diesel Gen K-6B	M208-1A (F-3	A	3	BF	AC	B	6	C	FO	MO-7A-2 00002785	FST FSE	MO 5Y		Classified as skid-mounted equipment.
CV-1318 Service Water Header Isolation Valve	M213 (G-4)	P	3	BF	AC	B	24	ELO	FO	QO-06 QO-06	ASTC PIT	CS 18MO		

Valve Matrix

SYSTEM: SWS - Service Water System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-1319	M213 (G-3)	P	3	BF	AC	B	24	ELO	FO	QO-06	ASTC	CS		
Service Water Header Isolation Valve										QO-06	PIT	18MO		
CV-1359	M213 (G-5)	A	3	BF	AO	B	24	O	FC	QO-06	FST	CS	CS - 33	
Non-Critical Service Water Isolation										QO-06	STC	CS	CS - 33	
										QO-06	PIT	18MO		

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: VAS - HVAC

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-1805	M218-2 (D-6)	A	2	BF	AO	A	8	ELC/O	FC	RO-032-01A	LT	RO		
Containment Purge Air Exhaust Valve										QO-06	FST	CS	CS - 19	
										QO-06	STC	CS	CS - 19	
										QO-06	PIT	18MO		
CV-1806	M218-2 (D-6)	A	2	BF	AO	A	8	ELC/O	FC	RO-032-01A	LT	RO		
Containment Purge Air Exhaust Valve										QO-06	FST	CS	CS - 19	
										QO-06	STC	CS	CS - 19	
										QO-06	PIT	18MO		
CV-1807	M218-2 (C, D-	A	2	BF	AO	A	8	ELC/O	FC	RO-032-01C	LT	RO		
Containment Purge Air Exhaust Valve										QO-06	FST	CS	CS - 19	
										QO-06	STC	CS	CS - 19	
										QO-06	PIT	18MO		
CV-1808	M218-2 (C, D-	A	2	BF	AO	A	8	ELC/O	FC	RO-032-01C	LT	RO		
Containment Purge Air Exhaust Valve										QO-06	FST	CS	CS - 19	
										QO-06	STC	CS	CS - 19	
										QO-06	PIT	18MO		
CV-1813	M218-2 (C-3)	A	2	BF	AO	A	12	ELC/O	FC	RO-032-68	LT	RO		
Air Space Purge Supply Fan V-46 Discharge Isolation Valve										QO-06	FST	CS	CS - 19	
										QO-06	STC	CS	CS - 19	
										QO-06	PIT	18MO		
CV-1814	M218-2 (B-3)	A	2	BF	AO	A	12	ELC/O	FC	RO-032-68	LT	RO		
Air Space Purge Supply Fan V-46 Discharge Isolation Valve										QO-06	FST	CS	CS - 19	
										QO-06	STC	CS	CS - 19	
										QO-06	PIT	18MO		
D-1	M218-6 (F-7)	A	NC	D	AO	N/A	36	O	FC	RO-28	AFSE	18 MO		
D-10	M218-6 (C-6)	P	NC	D	AO	N/A		O	FO	RO-28	AFSE	18 MO		
D-13	M218-6A (B-3	A	NC	D	AO	N/A		C	FO	RO-28	AFSE	18 MO		

Valve Matrix

SYSTEM: VAS - HVAC

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
D-14	M218-6A (C-3	A	NC	D	AO	N/A		C	FAI	RO-28	AFSE	18 MO		
D-15	M218-6 (D-4)	P	NC	D	AO	N/A		C	FC	RO-28	AFSE	18 MO		
D-16	M218-6 (D-4)	P	NC	D	AO	N/A		C	FC	RO-28	AFSE	18 MO		
D-2	M218-6 (F-7)	A	NC	D	AO	N/A	36	O	FC	RO-28	AFSE	18 MO		
D-20	M218-6A (F,G	P	NC	D	AO	N/A		O	FO	RO-28	AFSE	18 MO		
D-21	M218-6A (B,C	P	NC	D	AO	N/A		O	FO	RO-28	AFSE	18 MO		
D-3	M218-6 (F-6)	P	NC	D	AO	N/A		O	FO	RO-28	AFSE	18 MO		
D-6	M218-6A (G-3	A	NC	D	AO	N/A		O	FO	RO-28	AFSE	18 MO		
D-7	M218-6A (F,G	A	NC	D	AO	N/A		O	FAI	RO-28	AFSE	18 MO		
D-8	M218-6 (B-7)	A	NC	D	AO	N/A	36	O	FC	RO-28	AFSE	18 MO		
D-9	M218-6 (B-7)	A	NC	D	AO	N/A		O	FC	RO-28	AFSE	18 MO		
MO-P1 ILRT Fill Line Test Header Isolation	M218-2 (E-1)	P	2	BF	MO	A	6	C	N/A	RO-032-27	LT	RO		
MV-VA100 Purge Air Exhaust Isolation Valve	M218-2 (D-5)	P	2	GA	MA	A	4	LC	N/A	RO-032-01B	LT	RO		
MV-VA101 Purge Air Exhaust Isolation Valve	M218-2 (D-5)	P	2	GA	MA	A	4	LC	N/A	RO-032-01B	LT	RO		

