REVISION 13
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INSERVICE TESTING PROGRAM

SECOND TEN-YEAR INTERVAL

DIABLO CANYON POWER PLANT

UNITS 1 AND 2

USNRC DOCKET NOS. 50-275/50-323

FACILITY OPERATING LICENSE NOS. DPR-80/82

COMMERCIAL OPERATION DATES: MAY 7, 1985/MARCH 13, 1986

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INSERVICE TESTING PROGRAM PLAN
SECOND TEN-YEAR INTERVAL

INTRODUCTION

This volume describes the Inservice Testing (IST) Program Plan for Diablo Canyon Power Plant's safety-related components (pumps and valves) which are classified ASME Code Class 1, Class 2, and Class 3.

This IST Program Plan complies with the requirements of 10 CFR Part 50.55a(a), Part 50.55a(b)(2), and Part 50.55a(f), effective December 31, 1992, as follows:

10CFR50.55a(f) - For a pressurized water-cooled nuclear facilities (PWR) whose construction permit was issued prior to January 1, 1971 (Unit 1's was issued April 23, 1968 and Unit 2's was issued December 9, 1970), pumps and valves must meet the requirements of paragraphs (f)(4) and (5).

10CFR50.55a(f)(4) - Throughout the service life of a PWR, ASME Code Class 1, 2, or 3 pumps and valves must meet the IST requirements set forth in Section XI of the ASME B&PV Code and Addenda that are incorporated by reference in paragraph (b) of this section, to the extent practical within the limitations of design, geometry and materials of construction of such components.

10CFR50.55a(b)(2) - ...references to Section XI of the ASME B&PV Code refer to Section XI, Division 1, and include addenda through the 1988 Addenda and editions through the 1989 Edition.

10CFR50.55a(f)(4)(ii) - Inservice tests conducted during successive 120-month intervals must comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed in paragraph (b).

10CFR50.55a(f)(4)(iv) - IST of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (b), subject to the limitations and modifications listed in paragraph (b), and subject to Commission approval. Portions of editions or addenda may be used provided that all related requirement of the respective additions or addenda are met.

10CFR50.55a(f)(5)(i) -- The IST program for a PWR must be revised, as necessary, to meet the requirements of paragraph (f)(4).

The 1989 Edition of the ASME Boiler and Pressure Vessel Code, Section XI, is no longer involved in testing of pumps and valves. This responsibility has been assumed by the ASME/ANSI Operations and Maintenance of Nuclear Power Plants Standard (OM). Section XI, Subsections IWP (pumps) and IWV (valves), no longer contains requirements for pump and valve testing. Instead these subsections state that testing shall be performed in accordance with the requirements stated in ASME/ANSI OM (Part 6) (or (Part 10)). Table IWA-1600-1 of Subsection IWA of Section XI gives the specific revision dates for ASME/ANSI OM Parts 6 and 10 as 1987 including 1987A addenda. The 1987A addenda was later corrected to the OMa-1988 addenda. This is also stated in 10CFR50.55a(b)(2)(viii).

The initial testing interval for Unit 1 began May 7, 1985, and for Unit 2 began March 13, 1986, when the respective Units were placed into commercial operation. The second ten-year interval began January 1, 1996 for Unit 1 and June 1, 1996 for Unit 2. ASME Section XI, subsection IWA-2400, allows each IST interval to be decreased or extended by as much as one year (see also NRC NUREG-1482, section 3.3.1). This allowance has been applied as follows:

(a) Unit 1's first ten-year IST interval has been increased by approximately 8 months.
(b) Unit 2's first ten-year IST interval has been increased by approximately 2.5 months.

Where conformance with certain Code requirements is impractical, requests for relief, in accordance with 10CFR50.55a(a)(3) and 10CFR50.55a(f)(5), are included in each section with supporting information and proposed alternatives. Preservice tests, where required, have been completed. All preservice test data is available for review at the plant site.

ASME SECTION XI CODE BOUNDARY DRAWINGS

The ASME Code Classification Boundary Drawings, PG&E Number 102028 (Unit 1) and 104628 (Unit 2), are located in Section 2.0 of the Inservice Inspection (ISI) Program Plan. Regulatory Guide 1.26[1] was used as the governing document in setting up the Inservice Inspection and Testing Program (ISIT) boundary. The drawings show the Code Class 1, 2, and 3 systems and components subject to inservice inspection and testing requirements. Systems and components are identified by Code Class and are color coded as applicable to indicate exemptions from various code requirements[2]. These drawings are extracted from the piping schematics (P&ID's) for the plant that are contained in Section 3.2 of the FSAR. All ASME Code Class 1, 2, and 3 components subject to inservice testing are shown on the drawings. To emphasize the Section XI Code Boundaries, P&ID pages containing lines other than ASME Code Piping have been omitted and non-ASME lines have been ghosted on the pages included. An explanation of the color coding system is provided at the end of the drawings.

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

2 As allowed by Paragraphs IWB-1220, IWC-1220, IWC-1230, and Table IWD-2500-1 of Section XI.

INSERVICE TESTING OF PUMPS AND VALVES

The pump and valve testing program demonstrates the operational readiness of Code Class 1, 2, and 3 pumps and valves which are required to perform a specific function in shutting down the reactor to the cold shutdown condition or in mitigating the consequences of an accident. This program is presented in the attached Tables.

Table 1.0 (Pump IST Program) includes the pump name and number, the Code Class, applicable surveillance test procedure and test parameters, i.e., speed, differential pressure, discharge pressure, flow rate, pump bearings vibration, applicable relief request numbers, and remarks.

Table 1.1 contains all of the pump requests for relief from Code requirements.

Table 2.0 (Valve IST Program) includes the system name and number, valve number, description, P&ID coordinates, Code class, Code category, size, valve type (ball, butterfly, check, diaphragm, gate, globe, plug, or relief valve), actuator type (air operated, electric motor, electrohydraulic, manual, or solenoid-operated), normal valve position, test requirements, the test frequency, applicable stroke time and direction, relief request number (or cold shutdown or refueling outage justification numbers), procedure number, and remarks.

Table 2.1 contains all valve cold shutdown justifications per OMa-1988, Part 10, section 6.2(d). Table 2.2 contains all valve refueling outage justifications per OMa-1988, Part 10, section 6.2(d). Table 2.3 contains all of the valve requests for relief from Code requirements.

HOT STANDBY AS THE SAFE SHUTDOWN CONDITION

NUREG-1482 Section 2.2 requires that the IST PP state the Safe Shutdown condition of the plant. Safe shutdown at Diablo Canyon Power Plant is defined as HOT STANDBY. DCPP SSER 7, page 3-3 and SSER 22, pages 93-95 indicate that DCPP is considered to be a Class 2 plant wherein a single suction line from RCS Hot Leg is considered acceptable since the plant has a safety related Auxiliary Feedwater system enabling decay heat removal for extended periods at Hot Standby. Technical Specification Bases 3/4.3.3.5 states that "safe shutdown condition is defined as MODE 3, the Auxiliary Feedwater (AFW) system and the steam generator (SG) safety valves can be used to remove core decay heat and meet all safety requirements." Hence, DCPP is considered to be a Hot Standby plant.

The attached sheets identify the pumps that are subject to the testing requirements of OMa-1988, Part 6, and the requests for relief from code requirements.

LEGEND:

CODE CLASS
ASME Code Class taken from DWG 102028 Revision 21 (104628 Rev. 19 for Unit 2), "ASME CODE BOUNDARIES FOR INSERVICE INSPECTION AND TESTING PROGRAM."

TEST FREQUENCY NOTATION

Notation	Frequency
M	At least once per 31 days
Q	At least once per 92 days
A	At least once per 366 days
NA	Not applicable

TEST PARAMETER NOTATION

Notation	Parameter
N	Pump Speed (if variable speed)
Dp	Pump Differential Pressure
Q	Flow Rate
V	Pump Vibration
P	Pump Discharge Pressure

INSERVICE TESTING PROGRAM PLAN - PUMPS

ASME/ANSI OM-1987 (INCLUDING OMa-1988 ADDENDA)

PUMP NAME AND NUMBER	P&ID COORD	CODE CLASS	TEST PROCEDURE	PARAMETERS AND FREQUENCY N	Dp	P	Q	V	RELIEF REQUEST	REMARKS
Safety Injection Pump 1	57-E	2	P-SIP	NA	Q	NA	Q	Q		*Dp ≥ 1455 psid
Safety Injection Pump 2	57-D	2	P-SIP	NA	Q	NA	Q	Q		*Dp ≥ 1455 psid
Centrifugal Charging Pump 1	43D-C	2	P-CCP	NA	Q	NA	Q	Q	RR3	*Dp ≥ 2400 psid
Centrifugal Charging Pump 2	43D-D	2	P-CCP	NA	Q	NA	Q	Q	RR3	*Dp ≥ 2400 psid
Residual Heat Removal Pump 1	36-D	2	P-RHR	NA	Q	NA	Q	Q		*Dp ≥ 165 psid
Residual Heat Removal Pump 2	36-A	2	P-RHR	NA	Q	NA	Q	Q		*Dp ≥ 165 psid
Containment Spray Pump 1	36-D	2	P-CSP	NA	Q	NA	Q	Q		*Dp ≥ 205 psid
Containment Spray Pump 2	36-A	2	P-CSP	NA	Q	NA	Q	Q		*Dp ≥ 205 psid
Auxiliary Feed Pump 2 (Mtr)	43-D	3	P-AFW	NA	Q	NA	Q	Q		
Auxiliary Feed Pump 3 (Mtr)	43-D	3	P-AFW	NA	Q	NA	Q	Q		
Auxiliary Feed Pump 1 (Turb)	43-C	3	P-AFW	Q	Q	NA	Q	Q	RR2	
Auxiliary Saltwater Pump 1	31B-A	3	P-ASW	NA	Q	NA	Q	Q	RR5	
Auxiliary Saltwater Pump 2	31B-C	3	P-ASW	NA	Q	NA	Q	Q	RR5	
Component Cooling Water Pump 1	50-D	3	P-CCW	NA	Q	NA	Q	Q	RR4	
Component Cooling Water Pump 2	52-D	3	P-CCW	NA	Q	NA	Q	Q	RR4	
Component Cooling Water Pump 3	54-D	3	P-CCW	NA	Q	NA	Q	Q	RR4	
Boric Acid Transfer Pump 1	52B-A	2	P-BAT	NA	Q	NA	Q	Q		
Boric Acid Transfer Pump 2	52B-B	2	P-BAT	NA	Q	NA	Q	Q		
MU Water Transfer Pump 01	73-D	3	P-MUW	NA	Q	NA	Q	Q		
MU Water Transfer Pump 02	76-D	3	P-MUW	NA	Q	NA	Q	Q		

*Per Tech Spec

#	NOTES

1 Unit One Centrifugal Charging Pumps minimum flow recirculation line is now equipped with flow instrumentation. Relief Request P-RR3 is no longer required for Unit One.

RELIEF REQUEST	COMPONENT	RELIEF REQUEST APPROVAL STATUS
P-RR1	Deleted	
P-RR2	Turbine-driven Auxiliary Feedwater Pumps	Awaiting NRC approval
P-RR3	Centrifugal Charging Pumps	Approved NRC Letter dated 03/01/96
P-RR4	Component Cooling Water Pumps	Awaiting NRC approval
P-RR5	Auxiliary Saltwater Pumps	Awaiting NRC approval

NO. P-RR2

Pumps:	Turbine-driven Auxiliary Feedwater Pump 1-1 Turbine-driven Auxiliary Feedwater Pump 2-1
Code Class:	3
Test Reqt:	Part 6, Section 6.1, "Acceptance Criteria" states "If deviations fall within the alert range of Table 3, the frequency of the testing...shall be doubled...." According to Table 3a, for centrifugal pumps with speeds >600 rpm, any measured vibration levels greater than 0.325 in/sec fall within the Alert Range. Relief is requested from the 0.325 in/sec alert range value.

Functions:

The auxiliary feedwater (AFW) system provides a backup source of feedwater to the secondary side of the steam generators (SGs) when the main feedwater system is unavailable. This maintains the heat removal capability of the SGs. The system also functions as a source of feedwater during plant startups and shutdowns. The turbine-driven AFW pumps (AFWPs) are used as back up to the motor-driven AFWPs.

The turbine-driven AFWPs are tested on recirculation flow in accordance with ASME/ANSI OMa-1988 and Technical Specification 4.7.1.2.1.

Basis:

PG&E requests relief based on 10CFR50.55a(a)(3)(i). The alternative testing provides an acceptable level of quality and safety.

Baseline testing and subsequent quarterly testing of the turbine-driven AFWPs is performed while on recirculation because the only other available flow path is into the steam generators which could result in thermal cycling of FW/AFW nozzles. The baseline vibration levels for the outboard pump bearings were measured at 0.312 in/sec for pump 1-1 and 0.316 in/sec for pump 2-1 in February 1992. The baseline vibration levels were investigated and the pumps were found to be operating acceptably. Subsequent testing on a monthly basis has shown that there is no increasing trend in vibration levels. Some data scatter occurs which occasionally results in vibration readings in the alert range of 0.325 in/sec to 0.700 in/sec. The upper limit of the observed vibration data scatter is approximately 0.400 in/sec. An alert level of 0.450 in/sec will prevent normal vibration from putting the pump on alert, yet it will still provide sufficient warning if the pump trends toward the action limit.

NO. P-RR2 (cont.)

Per the ASME Code, any vibration level greater than 0.325 in/sec is within the alert range and requires doubling the pump's testing frequency. Since these pumps were baselined, subsequent tests have yielded vibration levels averaging 0.248 in/sec for Unit 1 and 0.317 in/sec for Unit 2. To further investigate this vibration issue, vibration readings were taken on Pump 2-1 at full flow condition. The vibration levels dropped from >0.300 in/sec on recirculation to 0.099 in/sec at full flow.

Vibration spectral analysis indicates that the predominant frequency is five times pump speed which correlates with the pump vane pass frequency because the pump impellers have five vanes each. When the pumps are operated at low flow, during surveillance testing, the relative flow to the impeller is not aligned with the impeller vane. This causes vibration at vane passing frequency (5X). The operating design flow of these pumps is 870 gpm. Due to thermal fatigue and plant transient concerns, the surveillance test is run with the pump on recirculation flow of approximately 50 gpm.

These recirculation vibration levels do not warrant doubling the testing frequency. In addition, industry experience has shown that extended or frequent operation at minimum flow can cause pumps to degrade. In the case of the turbine-driven AFWPs, vibration at an alert level of 0.325 in/sec when tested on recirculation is not indicative of a potential pump problem.

Operation of the pumps at vibration levels of up to 0.45 in/sec for short periods of time during quarterly pump testing will not cause the pump to degrade. When the pumps are operated for normal and emergency operations, the flows will be higher and the vibration significantly reduced.

Alternative:

PG&E will set the vibration alert level to 0.450 in/sec for the turbine-driven AFWP bearings for pump testing on recirculation flow. The current action level of 0.700 in/sec will remain unchanged. The vibration levels will continue to be evaluated to the 0.325 in/sec alert level during full flow testing.

Full flow vibration testing will be performed on a COLD SHUTDOWN frequency not to exceed once per 92 days. The test will be performed in Mode 1, 2 or 3 when adequate steam flow is available. During the test, only the bearings which have had vibration levels greater than 0.325 in/sec during the quarterly tests will be monitored, in order to decrease the length of time that cold water is injected into the steam generators.

NO. P-RR3

System: Chemical and Volume Control System

Pumps: Centrifugal Charging Pump 2-1
Centrifugal Charging Pump 2-2

Code Class: 2

Test Requirement:

Units 1 and 2: ASME/ANSI OM-1987 (Including OMa-1988 Addenda), Part 6, Section 5.2(b). The resistance of the system shall be varied until the flow rate equals the reference value. The pressure shall then be determined and compared to its reference value. Alternatively, the flow rate can be varied until the pressure equals the reference value and the flow rate shall be determined and compared to the reference flow rate value.

Functions:

To provide a means for post-accident high head pressure coolant injection, boron injection, and safety injection recirculation to the reactor.

Basis:

Technical Specification 4.0.5 states that inservice testing of ASME Code Class 1, 2, and 3 pumps, valves, and snubbers shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR 50, Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50, Section 50.55a(g)(6)(i).

Prior to initial startup of DCPP Units 1 and 2, PG&E had requested relief from measuring the flow rate for the centrifugal charging pumps in accordance with the requirements of Section XI of the Code. In Supplemental Safety Evaluation Report (SSER) 31, dated May 1985, the NRC provided the following response to PG&E regarding the relief request: It is the staff s position that monitoring pump differential pressure while the pumps are being tested in a fixed resistance configuration may not adequately monitor the hydraulic characteristics of these pumps and, therefore, detect possible pump degradation. Accordingly, the requested relief from the requirements of Subsection IWP of Section XI of the ASME Code was denied.

Per PG&E Letter No. DCL-86-238, dated August 12, 1986, the relief request was withdrawn. Instead of installing instrumentation for measuring the flow rate through the charging minimum-flow recirculation line, PG&E used an alternative method to test the centrifugal charging pumps. This was accomplished by closing the motor-operated isolation valves (CVCS-8105 and CVCS-8106) within the non-instrumented fixed resistance charging minimum-flow recirculation line and feeding forward through the normal injection flow path, which allows the existing flow instrumentation in the normal injection flow path to be used.

NO. P-RR3

Chemical and Volume Control System (cont.)

Based on recent review and evaluation of DCPP s accident analyses, this previous testing method is no longer acceptable (refer to PG&E s 1-hour, non-emergency report made to the NRC on February 1, 1996, in accordance with 10 CFR 50.72). It has recently been determined that closing the charging minimum-flow recirculation line with the plant in Mode 1, 2, or 3 would cause both trains of charging pumps to become inoperable for certain transients or accidents requiring safety injection, thus placing the plant in an unanalyzed condition.

The proposed flow path for performing quarterly centrifugal charging pump testing (Mode 1, 2, or 3) is through a combination of the non-instrumented, fixed resistance minimum-flow path and the normal, instrumented injection flow path. As stated in NRC Bulletin 88-04, the test point for monitoring pump performance for degradation should be in a region sufficient to prevent damage to the pump. The proposed combination of flow paths would yield a test point at a higher flow on the pump performance curve, thus providing more meaningful test data and avoiding potential pump damage. However, because the flow through the charging minimum-flow path would be unmeasurable, this testing would not be in compliance with the Code requirements for flow measurement.

NRC Staff Position 9 of Generic Letter 89-04 (NUREG-1482) provides an alternative method for testing pumps using a minimum-flow return line without flow measuring devices. This Position is applicable in cases where flow can only be established through a non-instrumented minimum-flow path during quarterly pump testing, and a path exists at cold shutdowns or refueling outages to perform a test of the pump under full or substantial flow conditions.

The PG&E proposed test differs from NRC Staff Position 9 in that only a portion of the total flow will be through a non-instrumented flow path, whereas Position 9 assumes the total flow to be through the non-instrumented flow path. Although the combination flow path does not strictly meet the guidelines of Position 9, the flow configuration PG&E is proposing to use will yield more meaningful test data to adequately monitor the hydraulic characteristics and detect pump degradation. Therefore, under the guidance of Response 3.3-2 of NUREG-1482 (page G-23), PG&E is requesting specific NRC approval of a relief to implement this alternative to quarterly instrumented testing.

Alternative:

On a quarterly frequency, pump differential pressure and vibration will be measured and trended using a combination of the non-instrumented minimum-flow path and the instrumented normal injection flow path. On a refueling frequency, a second set of reference values will be used, so that pump differential pressure, flowrate, and vibration will be measured and trended using only the instrumented flow path under full or substantial flow conditions.

NO. P-RR4

System: Component Cooling Water

Pumps:	Code Class:	P&ID Coordinate
Component Cooling Water Pump 1-1	3	102028 E-250
Component Cooling Water Pump 1-2	3	102028 E-252
Component Cooling Water Pump 1-3	3	102028 E-254
Component Cooling Water Pump 2-1	3	104628 E-250
Component Cooling Water Pump 2-2	3	104628 E-252
Component Cooling Water Pump 2-3	3	104628 E-254

Functions:

The component cooling water (CCW) system removes heat from safety-related and nonsafety-related system components during normal operation and plant shutdown and transfers it to the ultimate heat sink via the auxiliary saltwater (AWS) system. The CCW pumps (CCWPs) are horizontally mounted centrifugal pumps.

The CCW system provides for safe shutdown and cooldown of the reactor by removing heat from safety-related and nonsafety-related system components after normal reactor shutdown, and from vital system components after an accident leading to an emergency shutdown.

Test Requirement

Operation and Maintenance (OM) Part 6, para 5.2.(b), during pump test resistance of the system, shall be varied until flow equals the reference value.

Basis For Relief

A variable flow measurement for the CCWP test is required because it is impractical to establish a fixed reference value(s). Relief is requested per 10CFR50.55a(f)(5)(iii). Diablo Canyon Power Plant (DCPP) had previously received relief for these pumps in the first 10 year plan.

NO. P-RR4 (cont.)

The CCW system has varying heat loads, and therefore varying flow requirements. A full flow test line with a single throttle valve for the purpose of testing was not incorporated in the initial design of the system. For some plant conditions, a reference flow condition cannot be established without adversely affecting the system flow balance and Technical Specification (TS) operability requirements. Thus, these pumps must be tested in a manner that the CCW system remains properly flow balanced during and after the testing and each supplied load remains fully operable per TS to maintain the required level of plant safety during power operation. During refueling outages, CCW flow demand varies greatly due to reactor coolant system cooldown, clearing of components for maintenance, and spent fuel pool heat exchanger cooling water demand. Past experience at DCPP has shown that CCW flow during refueling outages is usually greater than flow during power operations and it is not practical to reduce flow in order to perform the CCWP IST. At a minimum, perturbation of multiple systems is required to establish a flow point due to the multiple flow paths of the CCW system. This abnormal configuration would have to be maintained for the length of time required to take vibration data and pump hydraulic data. In addition, the requirement for the Operators to manipulate valves required to adjust CCW flow to the reference point is adverse to ALARA.

Alternative Test

Perform inservice tests on CCWPs using guidance from NUREG-1482, paragraph 5.2. A reference pump curve (flow rate vs. pump head) has been developed for each of the six CCWPs.

The following elements will be performed in developing the pump curves for testing the CCWPs. Existing data may be used in developing the curves provided it meets the criteria below.

1. Pump reference curves will be developed when the pumps are known to be operating satisfactorily.

2. Instrumentation used to develop pump curves is at least as accurate (accuracy and range) as required by OM Part 6, Table 1.

3. Pump curves will be constructed using a minimum of five points.

4. Points used to construct the curves are beyond the flat portion (low flow rates) of the pump curve in a range which includes the design bases flow rate.

5. Acceptance criteria for flow rate and differential pressure will be established by taking the more conservative of curves based on the limits of OM Part 6, Table 3b, or the operability criteria in TS or Safety Analysis Report.

6. Vibration levels will be measured over the range of pump conditions, and appropriate vibration acceptance criteria based on OM Part 6, Table 3a, will be assigned for regions of the pump curve.

7. A new reference curve will be prepared, or the previous curve will be validated, if the pump curve is affected by replacement, repair, or routine service.

NO. P-RR4 (cont.)

References

DCPP Final Safety Analysis Report Update Docket Numbers 50-275 and 50-323; Section 9.2.2 Component Cooling Water System.

DCPP Units 1 and 2 TS; Section 4.6.2.3a.2)

NUREG-1482 "Guidelines for Inservice testing at Nuclear Power Plants"

DCPP Supplemental Safety Evaluation Number 31, "Appendix A, Safety Evaluation Pump and Valve Inservice Testing Program," paragraph 2.3.3, "Relief Request (3)"

NO. P-RR5

System: Auxiliary Saltwater

Pumps:	Code Class:	P&ID Coordinate
Auxiliary Saltwater Pump 1-1	3	102028 C-354
Auxiliary Saltwater Pump 1-2	3	102028 C-354
Auxiliary Saltwater Pump 2-1	3	102028 C-354
Auxiliary Saltwater Pump 2-2	3	102028 C-354

Functions:

The auxiliary saltwater (ASW) system supplies cooling water from the ultimate heat sink, the Pacific Ocean, to the component cooling water (CCW) heat exchangers. The CCW system, in turn, removes heat from nuclear primary plant equipment and components during normal plant operation, plant cooldowns, refueling and accident conditions, including a loss of coolant accident.

Each DCPP unit is provided with two redundant ASW trains. Each of these trains consist of a full capacity ASW pump (ASWP) and associated piping to supply the tube side of one of the CCW heat exchangers with cooling water. Each pump may also be cross-connected so as to supply the opposite train heat exchanger.

Test Requirement

OM Part 6, para 5.2.(b), during pump test, resistance of the system shall be varied until flow equals the reference value.

Basis For Relief

Adjustment to a specific reference value for the ASWP test is not practical because the pump flow rate varies based on tide level (suction pressure) and heat exchanger differential pressure (system resistance), which cannot be readily controlled. The CCW heat exchanger outlet throttle valves are the only valves which can be adjusted to set ASWP flow at the desired test flow. These valves are sealed in a throttled position which ensures the train can perform its required safety function under worst case conditions. A CCW heat exchanger is considered inoperable after its outlet valve is adjusted until a flow verification test is performed. The flow verification test requires that the system alignment with the most system resistance i.e., ASW pump #1 to CCW heat exchanger #2 (or ASW pump #2 to CCW heat exchanger #1) be used. This realignment, test and subsequent data analysis takes several hours, during which time the CCW heat exchanger is inoperable. Diablo Canyon Technical Specifications require that the second vital CCW heat exchanger be placed in service whenever ultimate heat sink temperature is greater than 64°F. In order to meet the Technical Specification LCO, ASW pump tests performed when ultimate heat sink temperatures are above 64°F must be performed with two CCW heat exchangers in service and result in test flows of up to 14,000 gpm. When the test is run with only one CCW heat exchanger in service (normal test alignment), reference pump flow is between 11,500 and 12,500 gpm. Relief is requested per 10CFR50.55a(f)(5)(iii).

NO. P-RR5 (cont.)

Alternative Test

Perform inservice tests on ASWPs using guidance from NUREG-1482, paragraph 5.2. A reference pump curve (flow rate vs. pump head) will be developed for each of the four ASWPs.

The following elements will be performed in developing the pump curves for testing the ASWPs:

1. Pump reference curves will be developed when the pumps are known to be operating satisfactorily.

2. Instrumentation used to develop pump curves is at least as accurate (accuracy and range) as required by OM Part 6, Table 1.

3. These pump curves will be constructed using a minimum of five points.

4. Points used to construct the curves are beyond the flat portion (low flow rates) of the pump curve in a range which includes the design bases flow rate.

5. Acceptance criteria for flow rate and differential pressure will be established by taking the more conservative of curves based on the limits of OM Part 6, Table 3b, or the operability criteria in TS or Safety Analysis Report.

6. Vibration levels will be measured over the range of pump conditions, and appropriate vibration acceptance criteria based on OM Part 6, Table 3a, will be assigned for regions of the pump curve.

7. A new reference curve will be prepared, or the previous curve will be validated, if the pump curve is affected by replacement, repair, or routine service.

References

DCPP Final Safety Analysis Report Update Docket Numbers 50-275 and 50-323; Section 9.2.2 Component Cooling Water System.

DCPP Units 1 and 2 Technical Specifications; Section (3/4.7.4)

NUREG-1482 "Guidelines for Inservice testing at Nuclear Power Plants"

The attached sheets identify the system valves that are subject to the testing requirements of OMa-1988, Parts 1 and 10, and the requests for relief from code requirements.

LEGEND:

VALVE CLASS (VLV CLS)
ASME code class taken from DWG 102028 Revision 21 (104628 Rev. 19 for Unit 2) "ASME CODE BOUNDARIES FOR INSERVICE INSPECTION AND TESTING PROGRAM."

NOTE: TS indicates a non ASME code class valve that is required to be tested by Technical Specification. IWV indicates a non ASME code class valve that is required to be tested in accordance with ASME Section XI, Subsection IWV.

VALVE CATEGORY (VLV CAT)
OM Part 10, paragraph 1.4 VALVE CATEGORIES

VALVE SIZE (VLV SIZ)
ASME SIZE IN INCHES

VALVE TYPE (VLV TYP) NOTATION

NOTATION	TYPE
BA	Ball Valve
BV	Butterfly Valve
CK	Check Valve
DI	Diaphragm Valve
GA	Gate Valve
GL	Globe Valve
PL	Plug Valve
RV	Relief Valve

LEGEND: (Continued)

ACTUATOR TYPE (ACT TYP) NOTATION

NOTATION	TYPE
A	Air Operated
E	Electric Motor
H	Electrohydraulic
M	Manual
N	None
S	Solenoid Operated

NORMAL POSITION (NRM POS) NOTATION

NOTATION	POSITION
O	Open
C	Closed
LO	Locked, Sealed, or De-energized (Breaker Open) Open
LC	Locked, Sealed, or De-energized (Breaker Open) Closed
V	Variable

LEGEND: (Continued)

TEST REQUIREMENT (TEST REQ) NOTATION

NOTATION	REQUIREMENT
EC	Exercise of Check Valve - Full Stroke
EF	Exercise of Valve - Full Stroke
EP	Exercise of Check Valve or Valve - Partial Stroke
EM	Manual Exercise of Check Valve/Disassembly Inspection
EN	Nonintrusive Exercise of Check Valve
LT	Valve Leak Test
PI	Position Indication Test
RT	Test Per OM Part 1 for Safety and Relief Valve

NOTE: Valve Fail Safe testing is required by OM Part 10, paragraph 4.2.1.6. Valves with Fail Safe actuators are tested by the full stroke tests of the valves. A specific Test Requirement was not created for Fail Safe tests.

TEST FREQUENCY (TEST FRQ) NOTATION

NOTATION	FREQUENCY
Q	At least once per 92 days
CS	At least each cold shutdown but not more frequently than once per 92 days (This notation identifies valves that cannot be exercised during plant operation. A statement of the technical justification for not full stroke exercising these valves during plant operation is included in Table 2.1).
R	At least once per each refueling interval (This notation identifies valves that cannot be exercised during plant operation nor full stroke exercised during cold shutdown. A statement of the technical justification for not full stroke exercising these valves during plant operation and whether they will be part stroked or not tested at all during cold shutdown is included in Table 2.2).
2Y	At least once per 24 months
T	Per ASME/ANSI OM Part 1
RR	Tested on a rotational basis during refueling outages.
J	Per 10CFR50 Appendix J, Option B.

LEGEND: (Continued)

STROKE TIME (STR TIM)
For power operated valves, the maximum allowed stroke time is given in seconds followed by a "c" for closing, or an "o" for opening, or an "o/c" for both opening and closing. For manual valves and check valves, this column denotes that the valve has a safety function in the "c" closed position, in the "o" open position, or in both the "o/c" open and closed position.

RELIEF REQUEST (REL REQ)
Numbers in this column refer to either a cold shutdown justification (CS), a refueling outage justification (RO), or a relief request (RR). These justifications and relief requests are found in TABLES 2.1, 2.2, and 2.3 respectively.

PROCEDURE NUMBER (PROC NO.)
Identifies procedure used to meet test requirement.

REMARKS
The numbers in the remarks column refer to the list of remarks on the last page of TABLE 2.0.

DRAWING REFERENCE NUMBERS
UNIT 1: 1020--series
UNIT 2: 1080--series

UNIT 2 SPECIFIC INFORMATION INDICATED BY PARENTHESES

FEEDWATER SYSTEM P & ID NO. 1020 03

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FW-348	AUX FP-1 SUCT CK FROM CST	42-C	3	C	8	CK	N	C	EP	Q	o		P-AFW	#1-BACKFLOW
									EC	CS	o	CS2	P-AFW	
FW-349	AUX FP-1 SUCT CK FROM RWS	41-C	3	C	8	CK	N	C	EM	RR	o	RR1	V-18	
FW-350	AUX FP-2 SUCT CK FROM CST	42-D	3	C	6	CK	N	C	EP	Q	o		P-AFW	#1-BACKFLOW
									EC	CS	o	CS2	A-AFW	
FW-352	AUX FP-3 SUCT CK FROM CST	42-D	3	C	6	CK	N	C	EP	Q	o		P-AFW	#1-BACKFLOW
									EC	CS	o	CS2	P-AFW	
FW-353	AUX FP-2&3 SUCT CK FROM RWS	41-D	3	C	8	CK	N	C	EM	RR	o	RR1	V-18	
FW-354	AUX FP-1 RECIRC CK	43-C	3	C	1.5	CK	N	C	EC	Q	o		P-AFW	
FW-355	AUX FP-2 RECIRC CK	43-D	3	C	1.5	CK	N	C	EC	Q	o		P-AFW	
FW-356	AUX FP-3 RECIRC CK	44-D	3	C	1.5	CK	N	C	EC	Q	o		P-AFW	
FW-361	AUX FP-1 DISCH CK	44-C	3	C	6	CK	N	C	EP	Q	o		P-AFW	#2-BACKFLOW
									EC	CS	o	CS3	P-AFW	
FW-362	AUX FP-2 DISCH CK	44-D	3	C	4	CK	N	C	EP	Q	o		P-AFW	#2-BACKFLOW
									EC	CS	o	CS3	P-AFW	
FW-363	AUX FP-3 DISCH CK	44-D	3	C	4	CK	N	C	EP	Q	o		P-AFW	#2-BACKFLOW
									EC	CS	o	CS3	P-AFW	
FW-367	SG-2 FW CK	47-A	2	A,C	16	CK	N	O	EC	CS	c	CS1	V-3P3	
									LT	2Y	c		V-3P3	#3-ADMIN
FW-368	SG-1 FW CK	47-A	2	A,C	16	CK	N	O	EC	CS	c	CS1	V-3P3	
									LT	2Y	c		V-3P3	#3-ADMIN
FW-369	AUX FP-1 TO SG-1 CK	47-C	2	C	3	CK	N	C	EP	Q	o/c		P-AFW	
									EC	CS	o/c	CS3	P-AFW	

FEEDWATER SYSTEM

P & ID NO. 1020 03

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FW-370	AUX FP-2 TO SG-1 CK	47-D	2	C	3	CK	N	C	EP	Q	o/c		P-AFW	
									EC	CS	o/c	CS3	P-AFW	
FW-371	AUX FP-1 TO SG-2 CK	47-C	2	C	3	CK	N	C	EP	Q	o/c		P-AFW	
									EC	CS	o/c	CS3	P-AFW	
FW-372	AUX FP-2 TO SG-2 CK	47-D	2	C	3	CK	N	C	EP	Q	o/c		P-AFW	
									EC	CS	o/c	CS3	P-AFW	
FW-373	AUX FP-1 TO SG-3 CK	47-B	2	C	3	CK	N	C	EP	Q	o/c		P-AFW	
									EC	CS	o/c	CS3	P-AFW	
FW-374	AUX FP-3 TO SG-3 CK	47-C	2	C	3	CK	N	C	EP	Q	o/c		P-AFW	
									EC	CS	o/c	CS3	P-AFW	
FW-375	AUX FP-1 TO SG-4 CK	47-B	2	C	3	CK	N	C	EP	Q	o/c		P-AFW	
									EC	CS	o/c	CS3	P-AFW	
FW-376	AUX FP-3 TO SG-4 CK	47-C	2	C	3	CK	N	C	EP	Q	o/c		P-AFW	
									EC	CS	o/c	CS3	P-AFW	
FW-377	SG-1 AUX FW 1ST CK	49-B	2	C	3	CK	N	C	EP	Q	o		P-AFW	#4-BACKFLOW
									EC	CS	o	CS3	P-AFW	
FW-378	SG-2 AUX FW 1ST CK	48-B	2	C	3	CK	N	C	EP	Q	o		P-AFW	#4-BACKFLOW
									EC	CS	o	CS3	P-AFW	
FW-379	SG-3 AUX FW 1ST CK	48-B	2	C	3	CK	N	C	EP	Q	o		P-AFW	#4-BACKFLOW
									EC	CS	o	CS3	P-AFW	
FW-380	SG-4 AUX FW 1ST CK	48-B	2	C	3	CK	N	C	EP	Q	o		P-AFW	#4-BACKFLOW
									EC	CS	o	CS3	P-AFW	

FEEDWATER SYSTEM P & ID NO. 1020 03

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FW-531	SG-3 FW CK	47-A	2	A,C	16	CK	N	O	EC	CS	c	CS1	V-3P3	
									LT	2Y	c		V-3P3	#3-ADMIN
FW-532	SG-4 FW CK	47-A	2	A,C	16	CK	N	O	EC	CS	c	CS1	V-3P3	
									LT	2Y	c		V-3P3	#3-ADMIN
FCV-436	RWS SUP AUX FP-1	41-C	3	B	8	BV	M	C	EF	Q*	o/c		V-3P4	*Per Tech Spec
FCV-437	RWS SUP AUX FP-2 & 3	41-D	3	B	8	BV	M	C	EF	Q*	o/c		V-3P4	*Per Tech Spec
FCV-438	SG-1 FW ISO	48-A	2	B	16	GA	E	O	PI	2Y	NA		V-2U1C	
									EF	CS	60c	CS1	V-3P2	
FCV-439	SG-2 FW ISO	47-A	2	B	16	GA	E	O	PI	2Y	NA		V-2U2C	
									EF	CS	60c	CS1	V-3P2	
FCV-440	SG-3 FW ISO	47-A	2	B	16	GA	E	O	PI	2Y	NA		V-2U3C	
									EF	CS	60c	CS1	V-3P2	
FCV-441	SG-4 FW ISO	48-A	2	B	16	GA	E	O	PI	2Y	NA		V-2U4C	
									EF	CS	60c	CS1	V-3P2	
LCV-106	AUX FP-1 TO SG-1 REG	47-C	2	B	3	GL	E	O	PI	2Y	NA		V-2U1D	
									EF	Q	20o/c		V-3P5	
LCV-107	AUX FP-1 TO SG-2 REG	47-C	2	B	3	GL	E	O	PI	2Y	NA		V-2U2D	
									EF	Q	20o/c		V-3P5	
LCV-108	AUX FP-1 TO SG-3 REG	47-B	2	B	3	GL	E	O	PI	2Y	NA		V-2U3D	
									EF	Q	20o/c		V-3P5	
LCV-109	AUX FP-1 TO SG-4 REG	47-B	2	B	3	GL	E	O	PI	2Y	NA		V-2U4D	
									EF	Q	20o/c		V-3P5	
LCV-110	AUX FP-2 TO SG-1 REG	47-D	2	B	2	GL	H	O	PI	2Y	NA		V-2U1D	
									EF	Q	40o/c		V-3P6	
LCV-111	AUX FP-2 TO SG-2 REG	47-D	2	B	2	GL	H	O	PI	2Y	NA		V-2U2D	
									EF	Q	40o/c		V-3P6	