Valve Matrix

SYSTEM: VAS - HVAC

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
MV-VA1801B PS-1801 Test & Calibration Valve	M218-2 (E-4)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-48 RO-032-48A	LT LT	RO RO		
MV-VA1801C PS-1801A Test & Calibration Valve	M218-2 (F-4)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-48 RO-032-48A	LT LT	RO RO		
MV-VA1802B PS-1802 Test & Calibration Valve	M218-2 (G-5)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-17 RO-032-17B	LT LT	RO 10 YR		
MV-VA1802C PS-1802A Test & Calibration Valve	M218-2 (G-4)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-17 RO-032-17B	LT LT	RO 10 YR		
MV-VA1803B PS-1803 Test & Calibration Valve	M218-2 (E-5)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-48 RO-032-48A	LT LT	RO RO		
MV-VA1803C PS-1803A Test & Calibration Valve	M218-2 (F-4)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-48 RO-032-48A	LT LT	RO RO		
MV-VA1804B PS-1804 Test & Calibration Valve	M218-2 (G-4)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-17 RO-032-17B	LT LT	RO 10 YR		
MV-VA1804C PS-1804A Test & Calibration Valve	M218-2 (G-4)	P	2	GA	MA	A	0.5	LC	N/A	RO-032-17 RO-032-17B	LT LT	RO 10 YR		
MV-VA1805A PT-1805 Test & Calibration Valve	M218-2 (E-4)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-48 RO-032-48A	LT LT	RO RO		
MV-VA1805C PT-1805A Test & Calibration Valve	M218-2 (E-4)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-48 RO-032-48A	LT LT	RO RO		
MV-VA1812A PT-1812 Test & Calibration Valve	M218-2 (G-4, :	P	2	GL	MA	A	0.5	LC	N/A	RO-032-17 RO-032-17B	LT LT	RO 10 YR		
MV-VA1812C PT-1812 Test & Calibration Valve	M218-2 (G-4, :	P	2	GL	MA	A	0.5	LC	N/A	RO-032-17 RO-032-17B	LT LT	RO 10 YR		
MV-VA1814A PT-1814 Test & Calibration Valve	M218-2 (F-4)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-17 RO-032-17B	LT LT	RO 10 YR		
MV-VA1814B Test & Calibration Tap Isolation Valve	M218-2 (H-5)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-17	LT	RO		

Valve Matrix

SYSTEM: VAS - HVAC

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
MV-VA1814F Test Connection to LT-0382	M232-2A (B-1	P	2	GL	MA	A	).37	C	N/A	RO-032-52A	LT	RO		
MV-VA1814G Test Connection to LT-0382	M232-2A (B-1	P	2	GL	MA	A	).37	C	N/A	RO-032-52A	LT	RO		
MV-VA1815A PS-1815 Test & Calibration Valve	M218-2 (E,F-4	P	2	GL	MA	A	0.5	LC	N/A	RO-032-48 RO-032-48A	LT LT	RO RO		
MV-VA1815B Test & Calibration Tap Isolation Valve	M218-2 (F-5)	P	2	GL	MA	A	0.5	LC	N/A	RO-032-48	LT	RO		
MV-VA533 Personnel Airlock MZ-19 Test Valve	M232-1 (G-2)	P	2	GA	MA	N/A	0.75	C	N/A	SO-4A	LT	SO		
MV-VA601 ILRT Instrument Line Isolation Inside Containment	M218-2 (F-2)	P	2	GA	MA	A	1.5	LC	N/A	RO-032-66	LT	RO		
MV-VA606B Test Connection to LT-0383	M232-2A (B-2	P	2	GL	MA	A	).37	C	N/A	RO-032-52B	LT	RO		
MV-VA606C Test Connection to LT-0383	M232-2A (B-2	P	2	GL	MA	A	).37	C	N/A	RO-032-52B	LT	RO		
MV-VA-L-6 ILRT Instrument Line Isolation Valve	M218-2 (F-1)	P	2	GA	MA	A	1	LC	N/A	RO-032-66	LT	RO		

Consumers Energy **Palisades Pump and Valve Inservice Testing (IST) Program**

Valve Matrix

SYSTEM: WGS - Waste Gas System

Component	PID(Coord)	Function	Code Class	Type	Actuator	Cat.	Size	Position Norm.	Position Fail.	Procedure	Test	Freq	Code Dev.	Comments
CV-1101	M211-2 (G-7)	A	2	GL	AO	A	4	O/C	FC	RO-032-46	LT	RO		
Waste Gas Surge Tank Inlet Vent Header Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		
CV-1102	M211-2 (G-6)	A	2	GL	AO	A	4	O/C	FC	RO-032-46	LT	RO		
Waste Gas Surge Tank Inlet Vent Header Valve										QO-05	FST	QO		
										QO-05	STC	QO		
										QO-05	PIT	18MO		