FEEDWATER SYSTEM P & ID NO. 1020 03

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
LCV-113	AUX FP-3 TO SG-4 REG	47-C	2	B	2	GL	H	O	PI	2Y	NA		V-2U4D	
									EF	Q	40o/c		V-3P6	
LCV-115	AUX FP-3 TO SG-3 REG	47-C	2	B	2	GL	H	O	PI	2Y	NA		V-2U3D	
									EF	Q	40o/c		V-3P6	
FCV-510	SG-1 FW REG	33A-E (38-C)	TS	B	12	GL	A	O	EF	CS*	7c		V-3P1	*Per Tech Spec
									PI	2Y	NA		V-2U1C	
FCV-520	SG-2 FW REG	33A-D (38-D)	TS	B	12	GL	A	O	EF	CS*	7c		V-3P1	*Per Tech Spec
									PI	2Y	NA		V-2U2C	
FCV-530	SG-3 FW REG	33A-A (38-E)	TS	B	12	GL	A	O	EF	CS*	7c		V-3P1	*Per Tech Spec
									PI	2Y	NA		V-2U3C	
FCV-540	SG-4 FW REG	33A-C (38-D)	TS	B	12	GL	A	O	EF	CS*	7c		V-3P1	*Per Tech Spec
									PI	2Y	NA		V-2U4C	
FCV-1510	SG-1 FW REG BYPASS	33A-E (37-B)	TS	B	6	GL	A	C	EF	CS*	7c		V-3P1	*Per Tech Spec
									PI	2Y	NA		V-2U1C	
FCV-1520	SG-2 FW REG BYPASS	33A-C (38-D)	TS	B	6	GL	A	C	EF	CS*	7c		V-3P1	*Per Tech Spec
									PI	2Y	NA		V-2U2C	
FCV-1530	SG-3 FW REG BYPASS	33A-A (38-E)	TS	B	6	GL	A	C	EF	CS*	7c		V-3P1	*Per Tech Spec
									PI	2Y	NA		V-2U3C	
FCV-1540	SG-4 FW REG BYPASS	33A-B (38-E)	TS	B	6	GL	A	C	EF	CS*	7c		V-3P1	*Per Tech Spec
									PI	2Y	NA		V-2U4C	
RV-536	AUX FP-1 SUCT RELIEF	42-C (42-D)	3	C	1x1.5	RV	N	C	RT	T	NA		M-77	100#
RV-537	AUX FP-2&3 SUCT RELIEF	41-D	3	C	1x1.5	RV	N	C	RT	T	NA		M-77	100#

TURBINE STEAM SUPPLY SYSTEM P & ID NO. 1020 04

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
MS-1068	SG-1 MS LINE CK	31-A	IWV	C	28	CK	N	O	EM	R	c	RO1	V-18	
MS-2066	SG-2 MS LINE CK	31-B	IWV	C	28	CK	N	O	EM	R	c	RO1	V-18	
MS-3062	SG-3 MS LINE CK	31-D	IWV	C	28	CK	N	O	EM	R	c	RO1	V-18	
MS-4062	SG-4 MS LINE CK	31-E	IWV	C	28	CK	N	O	EM	R	c	RO1	V-18	
MS-5166	SG-2 STM TO AUX FP-1 CK	30-B	2	C	4	CK	N	C	EP	Q	o		P-AFW	
									EC	CS	o	CS4	P-AFW	
									EM	RR	c	RR11	V-18	
MS-5167	SG-3 STM TO AUX FP-1 CK	31-C	2	C	4	CK	N	C	EP	Q	o		P-AFW	
									EC	CS	o	CS4	P-AFW	
									EM	RR	c	RR11	V-18	
FCV-22	SG-4 MSIV BYPASS	31-E	2	B	3	GL	A	C	PI	2Y	NA		V-2U4A	
									EF	Q	5c		V-3R4	
FCV-23	SG-3 MSIV BYPASS	31-C	2	B	3	GL	A	C	PI	2Y	NA		V-2U3A	
									EF	Q	5c		V-3R4	
FCV-24	SG-2 MSIV BYPASS	31-B	2	B	3	GL	A	C	PI	2Y	NA		V-2U2A	
									EF	Q	5c		V-3R4	
FCV-25	SG-1 MSIV BYPASS	31-A	2	B	3	GL	A	C	PI	2Y	NA		V-2U1A	
									EF	Q	5c		V-3R4	
FCV-37	SG-2 STM TO AUX FP-1	30-B	2	B	4	GA	E	O	PI	2Y	NA		V-2U2E	
									EF	Q	30o/c		V-3R6	
FCV-38	SG-3 STM TO AUX FP-1	31-C	2	B	4	GA	E	O	PI	2Y	NA		V-2U3E	
									EF	Q	30o/c		V-3R6	

TURBINE STEAM SUPPLY SYSTEM P & ID NO. 1020 04

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-41	SG-1 MSIV	31-A	2	B	28	CK	A	O	PI	2Y	NA		V-2U1A	
									EF	CS	5c	CS5	V-3R2	
FCV-42	SG-2 MSIV	31-B	2	B	28	CK	A	O	PI	2Y	NA		V-2U2A	
									EF	CS	5c	CS5	V-3R2	
FCV-43	SG-3 MSIV	31-D	2	B	28	CK	A	O	PI	2Y	NA		V-2U3A	
									EF	CS	5c	CS5	V-3R2	
FCV-44	SG-4 MSIV	31-E	2	B	28	CK	A	O	PI	2Y	NA		V-2U4A	
									EF	CS	5c	CS5	V-3R2	
FCV-95	AUX FP-1 STM SUP	31-B	2	B	4	GA	E	C	PI	2Y	NA		V-2U5	
									EF	Q	30o		V-3R5	
FCV-151	SG-1 BD ISOL OC	72-C	2	B	3	GA	A	O	PI	2Y	NA		V-2J4	
									EF	Q	10c		V-3S2	
FCV-154	SG-2 BD ISOL OC	72-C	2	B	3	GA	A	O	PI	2Y	NA		V-2J4	
									EF	Q	10c		V-3S2	

TURBINE STEAM SUPPLY SYSTEM P & ID NO. 1020 04

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-157	SG-3 BD ISOL OC	72-D	2	B	3	GA	A	O	PI	2Y	NA		V-2J4	
									EF	Q	10c		V-3S2	
FCV-160	SG-4 BD ISOL OC	72-E	2	B	3	GA	A	O	PI	2Y	NA		V-2J4	
									EF	Q	10c		V-3S2	
FCV-244	SG-4 SAMPLE ISOL OC	72-E	2	B	.75	GL	A	O	PI	2Y	NA		V-2J4	
									EF	Q	10c		V-3S2	
FCV-246	SG-3 SAMPLE ISOL OC	72-D	2	B	.75	GL	A	O	PI	2Y	NA		V-2J4	
									EF	Q	10c		V-3S2	
FCV-248	SG-2 SAMPLE ISOL OC	72-C	2	B	.75	GL	A	O	PI	2Y	NA		V-2J4	
									EF	Q	10c		V-3S2	
FCV-250	SG-1 SAMPLE ISOL OC	72-C	2	B	.75	GL	A	O	PI	2Y	NA		V-2J4	
									EF	Q	10c		V-3S2	
FCV-760	SG-1 BD ISOL IC	71-C	2	B	3	GL	A	O	PI	2Y	NA		V-2N1	
									EF	Q	5c		V-3R3	
FCV-761	SG-2 BD ISOL IC	71-C	2	B	3	GL	A	O	PI	2Y	NA		V-2N1	
									EF	Q	5c		V-3R3	
FCV-762	SG-3 BD ISOL IC	71-D	2	B	3	GL	A	O	PI	2Y	NA		V-2N1	
									EF	Q	5c		V-3R3	
FCV-763	SG-4 BD ISOL IC	71-E	2	B	3	GL	A	O	PI	2Y	NA		V-2N1	
									EF	Q	5c		V-3R3	
PCV-19	SG-1 10% ATM DUMP	30-A	2	B	8	GL	A	C	PI	2Y	NA		V-2U1B	
									EF	Q	60o/c		V-3R1	

TURBINE STEAM SUPPLY SYSTEM P & ID NO. 1020 04

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
PCV-20	SG-2 10% ATM DUMP	30-C	2	B	8	GL	A	C	PI	2Y	NA		V-2U2B	
									EF	Q	60o/c		V-3R1	
PCV-21	SG-3 10% ATM DUMP	31-D	2	B	8	GL	A	C	PI	2Y	NA		V-2U3B	
									EF	Q	60o/c		V-3R1	
PCV-22	SG-4 10% ATM DUMP	31-E	2	B	8	GL	A	C	PI	2Y	NA		V-2U4B	
									EF	Q	60o/c		V-3R1	
RV-3	SG-1 SAFETY	30-A	2	C	6	RV	N	C	RT	T	NA		M-77	1065#
RV-4	SG-1 SAFETY	31-A	2	C	6	RV	N	C	RT	T	NA		M-77	1078#
RV-5	SG-1 SAFETY	31-A	2	C	6	RV	N	C	RT	T	NA		M-77	1090#
RV-6	SG-1 SAFETY	31-A	2	C	6	RV	N	C	RT	T	NA		M-77	1103#
RV-7	SG-2 SAFETY	30-B	2	C	6	RV	N	C	RT	T	NA		M-77	1065#
RV-8	SG-2 SAFETY	31-B	2	C	6	RV	N	C	RT	T	NA		M-77	1078#
RV-9	SG-2 SAFETY	31-B	2	C	6	RV	N	C	RT	T	NA		M-77	1090#
RV-10	SG-2 SAFETY	31-B	2	C	6	RV	N	C	RT	T	NA		M-77	1103#

TURBINE STEAM SUPPLY SYSTEM P & ID NO. 1020 04

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
RV-11	SG-3 SAFETY	31-D	2	C	6	RV	N	C	RT	T	NA		M-77	1065#
RV-12	SG-3 SAFETY	31-D	2	C	6	RV	N	C	RT	T	NA		M-77	1078#
RV-13	SG-3 SAFETY	32-D	2	C	6	RV	N	C	RT	T	NA		M-77	1090#
RV-14	SG-3 SAFETY	31-D	2	C	6	RV	N	C	RT	T	NA		M-77	1103#
RV-58	SG-4 SAFETY	31-E	2	C	6	RV	N	C	RT	T	NA		M-77	1065#
RV-59	SG-4 SAFETY	31-E	2	C	6	RV	N	C	RT	T	NA		M-77	1078#
RV-60	SG-4 SAFETY	32-E	2	C	6	RV	N	C	RT	T	NA		M-77	1090#
RV-61	SG-4 SAFETY	31-E	2	C	6	RV	N	C	RT	T	NA		M-77	1103#
RV-222	SG-1 SAFETY	31-A	2	C	6	RV	N	C	RT	T	NA		M-77	1115#
RV-223	SG-2 SAFETY	31-B	2	C	6	RV	N	C	RT	T	NA		M-77	1115#
RV-224	SG-3 SAFETY	31-D	2	C	6	RV	N	C	RT	T	NA		M-77	1115#
RV-225	SG-4 SAFETY	31-E	2	C	6	RV	N	C	RT	T	NA		M-77	1115#

AUXILIARY STEAM SYSTEM P & ID NO. 1020 06

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
AXS-208	AXS STM SUP TO CONT ISO IC	43-E	2	A	2	CK	N	C	LT	J	c		V-670	
AXS-26	AUX STM SUP TO CONT ISO OC	43-D	2	A	2	GA	M	LC	LT	J	c		V-670	

REACTOR COOLANT SYSTEM P & ID NO. 1020 07

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
RCS-508	RV & STM LK OFF HDR TO PRT	44-E	3	C	4	CK	N		EM	R	o	R014	V-18	RV function
RCS-512	MISC EQUIP DR TANK ISOL OC	48-A	2	A	3/4	GL	M	LC	LT	J	c		V-671	
PCV-455C	PZR PORV	40-C	1	B	3	GL	A	C	PI	2Y	NA		V-2T1	
									EF	CS	3.5o	CS6	V-3J2	
PCV-456	PZR PORV	40-B	1	B	3	GL	A	C	PI	2Y	NA		V-2T1	
									EF	CS	3.5o	CS6	V-3J2	
PCV-474	PZR PORV	40-C	1	B	3	GL	A	C	PI	2Y	NA		V-2T1	
									EF	CS	3.5o	CS6	V-3J2	
8000A	PZR PORV ISOL	41-C	1	B	3	GA	E	O	PI	2Y	NA		V-2T1	
									EF	Q	20c		V-3J1A	
8000B	PZR PORV ISOL	41-C	1	B	3	GA	E	O	PI	2Y	NA		V-2T1	
									EF	Q	20c		V-3J1B	
8000C	PZR PORV ISOL	40-B	1	B	3	GA	E	O	PI	2Y	NA		V-2T1	
									EF	Q	20c		V-3J1C	
8010A	PZR SAFETY	43-D	1	A,C	6	RV	N	C	RT	T	NA		M-77	2485#
8010B	PZR SAFETY	43-D	1	A,C	6	RV	N	C	RT	T	NA		M-77	2485#
8010C	PZR SAFETY	42-D	1	A,C	6	RV	N	C	RT	T	NA		M-77	2485#
8028	RV DISC HDR TO PRT ISOL IC	47-C	2	A,C	4	CK	N	C	LT	J	c		V-671	
									EM	R	o/c	R014	V-18	RV function
8029	PRI WTR TO PRT ISOL OC	48-D	2	A	3	BA	A	O	PI	2Y	NA		V-2J7	
									LT	J	c		V-652A	
									EF	Q	10c		V-3S7	

REACTOR COOLANT SYSTEM P & ID NO. 1020 07

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8034A	PRT TO GA ISOL IC	48-E	2	A	3/8	GL	A	O	PI	2Y	NA		V-204	
									LT	J	c		V-676B	
									EF	Q	10c		V-3S8	
8034B	PRT TO GA ISOL OC	48-E	2	A	3/8	GL	A	C	PI	2Y	NA		V-2J7	
									LT	J	c		V-676B	
									EF	Q	10c		V-3S8	
8045	N2 TO PRT ISOL OC	48-E	2	A	3/4	DI	A	O	PI	2Y	NA		V-2J7	
									LT	J	c		V-652B	
									EF	Q	10c		V-3S8	
8046	PRI WTR TO PRT ISOL IC	48-D	2	A,C	3	CK	N	C	LT	R	c		V-652A	
									EC	R	c	RR2	V-652A	
8047	N2 TO PRT ISOL IC	48-E	2	A,C	3/4	CK	N	C	LT	R	c		V-652B	
									EC	R	c	RR2	V-652B	
8078A	REACTOR VESSEL HEAD VENT	75-B	2	B	1	GL	S	LC	PI	2Y	NA		V-2T2	
									EF	CS	10o	CS7	V-2T2	
8078B	REACTOR VESSEL HEAD VENT	75-B	2	B	1	GL	S	LC	PI	2Y	NA		V-2T2	
									EF	CS	10o	CS7	V-2T2	
8078C	REACTOR VESSEL HEAD VENT	75-B	2	B	1	GL	S	LC	PI	2Y	NA		V-2T2	
									EF	CS	10o	CS7	V-2T2	
8078D	REACTOR VESSEL HEAD VENT	75-B	2	B	1	GL	S	LC	PI	2Y	NA		V-2T2	
									EF	CS	10o	CS7	V-2T2	

CHEMICAL AND VOLUME CONTROL SYSTEM P & ID NO. 1020 08

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-110A	BA SUP TO BLENDER	40B-B	2	B	2	GL	A	C	PI	2Y	NA		V-2K	
									EF	Q	10o		V-3E1	#5 - Hosgri
LCV-112B	VCT OUT ISOL	43B-D	IWV	B	4	GA	E	O	PI	2Y	NA		V-2I1	
									EF	CS	10c	CS8	V-3K12	
LCV-112C	VCT OUT ISOL	43B-D	IWV	B	4	GA	E	O	PI	2Y	NA		V-2I1	
									EF	CS	10c	CS8	V-3K12	
8100	RCP SEAL WTR RETRN ISOL OC	39-E	2	A	4	GA	E	O	PI	2Y	NA		V-2I1	
									LT	J	c		V-645	
									EF	CS	10c	CS9	V-3K2	
8104	EMERG BORATE	41B-A	2	B	2	GL	E	C	PI	2Y	NA		V-2K	
									EF	Q	10o		V-3E5	
8105	CENT CHG PP RECIRC	41B-A	IWV	B	2	GL	E	O	PI	2Y	NA		V-2I1	
									EF	CS	10c	CS10	V-3K9	
8106	CENT CHG PP RECIRC	41B-A	2	B	2	GL	E	O	PI	2Y	NA		V-2I1	
									EF	CS	10c	CS10	V-3K9	
8107	CHG LINE ISOL OC	47B-C	2	B	3	GA	E	O	PI	2Y	NA		V-2I1	
									EF	CS	14c	CS11	V-3K13	
8108	CHG LINE ISOL	47B-C	2	B	3	GA	E	O	PI	2Y	NA		V-2I1	
									EF	CS	14c	CS11	V-3K13	
8109	RCP SEAL WTR RETRN ISOL IC	38-D	2	A,C	3/4	CK	N	O	LT	R	c		V-645	
									EC	R	c	RR2	V-645	
									EC	R	o	R015	V-645	RV function

CHEMICAL AND VOLUME CONTROL SYSTEM P & ID NO. 1020 08

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8112	RCP SEAL WTR RETRN ISOL IC	38-E	2	A	4	GA	E	O	PI	2Y	NA		V-2I1	
									LT	J	c		V-645	
									EF	CS	10c	CS9	V-3K2	
8145	PZR AUX SPRAY	43-D	1	B	2	GL	A	C	PI	2Y	NA		V-2S	
									EF	CS	10o	CS12	V-3K8	
8146	NORMAL CHG	43-D	1	B	3	GL	A	O	PI	2Y	NA		V-2S	
									EF	CS	20o	CS32	V-3K5	
8147	ALTERNATE CHG	42-D	1	B	3	GL	A	C	PI	2Y	NA		V-2S	
									EF	CS	20o	CS32	V-3K5	
8148	PZR AUX SPRAY BYP	43-D	1	B	2	GL	A	C	PI	2Y	NA		V-2S	
									EF	CS	10o	CS12	V-3K8	
8149A	LTDN ORF RO-27 ISOL IC	43-C	2	A	2	GL	A	C	PI	2Y	NA		V-2Y	
									LT	J	c		V-635	
									EF	CS	10c	CS30	V-3K7A	

CHEMICAL AND VOLUME CONTROL SYSTEM P & ID NO. 1020 08

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8149B	LTDN ORF RO-27 ISOL IC	43-C	2	A	2	GL	A	C	PI	2Y	NA		V-2Y	
									LT	J	c		V-635	
									EF	CS	10c	CS30	V-3K7A	
8149C	LTDN ORF RO-27 ISOL IC	43-C	2	A	2	GL	A	C	PI	2Y	NA		V-2Y	
									LT	J	c		V-635	
									EF	CS	10c	CS30	V-3K7A	
8152	LTDN LINE ISOL OC	44-C	2	A	2	GL	A	O	PI	2Y	NA		V-2J8	
									LT	J	c		V-635	
									EF	CS	10c	CS13	V-3K7B	
8367A	RCP-1 SEAL INJ 2ND CK IC	31-C	1	C	2	CK	N	O	EC	Q	o		M-54	
8367B	RCP-2 SEAL INJ 2ND CK IC	33-C	1	C	2	CK	N	O	EC	Q	o		M-54	
8367C	RCP-3 SEAL INJ 2ND CK IC	35-C	1	C	2	CK	N	O	EC	Q	o		M-54	
8367D	RCP-4 SEAL INJ 2ND CK IC	37-C	1	C	2	CK	N	O	EC	Q	o		M-54	
8368A	RCP-1 SEAL INJ 1ST CK IC	30-B	2	A,C	2	CK	N	O	LT	R	c		V-641	
									EC	R	c	RR2	V-641	
									EC	Q	o		M-54	
8368B	RCP-2 SEAL INJ 1ST CK IC	33-B	2	A,C	2	CK	N	O	LT	R	c		V-641	
									EC	R	c	RR2	V-641	
									EC	Q	o		M-54	
8368C	RCP-3 SEAL INJ 1ST CK IC	35-B	2	A,C	2	CK	N	O	LT	R	c		V-641	
									EC	R	c	RR2	V-641	
									EC	Q	o		M-54	
8368D	RCP-4 SEAL INJ 1ST CK IC	37-B	2	A,C	2	CK	N	O	LT	R	c		V-641	
									EC	R	c	RR2	V-641	
									EC	Q	o		M-54	

CHEMICAL AND VOLUME CONTROL SYSTEM P & ID NO. 1020 08

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8372A	RCP-1 SEAL INJ 3RD CK IC	30-B	1	C	2	CK	N	O	EC	Q	o		M-54	
8372B	RCP-2 SEAL INJ 3RD CK IC	33-B	1	C	2	CK	N	O	EC	Q	o		M-54	
8372C	RCP-3 SEAL INJ 3RD CK IC	35-B	1	C	2	CK	N	O	EC	Q	o		M-54	
8372D	RCP-4 SEAL INJ 3RD CK IC	37-B	1	C	2	CK	N	O	EC	Q	o		M-54	
8377	PZR AUX SPRAY CK	42-E	1	C	2	CK	N	C	EC	CS	o	CS12	V-3K8	
8378A	CHG TO LOOP 3 COLD LEG CK	41-E	1	C	3	CK	N	O	EC	CS	o	CS32	V-3K5	
8378B	CHG TO LOOP 4 COLD LEG CK	41-E	1	C	3	CK	N	O	EC	CS	o	CS32	V-3K5	
8378C	CHG LINE CK	43-B	2	C	3	CK	N	O	EC	CS	o	CS32	V-3K5	
8379A	CHG TO LOOP 3 COLD LEG CK	41-E	1	C	3	CK	N	O	EC	CS	o	CS32	V-3K5	
8379B	CHG TO LOOP 4 COLD LEG CK	41-E	1	C	3	CK	N	O	EC	CS	o	CS32	V-3K5	
8440	VCT OUTLET CK	143-C	2	C	4	CK	N	O	EC	R	c	R011	M-86G	#7-OPEN
8445	EMER BORATE REV FLO CK	41B-B	2	C	2	CK	N	C	EC	Q	o		V-3E5	
8475	RECIP CHG PP-3 DISCH CK	45B-C	2	C	2	CK	N	O	EC	Q	o		P-PDP	
									EC	R	c	R02	V-25	
8478A	CENT CHG PP-1 DISCH CK	45B-B	2	C	4	CK	N	C	EP	Q	o		P-CCP	
									EC	R	o	R02	V-15	
									EC	R	c	R02	V-25	
8478B	CENT CHG PP-2 DISCH CK	45B-A	2	C	4	CK	N	C	EP	Q	o		P-CCP	
									EC	R	o	R02	V-15	
									EC	R	c	R02	V-25	

CHEMICAL AND VOLUME CONTROL SYSTEM P & ID NO. 1020 08

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8479A	CENT CHG PP-1 RECIRC CK	44B-B	2	C	2	CK	N	C	EC	Q	o		P-CCP	
8479B	CENT CHG PP-1 RECIRC CK	45B-A	2	C	2	CK	N	C	EC	Q	o		P-CCP	
8483	CHG FLO TO CL 3 BYPAS CK	42-E	1	C	3/4	CK	N	C	EC	R	o	RO17	V-15	RV function
8487A	BA TRANSFER PP-2 (PP-1) DISCH CK	52B-B (57B-B)	2	C	2	CK	N	O	EC	Q	o		P-BAT	
8487B	BA TRANSFER PP-1 (PP-2) DISCH CK	52B-A (57B-A)	2	C	2	CK	N	O	EC	Q	o		P-BAT	
RV-8116	PDP RV TO VCT1	44B-D	2	C	3/4x1	RV	N	C	RT	T	o		M-77	2720#
RV-8117	LETDOWN RV TO PRT	44-C	2	C	2	RV	N	C	RT	T	o		M-77	600#
RV-8121	RCP SEAL WTR RETURN HDR RV	37-E	2	C	2	RV	N	C	RT	T	o		M-77	150#
RV-8123	SEAL WTR HX1 INLT RV TO VCT	41B-D	NA	C	2	RV	N	C	RT	T	o		M-77	150#
RV-8125	CHG PPS SUC HDR REL TO PZR	40D-B (43B-B)	2	C	3/4	RV	N	C	RT	T	o		M-77	220#

SAFETY INJECTION SYSTEM P & ID NO. 1020 09

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
SI-161	FI-927 ISOL OC	42-E	2	A	3/4	GL	M	LC	LT	J	c		V-651B	
8801A	CHG INJ TO RCS	43-D	2	B	4	GA	E	C	PI	2Y	NA		V-2J6	|
									EF	Q	10o		V-3E9	
8801B	CHG INJ TO RCS	43-C	2	B	4	GA	E	C	PI	2Y	NA		V-2J6	|
									EF	Q	10o		V-3E9	
8802A	SI PP-1 DISCH ISOL OC	54-E	2	A	4	GA	E	LC	PI	2Y	NA		V-2J6	
									LT	R*	c		V-7E	*Per Tech Spec
									EF	CS	20o	CS14	V-3L1	
8802B	SI PP-2 DISCH ISOL OC	54-D	2	A	4	GA	E	LC	PI	2Y	NA		V-2J6	
									LT	R*	c		V-7E	*Per Tech Spec
									EF	CS	20o	CS14	V-3L1	
8803A	CHG INJ TO RCS	45-C	2	B	4	GA	E	C	PI	2Y	NA		V-2C	
									EF	Q	10o		V-3E11	
8803B	CHG INJ TO RCS	45-B	2	B	4	GA	E	C	PI	2Y	NA		V-2C	
									EF	Q	10o		V-3E11	
8804A	CHG PP SUCT FROM RHR	48-B	2	B	8	GA	E	C	PI	2Y	NA		V-2V1	
									EF	R	20o	R03	V-3L16	
8804B	SI PP SUCT FROM RHR	58-C	2	B	8	GA	E	C	PI	2Y	NA		V-2V1	
									EF	R	20o	R03	V-3L16	
8805A	RWST TO CHG PP SUCT	48-C	2	B	8	GA	E	C	PI	2Y	NA		V-2Z	
									EF	CS	11o	CS26	V-3K11	

SAFETY INJECTION SYSTEM P & ID NO. 1020 09

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8805B	RWST TO CHARG PP SUCT	48-C	2	B	8	GA	E	C	PI	2Y	NA		V-2Z	
									EF	CS	11o	CS26	V-3K11	
8807A	SI PP1 SUC TO CCP SUC XTIE	48-B	2	B	4	GA	E	C	PI	2Y	NA		V-2H	
									EF	Q	20o		V-3L3	
8807B	SI PP1 SUC TO CCP SUC XTIE	48-B	2	B	4	GA	E	C	PI	2Y	NA		V-2H	
									EF	Q	20o		V-3L3	
8808A	ACCUM-1 DISCH ISOL	31-D	2	B	10	GA	E	LO	PI	2Y	NA		V-2P1	
									EF	CS	30o	CS33	V-3L4	
8808B	ACCUM-2 DISCH ISOL	33-D	2	B	10	GA	E	LO	PI	2Y	NA		V-2P1	
									EF	CS	30o	CS33	V-3L4	
8808C	ACCUM-3 DISCH ISOL	35-D	2	B	10	GA	E	LO	PI	2Y	NA		V-2P1	
									EF	CS	30o	CS33	V-3L4	
8808D	ACCUM-4 DISCH ISOL	37-D	2	B	10	GA	E	LO	PI	2Y	NA		V-2P1	
									EF	CS	30o	CS33	V-3L4	
8809A	RHR TO CLD LEGS-1&2 ISOL OC	54-C	2	B	8	GA	E	LO	PI	2Y	NA		V-2J3	
									EF	CS	20c	CS15	V-3L5	
8809B	RHR TO CLD LEGS-3&4 ISOL OC	54-B	2	B	8	GA	E	LO	PI	2Y	NA		V-2J3	
									EF	CS	20c	CS15	V-3L5	
8818A	RHR TO COLD LEG-1 CK	52-C	1	A,C	6	CK	N	C	LT	R*	c		V-5A2	*Per Tech Spec
									EN	R	o	R013	V-18B	
8818B	RHR TO COLD LEG-2 CK	52-B	1	A,C	6	CK	N	C	LT	R*	c		V-5A2	*Per Tech Spec
									EN	R	o	R013	V-18B	

SAFETY INJECTION SYSTEM P & ID NO. 1020 09

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8818C	RHR TO COLD LEG-3 CK	52-B	1	A,C	6	CK	N	C	LT	R*	c		V-5A2	*Per Tech Spec
									EN	R	o	R013	V-18B	
8818D	RHR TO COLD LEG-4 CK	52-A	1	A,C	6	CK	N	C	LT	R*	c		V-5A2	*Per Tech Spec
									EN	R	o	R013	V-18B	
8819A	SI TO COLD LEG-1 CK	52-C	1	A,C	2	CK	N	C	LT	R*	c		V-5A1	*Per Tech Spec
									EC	R	o	R04	V-15	
8819B	SI TO COLD LEG-2 CK	52-B	1	A,C	2	CK	N	C	LT	R*	c		V-5A1	*Per Tech Spec
									EC	R	o	R04	V-15	
8819C	SI TO COLD LEG-3 CK	50-B	1	A,C	2	CK	N	C	LT	R*	c		V-5A1	*Per Tech Spec
									EC	R	o	R04	V-15	
8819D	SI TO COLD LEG-4 CK	50-A	1	A,C	2	CK	N	C	LT	R*	c		V-5A1	*Per Tech Spec
									EC	R	o	R04	V-15	
8820	CHG INJ 2ND OFF CK	41-D	1	C	3	CK	N	C	EP	CS	o	R09	V-4A	
									EC	R	o	R09	V-15	
8821A	SI PP-1 DISCH ISOL	55-E	2	B	4	GA	E	O	PI	2Y	NA		V-2J6	
									EF	Q	20c		V-3L2A	
8821B	SI PP-2 DISCH ISOL	55-D	2	B	4	GA	E	O	PI	2Y	NA		V-2J6	
									EF	Q	20c		V-3L2B	
8835	SI COLD INJECT ISOL OC	54-C	2	B	4	GA	E	LO	PI	2Y	NA		V-2J6	
									EF	CS	20c	CS16	V-3L6	

SAFETY INJECTION SYSTEM P & ID NO. 1020 09

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8871	SI TEST LINE ISOL IC	38-C	2	A	3/4	GL	A	C	PI	2Y	NA		V-201	
									LT	J	c		V-651B	
									EF	Q	10c		V-3S5	
8875A	SI ACCUM 1 NIT FILL & VENT	171-E	2	B	1	GL	A	C	PI	2Y	NA		V-2P2	
8875B	SI ACCUM 2 NIT FILL & VENT	173-E	2	B	1	GL	A	C	PI	2Y	NA		V-2P2	
8875C	SI ACCUM 3 NIT FILL & VENT	175-E	2	B	1	GL	A	C	PI	2Y	NA		V-2P2	
8875D	SI ACCUM 4 NIT FILL & VENT	177-E	2	B	1	GL	A	C	PI	2Y	NA		V-2P2	
8876A	SI ACCUM 1 DRAIN	170-D	IWV	B	1	GL	A	C	PI	2Y	NA		V-2P2	
8876B	SI ACCUM 2 DRAIN	172-D	IWV	B	1	GL	A	C	PI	2Y	NA		V-2P2	
8876C	SI ACCUM 3 DRAIN	174-D	IWV	B	1	GL	A	C	PI	2Y	NA		V-2P2	
8876D	SI ACCUM 4 DRAIN	177-D	IWV	B	1	GL	A	C	PI	2Y	NA		V-2P2	
8880	N2 SUP TO ACCUM ISOL OC	39-E	2	A	1	GL	A	O	PI	2Y	NA		V-2J7	
									LT	J	c		V-651A	
									EF	Q	10c		V-3S5	
8883	SI PP-1 TO TST LINE ISO OC	54-E	2	A	3/4	GL	A	C	PI	2Y	NA		V-2J7	
									LT	J	c		V-651B	
									EF	Q	10c		V-3S5	
8900A	CHG INJ LOOP-1 CK	40-E	1	C	1.5	CK	N	C	EC	R	o	R09	V-15	
8900B	CHG INJ LOOP-2 CK	40-B	1	C	1.5	CK	N	C	EC	R	o	R09	V-15	
8900C	CHG INJ LOOP-3 CK	40-C	1	C	1.5	CK	N	C	EC	R	o	R09	V-15	
8900D	CHG INJ LOOP-4 CK	40-D	1	C	1.5	CK	N	C	EC	R	o	R09	V-15	

SAFETY INJECTION SYSTEM P & ID NO. 1020 09

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8905A	SI TO HOT LEG-1 CK	52-E	1	A,C	2	CK	N	C	EC	R	o	RO4	V-15	
									LT	R*	c		V-5C	*Per Tech Spec
8905B	SI TO HOT LEG-2 CK	52-E	1	A,C	2	CK	N	C	EC	R	o	RO4	V-15	
									LT	R*	c		V-5C	*Per Tech Spec
8905C	SI TO HOT LEG-3 CK	52-D	1	A,C	2	CK	N	C	EC	R	o	RO4	V-15	
									LT	R*	c		V-5C	*Per Tech Spec
8905D	SI TO HOT LEG-4 CK	52-D	1	A,C	2	CK	N	C	EC	R	o	RO4	V-15	
									LT	R*	c		V-5C	*Per Tech Spec
8916	N2 SUP TO ACCUM CK IC	38-E	2	A,C	1	CK	N	C	LT	R	c		V-651A	
									EC	R	c	RR2	V-651A	
8919A	SI PP-1 TO RWST CK	57-E	2	C	3/4	CK	N	C	EC	Q	o		P-SIP	
8919B	SI PP-2 TO RWST CK	57-D	2	C	3/4	CK	N	C	EC	Q	o		P-SIP	
8922A	SI PP-1 DISCH CK	56-E	2	C	4	CK	N	C	EC	R	o	RO5	V-15	
									EC	Q	c		P-SIP	
8922B	SI PP-2 DISCH CK	56-D	2	C	4	CK	N	C	EC	R	o	RO5	V-15	
									EC	Q	c		P-SIP	
8923A	SI PP-1 SUCT	58-E	2	B	6	GA	E	O	PI	2Y	NA		V-2H	
									EF	Q	30c		V-3L10A	
8923B	SI PP-2 SUCT	58-D	2	B	6	GA	E	O	PI	2Y	NA		V-2H	
									EF	Q	30c		V-3L10B	
8924	RWST TO CHG PP CK	48-C	2	C	8	CK	N	C	EP	CS	o	RR3	V-3K10	
									EM	RR	o/c	RR3	V-18	

SAFETY INJECTION SYSTEM P & ID NO. 1020 09

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8948A	LOOP-1 COLD INJ CK	30-B	1	A,C	10	CK	N	C	LT	R*	c		V-5A2	*Per Tech Spec
									EN	RR	o	RR4	V-18A	
8948B	LOOP-2 COLD INJ CK	30-D	1	A,C	10	CK	N	C	LT	R*	c		V-5A2	*Per Tech Spec
									EN	RR	o	RR4	V-18A	
8948C	LOOP-3 COLD INJ CK	30-A	1	A,C	10	CK	N	C	LT	R*	c		V-5A2	*Per Tech Spec
									EN	RR	o	RR4	V-18A	
8948D	LOOP-4 COLD INJ CK	30-A	1	A,C	10	CK	N	C	LT	R*	c		V-5A2	*Per Tech Spec
									EN	RR	o	RR4	V-18A	
8949A	SI TO HOT LEG-1 CK	50-E	1	A,C	6	CK	N	C	EC	R	o	R06	V-15	
									LT	R*	c		V-5C	*Per Tech Spec
8949B	SI TO HOT LEG-2 CK	50-E	1	A,C	6	CK	N	C	EC	R	o	R06	V-15	
									LT	R*	c		V-5C	*Per Tech Spec
8949C	SI TO HOT LEG-3 CK	50-D	1	A,C	6	CK	N	C	EC	R	o	R06	V-15	
									LT	R*	c		V-5C	*Per Tech Spec
8949D	SI TO HOT LEG-4 CK	50-D	1	A,C	6	CK	N	C	EC	R	o	R06	V-15	
									LT	R*	c		V-5C	*Per Tech Spec
8956A	ACCUM-1 DISCH CK	31-C	1	A,C	10	CK	N	C	LT	R*	c		V-5A1	*Per Tech Spec
									EN	RR	o	RR5	V-18A	
8956B	ACCUM-2 DISCH CK	31-B	1	A,C	10	CK	N	C	LT	R*	c		V-5A1	*Per Tech Spec
									EN	RR	o	RR5	V-18A	
8956C	ACCUM-3 DISCH CK	31-A	1	A,C	10	CK	N	C	LT	R*	c		V-5A1	*Per Tech Spec
									EN	RR	o	RR5	V-18A	
8956D	ACCUM-4 DISCH CK	31-A	1	A,C	10	CK	N	C	LT	R*	c		V-5A1	*Per Tech Spec
									EN	RR	o	RR5	V-18A	

SAFETY INJECTION SYSTEM P & ID NO. 1020 09

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8961	SI TEST LINE ISOL OC	39-C	2	A	3/4	GL	A	C	PI	2Y	NA		V-2J7	
									LT	J	c		V-651B	
									EF	Q	10c		V-3S5	
8974A	SI RECIRC TO RWST	57-D	IWV.	B	2	GL	E	LO	PI	2Y	NA		V-2V1	
									EF	CS	10c	CS17	V-3L15	
8974B	SI RECIRC TO RWST	57-D	2	B	2	GL	E	LO	PI	2Y	NA		V-2V1	
									EF	CS	10c	CS17	V-3L15	
8976	RWST TO SI PP ISOL	59-D	2	B	8	GA	E	LO	PI	2Y	NA		V-2J6	
									EF	CS	20c	CS18	V-3L13	
8977	RWST TO SI PP CK	59-D	2	C	8	CK	N	C	EP	Q	o		P-SIP	
									EM	RR	o/c	RR6	V-18	
8980	RWST TO RHR PPS ISOL OC	59-B	2	B	12	GA	E	LO	PI	2Y	NA		V-2J3	
									EF	CS	25c	CS19	V-3L14	
8981	RWST TO RHR PP CK	59-B	2	C	12	CK	N	C	EM	R	o/c	RO7	V-18	
8982A	CONT RCRC SMP TO RHRP1 ISO	52-A	2	B	14	GA	E	LC	PI	2Y	NA		V-206	
									EF	R	25o	RO8	V-3L17	
8982B	CONT RCRC SMP TO RHRP2 ISO	53-A	2	B	14	GA	E	LC	PI	2Y	NA		V-206	
									EF	R	25o	RO8	V-3L17	
RV-8851	SI TO CL RELIEF TO PRT	55-D	2	C	3/4	RV	N	C	RT	T	o		M-77	1750#
RV-8853A	SI PP1 DISCH TO PRT RV	55-E	2	C	3/4x1	RV	N	C	RT	T	o		M-77	1750#
RV-8853B	SI PP2 DISCH TO PRT RV	54-D	2	C	3/4x1	RV	N	C	RT	T	o		M-77	1750#
RV-8855A	ACCUM 1 PRES RV	31-E	2	C	1	RV	N	C	RT	T	o		M-77	700#
RV-8855B	ACCUM 2 PRES RV	34-E	2	C	1	RV	N	C	RT	T	o		M-77	700#
RV-8855C	ACCUM 3 PRES RV	36-E	2	C	1	RV	N	C	RT	T	o		M-77	700#

SAFETY INJECTION SYSTEM P & ID NO. 1020 09

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
RV-8855D	ACCUM 4 PRES RV	38-E	2	C	1	RV	N	C	RT	T	o		M-77	700#
RV-8856A	RHR PP1 DISCH TO PRT RV	54-B	2	C	2X3	RV	N	C	RT	T	o		M-77	600#
RV-8856B	RHR PP2 DISCH TO PRT RV	54-B	2	C	2X3	RV	N	C	RT	T	o		M-77	600#
RV-8858	RWST TO SI PP SUCT RV	58-D	2	C	3/4	RV	N	C	RT	T	o		M-77	220#

RESIDUAL HEAT REMOVAL SYSTEM P & ID NO. 1020 10

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-641A	RHR PP-1 RECIRC	34-E	2	B	2	GL	E	C	PI	2Y	NA		V-2D	
									EF	Q	10o/c		V-3M1A	
FCV-641B	RHR PP-2 RECIRC	34-B	2	B	2	GL	E	C	PI	2Y	NA		V-2D	
									EF	Q	10o/c		V-3M1B	
HCV-637	RHR HX-2 OUTLET	31-B	2	B	8	BA	A	O	EF	Q	30o		V-3M2B	
									PI	2Y	NA		V-2J3	
HCV-638	RHR HX-1 OUTLET	31-D	2	B	8	BA	A	O	EF	Q	30o		V-3M2A	
									PI	2Y	NA		V-2J3	
8700A	RHR PP-1 SUCT OC	37-D	2	B	14	GA	E	O	PI	2Y	NA		V-2D2	
									EF	Q	120c		V-3M4A	
8700B	RHR PP-2 SUCT OC	37-B	2	B	14	GA	E	O	PI	2Y	NA		V-2D2	
									EF	Q	120c		V-3M4B	
8701	RCS LOOP-4 TO RHR IC	38-D	1	A	14	GA	E	LC	PI	2Y	NA		V-2D3	
									LT	R*	c		V-7C	*Per Tech Spec
									EF	CS	160o/c	CS31	V-3M5	
8702	RCS LOOP-4 TO RHR	39-D	1	A	14	GA	E	LC	PI	2Y	NA		V-2D3	
									LT	R*	c		V-7C	*Per Tech Spec
									EF	CS	160o/c	CS31	V-3M5	
8703	RHR TO HOT LEGS-1, 2 IC	38-B	2	A	12	GA	E	LC	PI	2Y	NA		V-2M3	
									EF	CS	85o	CS20	V-3M6	
									LT	R*	c		V-7D	*Per Tech Spec

RESIDUAL HEAT REMOVAL SYSTEM P & ID NO. 1020 10

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8716A	RHR TRAIN XTIE OC	30-D	2	B	8	GA	E	O	PI	2Y	NA		V-2J3	
									EF	CS	20o/c	CS27	V-3M7	
8716B	RHR TRAIN XTIE OC	30-C	2	B	8	GA	E	O	PI	2Y	NA		V-2J3	
									EF	CS	20o/c	CS27	V-3M7	
8730A	RHR PP-1 DISCH CK	35-D	2	C	8	CK	N	C	EP	Q	o		P-RHR	
									EC	CS	o	CS21	V-4A	
8730B	RHR PP-2 DISCH CK	35-C	2	C	8	CK	N	C	EP	Q	o		P-RHR	
									EC	CS	o	CS21	V-4A	
8740A	RHR TO HOT LEG-1 CK	39-B	1	A/C	8	CK	N	C	EN	R	o	R012	V-18C	
									LT	R*	c		V-5C	*Per Tech Spec
8740B	RHR TO HOT LEG-2 CK	39-A	1	A/C	8	CK	N	C	EN	R	o	R012	V-18C	
									LT	R*	c		V-5C	*Per Tech Spec
8742A	RHR HT EX-1 DISCH CK	32-D	2	C	8	CK	N	C	EC	CS	o	CS28	V-4A	
									EC	Q	c		P-RHR	
8742B	RHR HT EX-2 DISCH CK	32-B	2	C	8	CK	N	C	EC	CS	o	CS28	V-4A	
									EC	Q	c		P-RHR	
RV-8707	RHR PPS SUCT FROM HL4 RV	38-D	2	C	3x4	RV	N	C	RT	T	o		M-77	450#
RV-8708	RHR TO HL1&2 TO PRT RV	38-B	2	C	3/4x1	RV	N	C	RT	T	o		M-77	600#

NUCLEAR STEAM SUPPLY SAMPLING SYSTEM P & ID NO. 1020 11

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
9354A	PZR STM SAMPLE ISOL IC	21-A	2	A	3/8	GL	A	O	PI	2Y	NA		V-203	
									LT	J	c		V-676A	
									EF	Q	10c		V-3S1	
9354B	PZR STM SAMPLE ISOL OC	22-A	2	A	3/8	GL	A	O	PI	2Y	NA		V-2J1	
									LT	J	c		V-676A	
									EF	Q	10c		V-3S1	
9355A	PZR LIQUID SAMPLE ISOL IC	21-B	2	A	3/8	GL	A	O	PI	2Y	NA		V-203	
									LT	J	c		V-659A	
									EF	Q	10c		V-3S1	
9355B	PZR LIQUID SAMPLE ISOL OC	22-B	2	A	3/8	GL	A	O	PI	2Y	NA		V-2J1	
									LT	J	c		V-659A	
									EF	Q	10c		V-3S1	
9356A	HOT LEG SAMPLE ISOL IC	21-B	2	A	3/8	GL	A	O	PI	2Y	NA		V-203	
									LT	J	c		V-659B	
									EF	Q	10c		V-3S1	

NUCLEAR STEAM SUPPLY SAMPLING SYSTEM P & ID NO. 1020 11

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
9356B	HOT LEG SAMPLE ISOL OC	22-B	2	A	3/8	GL	A	O	PI	2Y	NA		V-2J1	
									LT	J	c		V-659B	
									EF	Q	10c		V-3S1	
9357A	ACCUM SAMPLE ISOL IC	21-C	2	A	3/8	GL	A	O	PI	2Y	NA		V-203	
									LT	J	c		V-659C	
									EF	Q	10c		V-3S1	
9357B	ACCUM SAMPLE ISOL OC	22-C	2	A	3/8	GL	A	O	PI	2Y	NA		V-2J1	
									LT	J	c		V-659C	
									EF	Q	10c		V-3S1	

CONTAINMENT SPRAY SYSTEM P & ID NO. 1020 12

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
CS-31	CS PP-1 TO MEDT ISOL OC	33-D	2	A	.75	GL	M	LC	LT	J	c		V-631	PASSIVE
CS-32	CS PP-2 TO MEDT ISOL OC	33-A	2	A	.75	GL	M	LC	LT	J	c		V-630	PASSIVE
8992	CS ADD TK STOP	37-B	2	B	3	GA	E	LO	PI	2Y	NA		V-2G	PASSIVE
8994A	NaOH CS EDUCTOR ISOL	36-B	2	B	3	GA	E	C	PI	2Y	NA		V-2G	
									EF	CS	10o	CS22	V-3I2	
8994B	NaOH CS EDUCTOR ISOL	37-B	2	B	3	GA	E	C	PI	2Y	NA		V-2G	
									EF	CS	10o	CS22	V-3I2	
8998A	CS ADD TK OUT CK	35-C	2	A,C	3	CK	N	C	EC	CS	o	CS23	V-3I1	
									LT	2Y	c		V-21	
8998B	CS ADD TK OUT CK	35-B	2	A,C	3	CK	N	C	EC	CS	o	CS23	V-3I1	
									LT	2Y	c		V-21	
9001A	CS PP-1 ISOL	34-D	2	A	8	GA	E	C	PI	2Y	NA		V-2B	
									LT	J	c		V-631	
									EF	Q	10o		V-3I3	
9001B	CS PP-2 ISOL	34-A	2	A	8	GA	E	C	PI	2Y	NA		V-2B	
									LT	J	c		V-630	
									EF	Q	10o		V-3I3	

CONTAINMENT SPRAY SYSTEM P & ID NO. 1020 12

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
9002A	CS PP-1 DISCH CK	33-D	2	C	8	CK	N	C	EM	RR	o/c	RR10	V-18	
9002B	CS PP-2 DISCH CK	33-A	2	C	8	CK	N	C	EM	RR	o/c	RR10	V-18	
9003A	RHR HX-1 TO CS-A HDR	33-D	2	B	8	GA	E	C	PI	2Y	NA		V-2B2	
									EF	R	15o	R03	V-3I4	
9003B	RHR HX-2 TO CS-B HDR	33-B	2	B	8	GA	E	C	PI	2Y	NA		V-2B2	
									EF	R	15o	R03	V-3I4	
9011A	CS HDR-A ISOL CK IC	31-D	2	A,C	8	CK	N	C	LT	R	c		V-631	
									EM	RR	o	RR8	V-18	
9011B	CS HDR-B ISOL CK IC	31-A	2	A,C	8	CK	N	C	LT	R	c		V-630	
									EM	RR	o	RR8	V-18	
RV-930	CS ADD TK1 VAC BREAK	37-C	2	C	1.5	RV	N	C	RT	T	o		M-77	-1.5# vac
RV-931	CS ADD TK2 VAC BREAK	37-C	2	C	1.5	RV	N	C	RT	T	o		M-77	-1.5# vac
RV-8987	CS ADD TK1 TO AUX BLDG SMP	38-C	3	C	3/4x1	RV	N	C	RT	T	o		M-77	10#
RV-9007A	CS HDR A OC RV	32-D	2	C	3/4	RV	N	C	RT	T	o		M-77	260#
RV-9007B	CS HDR B OC RV	32-B	2	C	3/4	RV	N	C	RT	T	o		M-77	260#

COMPONENT COOLING WATER SYSTEM P & ID NO. 1020 14

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
CCW-4	SUCT X-TIE VLV BETWEEN HDRS B&C	(50-C)	3	B	20	BV	M	LO	EF	R	N/A	RO16	V-3H15	
									EP	Q	N/A		V-3H14	
CCW-5	SUCT X-TIE VLV BETWEEN HDRS A&C	(52-C)	3	B	20	BV	M	LO	EF	R	N/A	RO16	V-3H15	
									EP	Q	N/A		V-3H14	
CCW-16	CCW PP 2 DISCH TO HEADER B	(53-D)	3	B	20	BV	M	LO	EF	Q	N/A		P-CCW	
CCW-17	CCW PP 3 DISCH TO HEADER B	(55-D)	3	B	20	BV	M	LO	EF	Q	N/A		P-CCW	
CCW-18	CCW PP 1 DISCH TO HEADER A	(51-E)	3	B	20	BV	M	LO	EF	Q	N/A		P-CCW	
CCW-19	CCW PP 2 DISCH TO HEADER A	(53-E)	3	B	20	BV	M	LO	EF	Q	N/A		P-CCW	
CCW-23	CCW HEADER A TO C ISOLATION VALVE	(58-E)	3	B	24	BV	M	O	EF	Q	N/A		P-CCW	
CCW-24	CCW HEADER B TO C ISOLATION VALVE	(58-D)	3	B	24	BV	M	O	EF	Q	N/A		P-CCW	

COMPONENT COOLING WATER SYSTEM P & ID NO. 1020 14

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
CCW-581	CCW FCV-749 BYPASS CK IC	71-B	2	A,C	3/4	CK	N	C	LT	R	c		V-620	
									EC	R	o	R015	V-620	RV function
									EC	R	c	R015	V-620	
CCW-585	CCW TO RCP & RX VSL SUPPORT CK IC	72-E	2	A,C	10	CK	N	O	LT	R	c		V-619	
									EC	R	c	RR2	V-619	
CCW-601	CCW PP-1 HDR-A CK	52-E	3	C	20	CK	N	O	EC	Q	o/c		P-CCW	
CCW-602	CCW PP-2 HDR-A CK	53-E	3	C	20	CK	N	O	EC	Q	o/c		P-CCW	
CCW-603	CCW PP-3 HDR-A CK	55-E	3	C	20	CK	N	O	EC	Q	o/c		P-CCW	
CCW-607	CCW PP-1 HDR-B CK	52-D	3	C	20	CK	N	O	EC	Q	o/c		P-CCW	
CCW-608	CCW PP-2 HDR-B CK	53-D	3	C	20	CK	N	O	EC	Q	o/c		P-CCW	
CCW-609	CCW PP-3 HDR-B CK	55-D	3	C	20	CK	N	O	EC	Q	o/c		P-CCW	
CCW-670	CCW FCV-750 BYPASS CK IC	73-B	2	A,C	3/4	CK	N	C	LT	R	c		V-621	
									EC	R	o	R015	V-621	RV function
									EC	R	c	R015	V-621	
CCW-695	CCW TO EXCS LTDN HX CK OC	98-D	2	A,C	4	CK	N	O	LT	R	c		V-623	
									EC	R	c	RR2	V-623	
FCV-355	CCW HDR-C ISOL	59-D	2	B	20	BV	E	O	PI	2Y	NA		V-2F	
									EF	CS	20c	CS24	V-3H3	
FCV-356	CCW TO RCP & RX VSL SUPPORT ISOL OC	72-E	2	A	10	BV	E	O	PI	2Y	NA		V-2J2	
									LT	J	c		V-619	
									EF	CS	25c	CS24	V-3H4	
FCV-357	RCP THM BAR CCW RTN ISO OC	73-B	2	A	6	GL	E	O	PI	2Y	NA		V-2J2	
									LT	J	c		V-621	
									EF	CS	30c	CS24	V-3H5	

COMPONENT COOLING WATER SYSTEM P & ID NO. 1020 14

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-361	CCW FRM XCS LTDN HX ISO OC	98-B	2	A	4	BV	A	C	PI	2Y	NA		V-2J2	
	OC								LT	J	c		V-623	
									EF	Q	10c		V-3S6	
FCV-363	RCP'S CLR CCW RTN ISOL OC	72-B	2	A	6	BV	E	O	PI	2Y	NA		V-2J2	
									LT	J	c		V-620	
									EF	CS	25c	CS24	V-3H6	
FCV-364	RHR HX-2 CCW RETURN	60-C	3	B	12	BV	A	C	PI	2Y	NA		V-2H	
									EF	Q	10o		V-3H7	
FCV-365	RHR HX-1 CCW RETURN	104-C	3	B	12	BV	A	C	PI	2Y	NA		V-2H	
									EF	Q	10o		V-3H7	
FCV-430	CCW HX-1 OUT ISOL	58-E	3	B	30	BV	E	O	PI	2Y	NA		V-2F	
									EF	Q	30o		V-3H8	
FCV-431	CCW HX-2 OUT ISOL	58-D	3	B	30	BV	E	O	PI	2Y	NA		V-2F	
									EF	Q	30o		V-3H8	
FCV-749	RCP'S CLR CCW RTN ISOL IC	72-B	2	A	6	BV	E	O	PI	2Y	NA		V-202	
									LT	J	c		V-620	
									EF	CS	20c	CS24	V-3H10	
FCV-750	RCP THM BAR CCW RTN ISO IC	73-B	2	A	6	GL	E	O	PI	2Y	NA		V-202	
									LT	J	c		V-621	
									EF	CS	30c	CS24	V-3H9	
LCV-69	MU WTR TO CCW HDR-A	55-B	3	B	3	GL	A	C	EF	Q	10o		V-3H11	
LCV-70	MU WTR TO CCW HDR-B	55-B	3	B	3	GL	A	C	EF	Q	10o		V-3H11	
RCV-16	CCW SURGE TK VENT	56-C	3	B	3	BA	A	O	PI	2Y	NA		V-2F	
									EF	Q	10c		V-3H12	

COMPONENT COOLING WATER SYSTEM P & ID NO. 1020 14

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
RV-41	RCP3 THRML BARRIER CCW RTN	72-D	3	C	3/4x1	RV	N	C	RT	T	o		M-77	2335#
RV-42	RCP4 THRML BARRIER CCW RTN	73-D	3	C	3/4x1	RV	N	C	RT	T	o		M-77	2335#
RV-43	RCP2 THRML BARRIER CCW RTN	70-D	3	C	3/4x1	RV	N	C	RT	T	o		M-77	2335#
RV-44	RCP1 THRML BARRIER CCW RTN	74-D	3	C	3/4x1	RV	N	C	RT	T	o		M-77	2335#
RV-45	CCW SURGE TANK RV	57-C	3	C	3x4	RV	N	C	RT	T	o		M-77	30#
RV-46	FCV-365 BYPASS RV	103-C	3	C	3/4x1	RV	N	C	RT	T	o		M-77	70#
RV-47	CCW RTN FROM RHR HX2 RV	61-C	3	C	3/4x1	RV	N	C	RT	T	o		M-77	70#
RV-51	RCP'S LO CLG RTN TO CCW RV	72-C	3	C	3	RV	N	C	RT	T	o		M-77	150#
RV-52	CCW RTN XCES LTDN HX RV	98-C	2	C	3	RV	N	C	RT	T	o		M-77	150#

MAKEUP WATER SYSTEM P & ID NO. 1020 16

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
MU-963	AFW PP RECIRC TO CST CK	71-C (78-C)	3	C	2	CK	N	C	EC	Q	o		P-AFW	
MU-965	CST TO MU H2O XFR PPS CK	70-E (78-E)	3	C	4	CK	N	C	EC	Q	o		V-3U2	
MU-968	MU H2O XFR PP-01 DISCH CK	74-D	3	C	4	CK	N	C	EC	Q	o		V-3U2	
MU-970	MU H2O XFR PP-02 DISCH CK	75-D	3	C	4	CK	N	C	EC	Q	o		V-3U2	
MU-971	MU H2O TO MISC SOURCES CK	71-E (78-E)	3	C	4	CK	N	C	EC	Q	o		V-3U2	
MU-1555	CST H2O MIXING PP DISCH CK	71-C (78-D)	3	C	3	CK	N	O	EC	Q	c		V-3U1	

SALTWATER SYSTEM P & ID NO. 1020 17

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
SW-34	ASW PP-1 DISCH VAC RELIEF	32B-D (38A-E)	3	C	3	CK	N	C	EC	R	o/c	RO10	V-18	RV function
SW-170	ASW PP-1 DISCH VAC RELIEF	32B-D (38A-E)	3	C	3	CK	N	C	EC	R	o/c	RO10	V-18	RV function
SW-200	ASW PP-1 DISCH CK	34-C	3	C	24	CK	N	O	EC	Q	o/c		P-ASW	
SW-201	ASW PP-2 DISCH CK	34-C	3	C	24	CK	N	O	EC	Q	o/c		P-ASW	
SW-301	ASW PP-2 DISCH VAC RELIEF	31B-D (37A-E)	3	C	3	CK	N	C	EC	R	o/c	RO10	V-18	RV function
SW-303	ASW PP-2 DISCH VAC RELIEF	31B-D (37A-E)	3	C	3	CK	N	C	EC	R	o/c	RO10	V-18	RV function
FCV-495	ASW PP-2 CROSS TIE	35-C	3	B	24	BV	E	O	PI	2Y	NA		V-2A1	
									EF	Q	30o		V-3F1	
FCV-496	ASW PP-1 CROSS TIE	35-C	3	B	24	BV	E	O	PI	2Y	NA		V-2A1	
									EF	Q	30o		V-3F2	
FCV-601	ASW UNIT CROSS TIE	34-C	3	B	24	BV	E	C	PI	2Y	NA		V-2A2	
									EF	Q	30o		V-3F3	
FCV-602	CCW HX-1 SW INLET	36-C (35-C)	3	B	24	BV	A	O	PI	2Y	NA		V-2F	
									EF	Q	60o		V-3F4	UNIT 1
									(EF	Q	120o		V-3F4	UNIT 2)
FCV-603	CCW HX-2 SW INLET	35-B	3	B	24	BV	A	O	PI	2Y	NA		V-2F	
									EF	Q	60o		V-3F5	UNIT 1
									(EF	Q	90o		V-3F5	UNIT 2)

FIRE PROTECTION SYSTEM P & ID NO. 1020 18

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FP-180	CONT FIREWATER ISOL IC	73-B	2	A,C	4	CK	N	C	LT	J	c		V-679	
(FP-867)		(73-D)												
FCV-633	CONT FIREWATER ISOL OC	72-B	2	A	3	GL	A	O	PI	2Y	NA		V-2J7	
		(72-E)							LT	J	NA		V-679	
									EF	Q	10c		V-3S4	
FP-306	FIREWATER SUPPLY TO AUX FEED PPS	37-C	3	B	8	BV	M	C	EF	Q*	NA		V-3P4	*Per Tech Spec
FP-307	FIREWATER SUPPLY TO AUX FEED PPS	37-C	3	B	8	BV	M	C	EF	Q*	NA		V-3P4	*Per Tech Spec

LIQUID RADWASTE SYSTEM P & ID NO. 1020 19

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
LWS-60	N2 TO RCDT ISOL IC	38-C	2	A,C	3/4	CK	N	C	LT	R	c		V-652D	
									EC	R	c	RR2	V-652D	
FCV-253	RCDT PP DISCH ISOL IC	38-A	2	A	2.5	BA	A	O	PI	2Y	NA		V-205	
									LT	J	c		V-650	
									EF	Q	10c		V-3S3	
FCV-254	RCDT PP DISCH ISOL OC	39-A	2	A	2.5	BA	A	O	PI	2Y	NA		V-2J5	
									LT	J	c		V-650	
									EF	Q	10c		V-3S3	
FCV-255	RCDT VENT ISOL IC	38-B	2	A	3/4	BA	A	O	PI	2Y	NA		V-205	
									LT	J	c		V-651C	
									EF	Q	10c		V-3S3	
FCV-256	RCDT VENT ISOL OC	39-B	2	A	3/4	BA	A	O	PI	2Y	NA		V-2J5	
									LT	J	c		V-651C	
									EF	Q	10c		V-3S3	
FCV-257	RCDT GAS ANAL ISOL OC	39-B	2	A	1/2	BA	A	C	PI	2Y	NA		V-2J5	
									LT	J	c		V-651D	
									EF	Q	10c		V-3S3	

LIQUID RADWASTE SYSTEM P & ID NO. 1020 19

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-258	RCDT GAS ANAL ISOL IC	38-B	2	A	1/2	BA	A	O	PI	2Y	NA		V-205	
									LT	J	c		V-651D	
									EF	Q	10c		V-3S3	
FCV-260	N2 TO RCDT ISOL OC	38-C	2	A	3/4	BA	A	O	PI	2Y	NA		V-2J5	
									LT	J	c		V-652D	
									EF	Q	10c		V-3S3	
FCV-500	CONT SUMP DISCH ISOL IC	38-D	2	A	2	BA	A	O	PI	2Y	NA		V-205	
									LT	J	c		V-649	
									EF	Q	10c		V-3S3	
FCV-501	CONT SUMP DISCH ISOL OC	39-D	2	A	2	BA	A	O	PI	2Y	NA		V-2J5	
									LT	J	c		V-649	
									EF	Q	10c		V-3S3	
FCV-696	RX CAV SUMP SMPL SUP ISO IC	38-B	2	A	3/8	GL	S	C	PI	2Y	NA		V-682A	
									LT	R	c		V-682A	
									EF	CS	10o	CS25	V-3T5	
FCV-697	RX CAV SUMP SMPL SUP ISO OC	39-B	2	A	3/8	GL	S	C	PI	2Y	NA		V-682A	
									LT	R	c		V-682A	
									EF	CS	10o	CS25	V-3T5	

LIQUID RADWASTE SYSTEM P & ID NO. 1020 19

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
8767	REFUEL WTR PURIF ISOL OC	39-C	2	A	4	DI	M	LC	LT	J	c		V-646	PASSIVE
8787	REFUEL WTR PURIF ISOL OC	38-D	2	A	4	DI	M	LC	LT	J	c		V-646	PASSIVE
8795	REFUEL WTR PURIF ISOL IC	38-C	2	A	4	DI	M	LC	LT	J	c		V-646	PASSIVE
8796	REFUEL WTR PURIF ISOL IC	38-D	2	A	4	DI	M	LC	LT	J	c		V-646	PASSIVE

VENTILATION AND AIR CONDITIONING SYSTEM P & ID NO. 1020 23

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
VAC-1	CHP SUP FAN-1 ISOL OC	45-A (45A-D)	2	A	4	GA	M	LC	LT	R	c		V-683	
VAC-2	CHP SUP FAN-2 ISOL OC	34-A (45A-E)	2	A	4	GA	M	LC	LT	R	c		V-683	
VAC-21	CONT AIR SMPL RTN ISOL IC	44-B (111-C)	2	A,C	2	CK	N	O	LT	R	c		V-668	
									EC	R	c	RR2	V-668	
VAC-116	CONT AIR SMPL POST LOCA RTN ISOL IC	44-C (111-D)	2	A,C	3/8	CK	N	C	LT	R	c		V-682B	
									EC	R	c	RR2	V-682B	
VAC-200	CHP SUP ISOL IC CK	35-A (48A-D)	2	A,C	4	CK	N	C	LT	R	c		V-683	
VAC-201	CHP SUP ISOL IC CK	35-A (48A-C)	2	A,C	4	CK	N	C	LT	R	c		V-683	
VAC-252	CONT H2 SAMPLE RTN CK IC	44-D (131-B)	2	A,C	3/8	CK	N	C	LT	R	c		V-678	
									EC	R	c	RR2	V-678	
									EC	CS	o	CS25	V-3T3	
VAC-253	CONT H2 SAMPLE RTN CK IC	44-E (131-D)	2	A,C	3/8	CK	N	C	LT	R	c		V-678	
									EC	R	c	RR2	V-678	
									EC	CS	o	CS25	V-3T3	
FCV-235	CONT H2 SAMPLE SUP ISOL IC	44-C (131-A)	2	A	3/8	GL	S	LC	PI	2Y	NA		V-678	
									LT	R	c		V-678	
									EF	CS	10o	CS25	V-3T3	

VENTILATION AND AIR CONDITIONING SYSTEM P & ID NO. 1020 23

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-236	CONT H2 SAMPLE SUP ISOL OC	46-C	2	A	3/8	GL	S	LC	PI	2Y	NA		V-678	
		(133-A)							LT	R	c		V-678	
									EF	CS	10o	CS25	V-3T3	
FCV-237	CONT H2 SAMPLE RTN ISOL OC	46-D	2	A	3/8	GL	S	LC	PI	2Y	NA		V-678	
		(133-B)							LT	R	c		V-678	
									EF	CS	10o	CS25	V-3T3	
FCV-238	CONT H2 SAMPLE SUP ISOL IC	46-D	2	A	3/8	GL	S	LC	PI	2Y	NA		V-678	
		(131-C)							LT	R	c		V-678	
									EF	CS	10o	CS25	V-3T3	
FCV-239	CONT H2 SAMPLE SUP ISOL OC	46-D	2	A	3/8	GL	S	LC	PI	2Y	NA		V-678	
		(133-C)							LT	R	c		V-678	
									EF	CS	10o	CS25	V-3T3	
FCV-240	CONT H2 SAMPLE SUP ISOL OC	46-E	2	A	3/8	GL	S	LC	PI	2Y	NA		V-678	
		(30-B)							LT	R	c		V-678	
									EF	CS	10o	CS25	V-3T3	
FCV-654	INCOR CHILL WTR SUP ISOL OC	34-D	2	A	2	BA	A	O	PI	2Y	NA		V-2J7	
		(30-B)							LT	J	c		V-682D	
									EF	Q	10c		V-3S4	
FCV-655	INCOR CHILL WTR SUP ISOL IC	35-D	2	A	2	BA	A	O	PI	2Y	NA		V-204	
		(30-B)							LT	J	c		V-682D	
									EF	Q	10c		V-3S4	
FCV-656	INCOR CHILL WTR SUP ISOL OC	34-D	2	A	2	BA	A	O	PI	2Y	NA		V-2J7	
		(30-B)							LT	J	c		V-682D	
									EF	Q	10c		V-3S4	

VENTILATION AND AIR CONDITIONING SYSTEM P & ID NO. 1020 23

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-657	INCOR CHILL WTR SUP ISOL IC	35-D (30-B)	2	A	2	BA	A	O	PI	2Y	NA		V-204	
									LT	J	c		V-682D	
									EF	Q	10c		V-3S4	
FCV-658	CHP EXH SYS #2 DISCH ISO IC	35-B (48A-C)	2	A	4	GA	E	LC	PI	2Y	NA		V-2X	
									LT	J	c		V-681	
									EF	CS	15o	CS25	V-3T3	
FCV-659	CHP EXH SYS #1 DISCH ISO IC	35-B (34-C)	2	A	4	GA	E	LC	PI	2Y	NA		V-2X	
									LT	J	c		V-657	
									EF	CS	15o	CS25	V-3T3	
FCV-660	CONT PURGE SUP ISOL IC	35-C (34-C)	2	A	48	BV	A	C	PI	2Y	NA		V-2Q	
									LT	R	c		V-661	
									EF	CS	2c	CS29	V-3T7	
FCV-661	CONT PURGE SUP ISOL OC	34-C	2	A	48	BV	A	C	PI	2Y	NA		V-2E1	
									LT	R	c		V-661	
									EF	CS	2c	CS29	V-3T7	
FCV-662	CONT EXCESS PRES/VAC RLF ISOL IC	35-C (34-C)	2	A	12	BV	A	C	PI	2Y	NA		V-2Q	
									LT	R	c		V-663	
									EF	Q	5c		V-3T6	

VENTILATION AND AIR CONDITIONING SYSTEM P & ID NO. 1020 23

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-663	CONT XCESS PRES RLF ISO OC	31-C	2	A	12	BV	A	C	PI	2Y	NA		V-2E3	
		(34-C)							LT	R	c		V-663	
									EF	Q	5c		V-3T6	
FCV-664	CONT VAC RLF OC	32-C	2	A	12	BV	A	C	PI	2Y	NA		V-2E3	
		(34-C)							LT	R	c		V-663	
									EF	Q	5c		V-3T6	
FCV-668	CHP EXH SYS #2 DISCH ISO OC	34-B	2	A	4	GA	E	LC	PI	2Y	NA		V-2X	
		(47A-C)							LT	J	c		V-681	
									EF	CS	15o	CS25	V-3T3	
FCV-669	CHP EXH SYS #1 DISCH ISO OC	34-B	2	A	4	GA	E	LC	PI	2Y	NA		V-2X	
		(47A-B)							LT	J	c		V-657	
									EF	CS	15o	CS25	V-3T3	
FCV-678	CONT AIR SAMPLE SUP ISOL IC	44-A	2	A	1	BA	A	O	PI	2Y	NA		V-203	
		(111-B)							LT	J	c		V-668	
									EF	Q	10c		V-3T1	

VENTILATION AND AIR CONDITIONING SYSTEM P & ID NO. 1020 23

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
FCV-679	AIR SAMPLE SUP ISOL OC	46-A (113-B)	2	A	1	BA	A	O	PI	2Y	NA		V-2J1	
									LT	J	c		V-668	
									EF	Q	10c		V-3T1	
FCV-681	AIR SAMPLE RETURN ISOL OC	46-B (113-C)	2	A	1	BA	A	O	PI	2Y	NA		V-2J1	
									LT	J	c		V-668	
									EF	Q	10c		V-3T1	
FCV-698	AIR SAMPLE POST LOCA SUP ISOL OC	44-B (111-C)	2	A	3/8	GL	S	C	PI	2Y	NA		V-682B	
									LT	R	c		V-682B	
									EF	CS	10o	CS25	V-3T4	
FCV-699	AIR SAMPLE POST LOCA SUP ISOL OC	46-B (113-C)	2	A	3/8	GL	S	C	PI	2Y	NA		V-682B	
									LT	R	c		V-682B	
									EF	CS	10o	CS25	V-3T4	
FCV-700	AIR SAMPLE POST LOCA SUP ISOL OC	35-C (34-C)	2	A	3/8	GL	S	C	PI	2Y	NA		V-682B	
									LT	R	c		V-682B	
									EF	CS	10o	CS25	V-3T4	
RCV-11	PURGE EXHAUST ISOL IC	34-C	2	A	48	BV	A	C	PI	2Y	NA		V-2Q	
									LT	R	c		V-662	
									EF	CS	2c	CS29	V-3T7	
RCV-12	PURGE EXHAUST ISOL OC	34-C	2	A	48	BV	A	C	PI	2Y	NA		V-2E2	
									LT	R	c		V-662	
									EF	CS	2c	CS29	V-3T7	

COMPRESSED AIR SYSTEMS P & ID NO. 1020 25

VALVE NUMBER	VALVE DESCRIPTION	P & ID COORD	VLV CLS	VLV CAT	VLV SIZ	VLV TYP	ACT TYP	NRM POS	TST REQ	TST FRQ	STR TIM	REL REQ	PROC NO.	REMARKS
AIR-S-114	CONT SERV AIR SUP ISOL IC	41-D (48-D)	2	A,C	3	CK	N	C	LT	J	c		V-656	
AIR-S-200	CONT SERV AIR SUP ISOL OC	42-D (47-D)	2	A	3	BA	M	LC	LT	J	c		V-656	PASSIVE
AIR-I-585	CONT NORM INST AIR SUP ISOL BYPASS OC	42-C (47-C)	2	A	1.5	DI	M	LC	LT	J	c		V-654	PASSIVE
AIR-I-587	CONT NRM INST AIR SUP CK IC	42-D (47-D)	2	A,C	2	CK	N	O	LT	R	c		V-654	
									EC	R	c	RR2	V-654	
FCV-584	CNT NRM INST AIR SUP ISO OC	42-C (47-C)	2	A	2	BA	A	O	PI	2Y	NA		V-2J7	
									LT	J	c		V-654	
									EF	Q	10c		V-3S4	

REMARKS

#1 The backflow safety function of check valves FW-348, 350, 352, is not tested, instead credit is taken for closing the manual isolation valves, FW-121, 159, and 180, prior to realigning to the raw water storage reservoir per Operating Procedure, OP D-1:V.

#2 The AFW pumps' discharge check valves FW-361, 362, and 363, share the safety function of preventing backflow with the second-off checks, FW-369 through 376. Due to the difficulty of testing these valves only the second-off checks will be quarterly tested in the closed direction.

#3 The leak tests for valves FW-367, 368, 531, and 532, are not required by Code as these valves do not have a safety related function to prevent back leakage. The leak test and the categorization as "A,C" is based on a corrective action in NCR DC1-91-TN-N002.

#4 The backflow safety function of check valves FW-377, 378, 379, 380, is monitored continuously via TE-117, 118, 119, and 120 which provide inputs to control room annunciator PK09-16, "AUX FW SYSTEM LEAKAGE/TEMP HI".

#5 FCV-110A does not have an active safety function. The safety related boration flow path is through 8104 and the redundant flow path is from the RWST. However, in the Appendix R and Hosgri evaluations credit was taken for this valve to open or fail open so this valve is being administratively included in the IST program as a conservative measure since it may be considered a licensing commitment.

#6 Deleted.

#7 The open safety function of check valve CVCS-8440 is verified during normal operations.

NO. V-CS1

Valves:	FW-367	Steam Generator #2 Main Feedwater Check
	FW-368	Steam Generator #1 Main Feedwater Check
	FW-531	Steam Generator #3 Main Feedwater Check
	FW-532	Steam Generator #4 Main Feedwater Check

Category: A/C Code Class: 2

Valves:	FCV-438	Steam Generator #1 Feedwater Isolation Valve
	FCV-439	Steam Generator #2 Feedwater Isolation Valve
	FCV-440	Steam Generator #3 Feedwater Isolation Valve
	FCV-441	Steam Generator #4 Feedwater Isolation Valve

Category: B Code Class: 2

Function:

The check valves have an active function to close to prevent backflow so that AFW pump discharge flow will be directed to the steam generators as required when the AFW system is actuated.

The isolation valves have an active safety function to close to terminate continued feedwater flow to the steam generators or to a faulted feedwater line inside containment as assumed in the plant accident analysis.

Basis:

These Main Feedwater Check Valves and Feedwater Isolation Valves cannot be exercised during power operation because closing these valves would require securing feed flow to a steam generator which would result in a reactor trip. Three loop operation has not been analyzed for at Diablo Canyon Power Plant and is not allowed.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c) and 4.3.2.2(c).

NO. V-CS2

Valves:	FW-348	Aux Feedwater Pump #1 Suction Check Valve from the CST
	FW-350	Aux Feedwater Pump #2 Suction Check Valve from the CST
	FW-352	Aux Feedwater Pump #3 Suction Check Valve from the CST

Category: C Code Class: 3

Function:

These valves have an active safety function in the open direction to permit the flow of water from the CST to the AFW pumps' suction. They also have a safety function to close to maintain AFW pump suction when this suction is aligned to the raw water reservoir.

Basis:

These AFW supply check valves cannot be full-stroke exercised during power operation because the only available flow path is into the steam generators which could result in thermal shock to the associated piping and fittings. These valves will be full-stroked open during a shutdown to, or a startup from, a cold shutdown condition.

The backflow safety function of these check valves is not tested, instead credit is taken for closing the manual isolation valves, FW-121, 159, and 180, when realigning to the raw water storage reservoir per Operating Procedure, OP D-1:V.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.3.2.2(c).

NO. V-CS3

Valves:	FW-361	Aux Feedwater Pump #1 Discharge Check Valve
	FW-362	Aux Feedwater Pump #2 Discharge Check Valve
	FW-363	Aux Feedwater Pump #3 Discharge Check Valve

Category: C Code Class: 3

Valves:	FW-369	Aux Feedwater Pump #1 to Steam Generator #1 Check Valve
	FW-370	Aux Feedwater Pump #2 to Steam Generator #1 Check Valve
	FW-371	Aux Feedwater Pump #1 to Steam Generator #2 Check Valve
	FW-372	Aux Feedwater Pump #2 to Steam Generator #2 Check Valve
	FW-373	Aux Feedwater Pump #1 to Steam Generator #3 Check Valve
	FW-374	Aux Feedwater Pump #3 to Steam Generator #3 Check Valve
	FW-375	Aux Feedwater Pump #1 to Steam Generator #4 Check Valve
	FW-376	Aux Feedwater Pump #3 to Steam Generator #4 Check Valve
	FW-377	Steam Generator #1 Aux Feedwater 1st off Check Valve
	FW-378	Steam Generator #2 Aux Feedwater 1st off Check Valve
	FW-379	Steam Generator #3 Aux Feedwater 1st off Check Valve
	FW-380	Steam Generator #4 Aux Feedwater 1st off Check Valve

Category: C Code Class: 2

Function:

These valves have an active safety function in the open direction to permit the flow of water from the AFW pump discharge lines to the steam generators. They also have a safety function to close to prevent the backflow of feedwater through an idle AFW pump.

Basis:

These Auxiliary Feedwater Supply Check Valves cannot be full-stroke exercised during power operation because the only available flow path is into the steam generators which could result in thermal shock to the associated piping and fittings. These valves will be full-stroke exercised during a shutdown to, or a startup from, a cold shutdown condition.

The AFW pumps' discharge check valves FW-361, 362, and 363, share the safety function of preventing backflow with the second-off checks, FW-369 through 376. Due to the difficulty of testing these valves only the second-off checks will be tested for backflow.

The backflow safety function of check valves FW-377, 378, 379, 380, is monitored continuously via TE-117, 118, 119, and 120 which provide inputs to control room annunciator PK09-16, "AUX FW SYSTEM LEAKAGE/TEMP HI".

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.3.2.2(c).

NO. V-CS4

Valves: MS-5166 Steam Generator #2 to Aux Feedwater Pump #1 Check Valve
MS-5167 Steam Generator #3 to Aux Feedwater Pump #1 Check Valve

Category: C **Code Class:** 2

Function:

These valves have an active safety function to open to allow steam flow to the AFW pump turbine. They also have a safety function to prevent the backflow of steam from an unfaulted steam generator escaping out of the break in a faulted steam generator.

Basis:

These check valves cannot be full-stroke exercised during power operation because this would require operating the turbine-driven AFW pump at rated speed and the only available flow path for AFW is into the steam generators which could result in thermal shock to the associated piping and fittings. These valves will be part stroked on a quarterly frequency with the pump operating on its recirculation flow path. Full stroke exercising will be performed during a shutdown to, or a startup from, a cold shutdown condition.

Closure testing is covered in Valve Relief Request #11.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.3.2.2(b).

NO. V-CS5

Valves:	FCV-41	Steam Generator #1 Main Steam Isolation Valve
	FCV-42	Steam Generator #2 Main Steam Isolation Valve
	FCV-43	Steam Generator #3 Main Steam Isolation Valve
	FCV-44	Steam Generator #4 Main Steam Isolation Valve

Category: B Code Class: 2

Function:

These valves have an active safety function to automatically close on high steam flow, coincident with either low-low T(avg) or low steam pressure, or on a high-high containment pressure signal.

Basis:

These valves cannot be full-stroke exercised during power operation because this would require securing steam from a steam generator which would result in a reactor trip, and most likely a safety injection. Also, three loop operation has not been analyzed for Diablo Canyon Power Plant and is not allowed.

Part-stroke testing capability does exist for these valves but is not considered practical, since extremely limited (6° max., 2° nominal) valve motion is allowed due to the valve design which only provides verification that the valve is not frozen in the open position. Additionally, as a result of the valve design, performing partial stroke testing exposes the plant to an inadvertent Reactor Trip and/or Safety Injection should the valve stroke more than 6° (resulting in a flow assisted closure of the valve).

These valves will be full stroke exercised on a cold shutdown frequency.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS6

Valves: PCV-455C Pressurizer Power Operated Relief Valve
PCV-456 Pressurizer Power Operated Relief Valve
PCV-474 Pressurizer Power Operated Relief Valve

Category: B **Code Class:** 1

Function:

The PORVs have an active safety function to open for steam generator tube rupture accident mitigation and also for RCS low temperature overpressure protection.

Basis:

The PORVs should not be exercised during power operation by NRC direction. The NRC's current position is that these valves will be full-stroke exercised during the approach to cold shutdown.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS7

Valves:	8078A	Reactor Vessel Head Vent Valve
	8078B	Reactor Vessel Head Vent Valve
	8078C	Reactor Vessel Head Vent Valve
	8078D	Reactor Vessel Head Vent Valve

Category: B Code Class: 2

Function:

These valves have an active function to open to vent noncondensible gases from the RCS which might inhibit core cooling during natural circulation. They were installed to provide reactor vessel high point vent capability for beyond-design-bases events per the guidance of NUREG 0737 and are not relied upon to mitigate any design basis accidents as defined and analyzed in the FSAR Chapter 15 Accident Analyses.

Basis:

These Reactor Vessel Head Vent Valves should not be exercised during power operation by NRC direction. The NRC's current position is that these valves will be full-stroke exercised during cold shutdown.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS8

Valves: LCV-112B Volume Control Tank Outlet Isolation Valve
LCV-112C Volume Control Tank Outlet Isolation Valve

Category: B **Code Class:** N/A

Function:

These valves have an active safety function to close to isolate the volume control tank from the suction of the charging pumps upon the receipt of a safety injection signal.

Basis:

These isolation valves should not be exercised during power operation because failure of either valve in the closed position would result in a loss of reactor system level control or injecting 2000 ppm boric acid solution from the RWST into the reactor coolant system, resulting in a possible plant shutdown. See also NRC SER dated 1/31/94 addressing LA 86 and 87.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS9

Valves:	8100	Reactor Coolant Pump Seal Water Return Isolation Valve, Outside Containment
	8112	Reactor Coolant Pump Seal Water Return Isolation Valve, Inside Containment

Category: A Code Class: 2

Function:

These valves have an active safety function to close to isolate the seal water return line containment penetration upon receipt of a Phase A containment isolation signal.

Basis:

These isolation valves cannot be exercised during power operation because this would challenge the relief valve in the RCP seal water return line. If this relief valve failed in the open position, this would result in unnecessary reactor coolant system leakage.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS10

Valves:	8105	Centrifugal Charging Pumps' Recirculation Isolation Valve
	8106	Centrifugal Charging Pumps' Recirculation Isolation Valve

Category: B **Code Class:** 2 (8106), N/A (8105)

Function:

These valves have an active safety function to close to isolate the high pressure safety injection flow path from the CVCS during safety injection system operation following a LOCA.

Basis:

These valves should not be exercised during power operation because failure of either valve in the closed position could result in pump damage if a secondary system accident occurred.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS11

Valves: 8107 Charging Line Isolation Valve
8108 Charging Line Isolation Valve

Category: B Code Class: 2

Function:

These redundant, motor-operated gate valves have an active safety function to close to isolate the normal charging flow path from the high pressure safety injection flow path upon receipt of a safety injection signal.

Basis:

These valves should not be exercised during power operation because failure of either valve in the closed position could result in loss of reactor coolant system level control, which could result in a plant shutdown. Also, failure of either of these valves in a closed position would place the plant in an LCO action statement due to a loss of the boration flow path from the boric acid tanks. See also NRC SER dated 1/31/94 addressing LA 86 and 87.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS12

Valves:	8145	Pressurizer Auxiliary Spray Valve
	8148	Pressurizer Auxiliary Spray Bypass Valve
Category:	B	Code Class: 1
Valves:	8377	Pressurizer Auxiliary Spray Check Valve
Category:	C	Code Class: 1

Function:

Air operated globe valves 8145 and 8148, along with check valve 8377, have an active safety function to open during plant cooldown to cool down the pressurizer when normal pressurizer spray is inoperable. This is not an accident mitigation function but a safe shutdown function following a Hosgri earthquake.

Basis:

These valves should not be exercised during power operation because failure of either valve in the open position could result in a loss of reactor coolant system pressure control which could result in a plant shutdown.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c) and 4.3.2.2(c).

NO. V-CS13

Valves: 8152 Letdown Line Isolation Valve, Outside Containment

Category: A **Code Class:** 2

Function:

This air operated globe valve has an active safety function to close to isolate letdown on a high room temperature in the letdown heat exchanger room. This valve also has the safety function of providing containment isolation.

Basis:

This valve should not be exercised during power operation because failure of the valve in the closed position could result in a loss of reactor coolant system level control which could result in a plant shutdown. See also NRC SER dated 1/31/94 addressing LA 86 and 87.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS14

Valves:

8802A	Safety Injection Pump #1 Discharge Isolation Valve, Outside Containment
8802B	Safety Injection Pump #2 Discharge Isolation Valve, Outside Containment

Category: A **Code Class:** 2

Function:

These motor operated gate valves have an active safety function to open to provide a flow path for the safety injection pumps in the Hot Leg recirculation mode.

Basis:

These valves cannot be exercised during power operation because they are required to be closed with power to the valve operators removed by Technical Specification Surveillance Requirement 4.5.2. If these valves were opened during power operation and an accident were to occur, safety injection flow would go to the hot legs instead of the cold legs. The safety analysis has analyzed for flow going to the cold legs and not the hot legs.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS15

Valves: 8809A RHR to Cold Legs 1&2 Isolation Valve
8809B RHR to Cold Legs 3&4 Isolation Valve

Category: B Code Class: 2

Function:

These motor operated gate valves have an active safety function to close during hot leg recirculation. These valves are exempt from type C leak testing per Appendix J, section III.C.3. They also have a passive safety function to remain open to provide a flow path from the RHR system to the SIS/RCS cold leg injection lines. These valves are normally open with the power to the actuators removed during power operations.

Basis:

These valves cannot be exercised during power operation because they are required to be open with power to the valve operators removed by Technical Specification Surveillance Requirement 4.5.2.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS16

Valves: 8835 Safety Injection to Cold Legs Isolation Valve

Category: B **Code Class:** 2

Function:

This motor operated gate valve has an active safety function to close when placing the ECCS in the hot leg recirculation mode of safety injection. This valve is exempt from type C leak testing per Appendix J, section III.C.3.

Basis:

This valve cannot be exercised during power operation because it is required to be open with power to the valve operator removed by Technical Specification Surveillance Requirement 4.5.2. Also, failure of this valve in the closed position would result in the safety injection system being not OPERABLE.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS17

Valves:	8974A	Safety Injection Pumps Recirculation to the Refueling Water Storage Tank Isolation Valve
	8974B	Safety Injection Pumps Recirculation to the Refueling Water Storage Tank Isolation Valve

Category: B **Code Class:** 2 (8974B), N/A (8974A)

Function:

These motor operated globe valves have an active safety function to close via an interlock prior to either 8804A or 8804B opening.

Basis:

These valves cannot be exercised during power operation because they are required to be open with power to the valve operators removed by Technical Specification Surveillance Requirement 4.5.2. Also, the failure of one of these valves in the closed position could result in damage to the safety injection pumps, if an SI signal were to start the pumps during this condition or test, thereby rendering the safety injection system not OPERABLE.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS18

Valves: 8976 RWST to Safety Injection Pumps Suction Isolation Valve

Category: B Code Class: 2

Function:

This motor operated gate valve has an active safety function to close to prevent backflow to the refueling water storage tank during the post-LOCA recirculation mode of safety injection.

Basis:

This valve cannot be exercised during power operation because it is required to be open with power to the valve operator removed by Technical Specification Surveillance Requirement 4.5.2. Also, failure of this valve in the closed position would result in the entire safety injection system being not OPERABLE.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS19

Valves: 8980 RWST to RHR Pumps Suction Isolation Valve

Category: B **Code Class:** 2

Function:

This motor operated gate valve has an active safety function to close to prevent backflow into the refueling water storage tank if the downstream check valve leaks.

Basis:

This valve cannot be exercised during power operation because it is required to be open with power to the valve operator removed by Technical Specification Surveillance Requirement 4.5.2. Also, failure of this valve in the closed position would result in the RHR portion of the safety injection system being not OPERABLE.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS20

Valves: 8703 RHR to Hot Legs Isolation Valve

Category: A **Code Class:** 2

Function:

This motor operated gate valve has an active safety function to open to provide a flow path for hot leg recirculation after a postulated accident. This valve is an RCS high pressure to low pressure interface boundary and is therefore leak rate tested every refueling outage per Tech Spec 4.4.6.2.2.

Basis:

This valve cannot be exercised during power operation because it is required to be closed with power to the valve operator removed by Technical Specification Surveillance Requirement 4.5.2. Also, failure of this valve in the open position would result in diversion of flow from the analyzed flow paths.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS21

Valves:	8730A	RHR Pump #1 Discharge Check Valve
	8730B	RHR Pump #2 Discharge Check Valve

Category: C **Code Class:** 2

Function:

These check valves have an active safety function to open to allow flow from the discharge of the RHR pumps.

Basis:

These valves cannot be full stroke exercised during power operation because the RHR pumps do not develop sufficient head to overcome reactor coolant system pressure. They will be part stroked quarterly and full stroked on a cold shutdown frequency.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.3.2.2(b).

NO. V-CS22

Valves: 8994A NaOH to Containment Spray Eductor Isolation Valve
8994B NaOH to Containment Spray Eductor Isolation Valve

Category: B **Code Class:** 2

Function:

These motor operated gate valves have an active safety function to open to provide a flow path during the ECCS injection phase of containment spray and then during the ECCS recirculation phase up until the time that the RWST low-low level is reached.

Basis:

These valves cannot be exercised during power operation because they could introduce NaOH into the RWST and subsequently into the reactor coolant system causing Na_{24} activation problems and possible chemical damage to components in the reactor coolant system. To prevent getting NaOH into the RWST, valve 8992 would have to be closed and the line flushed, which would result in the entire Spray Additive System being not OPERABLE.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS23

Valves:	8998A	Spray Additive Tank Outlet Check Valve
	8998B	Spray Additive Tank Outlet Check Valve

Category: A,C **Code Class:** 2

Function:

These check valves have an active safety function to open to allow the passage of sodium hydroxide solution for eduction into the containment spray flow. They also have a safety function to prevent backleakage, and thereby prevent diluting the educted NaOH solution, in the event that one of the containment spray pumps fails.

Basis:

These valves cannot be exercised during power operation because the system alignment for testing these check valves would result in the entire Spray Additive System being not OPERABLE.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c) and 4.3.2.2(c).

NO. V-CS24

Valves:	FCV-355	Component Cooling Water Header C Isolation Valve

Category: B **Code Class:** 2

Valves:	FCV-356	CCW to RCP and Reactor Vessel Support Isolation Valve
	FCV-357	RCP Thermal Barrier CCW Return Isolation Valve
	FCV-363	RCP Cooler CCW Return Isolation Valve
	FCV-749	RCP Cooler CCW Return Isolation Valve
	FCV-750	RCP Thermal Barrier CCW Return Isolation Valve

Category: A **Code Class:** 2

Function:

FCV-355 has an active safety function to close to isolate the non-vital CCW header C after an accident to assure adequate flow to the two vital CCW loops.

FCV-356, 357, 363, 749, and 750 each have an active safety function to close to provide containment isolation.

Basis:

These valves cannot be exercised during power operation because this could result in damage to the reactor coolant pumps and a possible plant trip.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS25

Valves:	FCV-235	Containment H2 Sample Supply Isolation Valve
	FCV-236	Containment H2 Sample Supply Isolation Valve
	FCV-237	Containment H2 Sample Return Isolation Valve
	FCV-238	Containment H2 Sample Supply Isolation Valve
	FCV-239	Containment H2 Sample Supply Isolation Valve
	FCV-240	Containment H2 Sample Supply Isolation Valve
	FCV-658	Containment H2 Purge Exhaust System #2 Suction Iso Valve
	FCV-659	Containment H2 Purge Exhaust System #1 Suction Iso Valve
	FCV-668	Containment H2 Purge Exhaust System #2 Suction Iso Valve
	FCV-669	Containment H2 Purge Exhaust System #1 Suction Iso Valve
	FCV-696	Reactor Cavity Sump Sample Supply Isolation Valve
	FCV-697	Reactor Cavity Sump Sample Supply Isolation Valve
	FCV-698	Air Sample Post LOCA Supply Isolation Valve
	FCV-699	Air Sample Post LOCA Supply Isolation Valve
	FCV-700	Air Sample Post LOCA Supply Isolation Valve

Category: A Code Class: 2

	VAC-252	Containment H2 Sample Return Check Valve
	VAC-253	Containment H2 Sample Return Check Valve

Category: A,C Code Class: 2

Function:

These valves have an active safety function to close to provide containment isolation.

Basis:

These Containment Sample Isolation Valves cannot be exercised during power operation because Technical Specification Surveillance Requirement 4.6.1.1a requires these valves to be closed when containment integrity is required, except under strict administrative control. These valves do not receive a containment isolation signal.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c) and 4.3.2.2(c).

NO. V-CS26

Valves: 8805A Charging Pump Suction Valve
8805B Charging Pump Suction Valve

Category: B **Code Class:** 2

Function:

These motor operated gate valves have an active safety function to open to provide a flow path from the refueling water storage tank to the suction of the charging pumps.

Basis:

These valves should not be exercised at power because opening these valves injects highly oxygenated, 2000 ppm borated water from the RWST into the reactor coolant system. Injecting this water results in a negative reactivity addition to the reactor coolant system which could shut the plant down. See also NRC SER dated 1/31/94 addressing LA 86 and 87.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS27

Valves:	8716A	RHR Train Crosstie Valves
	8716B	RHR Train Crosstie Valves

Category: B Code Class: 2

Function:

These motor operated gate valves have an active safety function to close to go to the cold leg mode of post-LOCA safety injection. They also have an active safety function to reopen to go to the hot leg mode of post-LOCA safety injection (no stroke time requirement). These valves are exempt from type C leak testing per Appendix J, section III.C.3.

Basis:

These valves cannot be exercised during power operation because failure of the valve in the closed position would result in a loss of RHR injection flow to two of the four RCS loops from a single RHR pump.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS28

Valves:	8742A	RHR Heat Exchanger #1 Discharge Check Valves
	8742B	RHR Heat Exchanger #2 Discharge Check Valves

Category: C Code Class: 2

Function:

These check valves have an active safety function to open to pass RHR flow from the RHR heat exchanger to the RCS. They also have a safety function to close (back flow) to prevent pump to pump interaction.

Basis:

These valves cannot be exercised during power operation because the RHR pumps do not develop sufficient head to overcome reactor coolant system pressure. These valves will be tested for backflow quarterly and for opening on a cold shutdown frequency.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.3.2.2(c).

NO. V-CS29

Valves:	FCV-660	Containment Purge Supply Isolation Valve (IC)
	FCV-661	Containment Purge Supply Isolation Valve (IC)
	RCV-11	Containment Purge Exhaust Isolation Valve (IC)
	RCV-12	Containment Purge Exhaust Isolation Valve (IC)

Category: A Code Class: 2

Function:

These valves have an active safety function to provide containment isolation.

Basis:

These valves are required to be leakrate tested every time they are exercised per Technical Specification (Tech Spec) Surveillance Requirement 4.6.3.4. These valves are administratively maintained in their isolation (closed) position during power operations. This ensures they will perform their required safety function and eliminates concerns regarding failure of a post-exercising leak test.

These valves will be full-stroke exercised on a cold shutdown frequency.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS30

Valves:	8149A	Letdown Orifice Control/Isolation Valve
	8149B	Letdown Orifice Control/Isolation Valve
	8149C	Letdown Orifice Control/Isolation Valve

Category: A Code Class: 2

Function:

These air operated globe valves have an active safety function to close to provide containment isolation and to isolate a high energy letdown line break outside containment upstream of the letdown heat exchanger.

Basis:

These valves will not be exercised during power operation due to the following causes: thermal transients on the regenerative letdown heat exchanger; hydraulic transients on the letdown line; pressure control transients resulting in the lifting of relief valve RV-8117; and charging nozzle temperature transients when charging is isolated during letdown testing. Reference NRC SER dated 1/31/94 addressing LA 86 and 87.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c).

NO. V-CS31

Valves: 8701 RCS Loop 4 to RHR Isolation Valve

8702 RCS Loop 4 to RHR Isolation Valve

Category: A **Code Class:** 1

Function:

The motor operated double disc gate valves isolate the low pressure Residual Heat Removal System from the High Pressure Reactor Coolant System.

Basis:

These Reactor Coolant System to RHR System Isolation Valves cannot be exercised during power operation because they are required to be closed with power to the valve operators removed by Technical Specification Surveillance Requirement 4.5.2. Also, failure of this valve to the open position would result in diversion of flow from the analyzed flow paths.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c)

NO. V-CS32

Valves:	8146	Normal Charging
	8147	Alternate Charging
Category:	B	Code Class: 1

Valves:	8378A	Charging to Loop 3 Cold Leg Check
	8378B	Charging to Loop 4 Cold Leg Check
	8379A	Charging to Loop 3 Cold Leg Check
	8379B	Charging to Loop 4 Cold Leg Check
Category:	C	Code Class: 1

Valves:	8378B	Charging Line Check
Category:	C	Code Class: 2

Function:

These valves have active functions to open to supply normal and alternate charging to Loop 4 or 3 RCS Cold Legs.

Basis:

These valves should not be exercised during power operation because this would cause a thermal transient to be induced on the charging to RCS Cold Leg nozzle. This is per Westinghouse Infogram (WIG) 90-025.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c) and 4.3.2.2(c)

NO. V-CS33

Valves:	8808A	SI Accumulator 1 Discharge Isolation
	8808B	SI Accumulator 2 Discharge Isolation
	8808C	SI Accumulator 3 Discharge Isolation
	8808D	SI Accumulator 4 Discharge Isolation

Category: B **Code Class:** 2

Function:

These valves are open with power removed from the valve operator during power operations. They are not required to operate during an accident requiring ECCS injection. Valves can be closed to prevent accumulator injection during normal cooldown/depressurization of RCS.

Basis:

These valves cannot be exercised during power operation because Technical Specification 3.5.1.a requires that accumulator discharge isolation valves remain open with power removed.

Justification:

Cold shutdown frequency testing is per Part 10, paragraph 4.2.1.2(c) and 4.3.2.2(c)

NO. V-RO1

Valves: MS-1068, Steam Generator #1 Main Steam Line Check Valve
MS-2066, Steam Generator #2 Main Steam Line Check Valve
MS-3062, Steam Generator #3 Main Steam Line Check Valve
MS-4062, Steam Generator #4 Main Steam Line Check Valve

Category: C **Code Class:** N/A

Function:

These check valves have an active safety function to close in the event of a steam line break upstream of the main steam isolation valves. This accident mitigation function is to prevent the blowing down of more than one steam generator.

Basis:

These valves cannot be exercised closed because provisions are not provided in the plant design to verify that these valves close on reverse flow. Therefore, each refueling outage, these valves will be internally inspected using a fiberoptics scope to verify closure.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

Internal inspection using a fiberoptics scope is per Part 10, paragraph 4.3.2.4 (a), ("...other positive means."). This is also supported by NRC Generic Letter 89-04, Attachment 1, position 3.

NO. V-RO2

Valves:	8475	Positive Displacement Charging Pump Discharge Check Valve
	8478A	Centrifugal Charging Pump #1 Discharge Check Valve
	8478B	Centrifugal Charging Pump #2 Discharge Check Valve

Category: C Code Class: 2

Function:

These valves have an active safety function to open to allow passage of their respective charging pump's discharge flow. They also have a safety function of preventing backflow from another charging pump while their respective pump is idle.

Basis:

8478A and 8478B cannot be full-stroked open during power operation because of insufficient available flow. These valves will be part-stroke exercised during power operation.

8478A and 8478B cannot be full-stroked open during cold shutdown because this could result in a possible low temperature overpressurization of the RCS. These valves will be full-stroke exercised on the way to or during refueling outages.

Open stroke testing for 8475 will be performed quarterly.

All of these valves cannot be tested for backflow during power operation as the only acceptable method of testing would be to perform hydros and measure for backleakage. This testing would require clearing pumps, entering ACTION statements, and numerous valve and pump manipulations which affect the pressurizer level control and letdown temperature. This can cause cavitation in the letdown line.

All of these valves cannot be tested for backflow during cold shutdown as the only acceptable method of testing would be to perform hydros and measure for backleakage. This testing would require clearing pumps, entering ACTION statements, and numerous valve and pump manipulations, along with setting up the hydro testing equipment. NUREG-1482, section 4.1.4, states that "the NRC has determined that the need to set up test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage".

All three valves will be tested for backflow each refueling outage.

Justification:

Part-stroke testing at power is per Part 10, paragraph 4.3.2.2(b).

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

NO. V-R03

Valves:

8804A, Charging Pump Suction from RHR System Isolation Valve
8804B, Safety Injection Pump Suction from RHR System Isolation Valve
9003A, RHR Hx-1 to containment spray header A Isolation Valve
9003B, RHR Hx-2 to containment spray header A Isolation Valve

Category: B **Code Class:** 2

Function:

These motor-operated gate valves have an active safety function to open. This will line up the safety injection system and the containment spray system for the cold leg recirculation phase of post-LOCA safety injection.

Basis:

These valves cannot be exercised during power operation because they are interlocked with valves 8982A&B (Containment Sump Isolation Valves) that are required to be closed with power to the valve operators removed by Technical Specification Surveillance Requirement 4.5.2. Valves 8982A or B cannot be opened during power operation because this would result in one train of the RHR system being not OPERABLE.

During cold shutdown, valves 8804A & B and 9003A & B cannot be exercised open because they are interlocked with valve 8701 and 8702 (RCS Loop-4 TO RHR ISOLATION VALVES) in the closed position. 8701 and 8702 are required to be open and closing one of these valves would result in both RHR trains being incapable of removing decay heat from the core.

Valves 8804A&B and 9003A&B will be full-stroke exercised during refueling outages.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.2.1.2(e).

NO. V-R04

Valves:

8819A, Safety Injection to Cold Leg #1 Check Valve
8819B, Safety Injection to Cold Leg #2 Check Valve
8819C, Safety Injection to Cold Leg #3 Check Valve
8819D, Safety Injection to Cold Leg #4 Check Valve

8905A, Safety Injection to Hot Leg #1 Check Valve
8905B, Safety Injection to Hot Leg #2 Check Valve
8905C, Safety Injection to Hot Leg #3 Check Valve
8905D, Safety Injection to Hot Leg #4 Check Valve

Category: A,C **Code Class:** 1

Function:

These check valves have an active safety function to open to supply flow from the safety injection pumps to the reactor coolant system (RCS).

Basis:

These valves cannot be exercised during power operation because the safety injection pumps do not develop sufficient head to overcome RCS pressure.

These valves cannot be exercised during cold shutdown because the safety injection pumps are required to be inoperable by Technical Specification Surveillance Requirement 4.5.3.2 to protect against a low temperature overpressurization of the RCS. Also during cold shutdown there may not be sufficient volume in the RCS to accommodate the amount of water needed to full-stroke exercise these valves.

These valves will be full-stroke exercised during refueling outages.

Justification:

Refueling outage frequency testing is per Part 10, paragraphs 4.2.1.2(e) and 4.3.2.2(e).

NO. V-R05

Valves: 8922A, Safety Injection Pump #1 Discharge Check Valve
8922B, Safety Injection Pump #2 Discharge Check Valve

Category: C **Code Class:** 2

Function:

These check valves have an active safety function to open to supply flow from the safety injection pumps to the reactor coolant system (RCS). They also have a closure safety function (backflow) to prevent pump to pump interaction.

Basis:

These valves cannot be exercised open during power operation because the safety injection pumps do not develop sufficient head to overcome RCS pressure.

These valves cannot be exercised open during cold shutdown because Technical Specification Surveillance Requirement 4.5.3.2 requires that either the safety injection pumps be inoperable or their discharge be isolated from the RCS to protect against a low temperature overpressurization of the RCS. Also during cold shutdown there may not be sufficient volume in the RCS to accommodate the amount of water needed to full-stroke exercise these valves.

These valves will be full-stroked exercised open during refueling outages.

These valves will be tested for backflow quarterly.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

NO. V-R06

Valves:

8949A, Safety Injection to Hot Leg #1 Check Valve
8949B, Safety Injection to Hot Leg #2 Check Valve
8949C, Safety Injection to Hot Leg #3 Check Valve
8949D, Safety Injection to Hot Leg #4 Check Valve

Category: A,C **Code Class:** 1

Function:

These check valves have an active safety function to open to supply safety injection flow to the reactor coolant system (RCS) hot legs.

Basis:

Valves 8949A&B cannot be exercised during power operation because neither the residual heat removal nor the safety injection pumps develop sufficient head to overcome RCS pressure. Valves 8949C&D cannot be exercised during power operation because the safety injection pumps do not develop sufficient head to overcome RCS pressure.

These valves cannot be exercised during cold shutdown because the safety injection pumps are required to be inoperable by Technical Specification Surveillance Requirement 4.5.3.2 to protect against a low temperature over-pressurization of the RCS. Valves 8949A&B cannot be exercised during cold shutdown using the RHR pump because this would result in short cycling the core and not removing decay heat properly.

These valves will be full-stroke exercised during refueling outages.

Justification:

Refueling outage frequency testing is per Part 10, paragraphs 4.2.1.2(e) and 4.3.2.2(e).

NO. V-R07

Valves: 8981, Refueling Water Storage Tank to Residual Heat Removal Pump Check Valve

Category: C **Code Class:** 2

Function:

This check valve has an active safety function to open to supply borated water from the RWST to the suction of the RHR pumps. This valve also has a safety function in the closed direction (backflow) to limit potential post-LOCA recirculation leakage to the RWST.

Basis:

This valve cannot be exercised during power operation because the RHR pumps do not develop sufficient head to overcome RCS pressure.

This valve cannot be exercised during cold shutdown because both RHR pumps must be aligned to remove decay heat from the RCS; therefore, no flow path exists for full-stroke exercising the valve. There are no test connections or taps installed that could allow reverse-flow seating verification. The valve is not equipped with mechanical exercisers, position indicators or differential pressure instrumentation; therefore, valve open or closure capability cannot be verified.

Alternatively, the valve will be disassembled, internally inspected, and manual full-stroke exercised each refueling outage to verify its capability to open and close. The valve will be full-flow tested after reassembly.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

Disassembly and inspection each refueling outage per Part 10, paragraph 4.3.2.4(c).

NO. V-R08

Valves: 8982A, Containment Recirc Sump to RHR Pump #1 Isolation Valve (Outside Containment)
8982B, Containment Recirc Sump to RHR Pump #2 Isolation Valve (Outside Containment)

Category: B **Code Class:** 2

Function:

These motor-operated gate valves have an active safety function to open which allows the RHR pumps to take suction from the containment recirculation sumps during the cold leg recirculation phase of an accident.

Basis:

These valves cannot be exercised during power operation because they are required to be closed with power to the valve operators removed by Technical Specification 4.5.2. If these valves were opened during power operation, this would result in one train of the RHR system being not OPERABLE.

These valves cannot be exercised during cold shutdown because opening one of these valves could introduce air into the suction piping of the RHR pumps, causing the RHR pumps to be not OPERABLE for an extended period of time.

These valves will be full-stroke exercised on a refueling outage frequency.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.2.1.2(e).

NO. V-R09

Valves: 8820, Charging Injection 2nd-off Check Valve
8900A, Charging Injection Loop-1 Cold Leg Check Valve
8900B, Charging Injection Loop-2 Cold Leg Check Valve
8900C, Charging Injection Loop-3 Cold Leg Check Valve
8900D, Charging Injection Loop-4 Cold Leg Check Valve

Category: C **Code Class:** 1

Function:

These check valves have an active safety function to open to supply safety injection flow to the reactor coolant system (RCS) cold legs from the high-head safety injection pumps (centrifugal charging pumps).

Basis:

These valves cannot be full-stroke exercised during plant operation because the high RCS pressure will prevent the maximum required injection flow rate. Part-stroke exercising these valves during plant operation is not practicable because any flow through the valves would result in unnecessary thermal transients on the RCS cold leg nozzles.

These valves cannot be full-stroke exercised during cold shutdown because of insufficient RCS expansion volume to accommodate the high flow rates required to full-stroke these valves. These high flow rates could challenge the RCS low temperature overpressure (LTOP) mitigation system. To prevent challenging the LTOP system, venting of the pressurizer by removal of a safety valve would be required. Additionally, full-stroke exercising these valves cannot be performed with a bubble in the pressurizer, because the net charging rate must be minimal to prevent thermal cycling of the pressurizer.

Valves 8900A-D cannot be part-stroke exercised during cold shutdown for the same reasons that they cannot be full-stroked. In addition, the charging injection flow path is not designed for throttled operation which would be required to part-stroke all four parallel check valves.

These valves are not equipped with mechanical exercisers, position indicators, or differential pressure instrumentation.

These valves will be full-stroke exercised on a refueling outage frequency. In addition, valve 8820 will be part-stroked during cold shutdowns via a small test line.

Justification:

Part-stroking during cold shutdown is per Part 10, paragraph 4.3.2.2(d).

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

NO. V-R010

Valves: SW-34, ASW Pump #1 Discharge Line Vacuum Relief Check
SW-170, ASW Pump #1 Discharge Line Vacuum Relief Check
SW-301, ASW Pump #2 Discharge Line Vacuum Relief Check
SW-303, ASW Pump #2 Discharge Line Vacuum Relief Check

Category: C Code Class: 3

Function:

These check valves have a safety related function in the open direction to serve as vacuum relief valves for the Auxiliary Saltwater System (ASW) pumps' discharge lines. Within 24 hours after a LOCA, the two ASW trains are isolated from each other. If an ASW pump is stopped and later restarted in this situation, then these check valves must open to permit the passage of air into the discharge line while the pump is shut down in order to prevent water hammer and resultant damage in the line and in the CCW heat exchanger, when the pump is restarted.

The check valves have the safety related functions in the closed direction (backflow) of preventing ASW flow out the vent, and maintaining the pressure boundary integrit of the ASW system.

Basis:

These valves are disassembled and inspected on a refueling outage frequency in accordance with Part 10, paragraph 4.3.2.4(c). This will prove both the open and close functions. They will also be opened and manually stroked every 6 months for preventive maintenance reasons.

Justification:

Part 10, paragraph 4.3.2.4(c). (Refueling outage justification not required.)

NO. V-R011

Valves: 8440 Volume Control Tank Outlet Check Valve

Category: C **Code Class:** 2

Function:

This check valve has an active safety function to close to prevent backflow from the charging pump suction header to relief valve 8123 during the post-LOCA containment sump recirculation mode of safety injection. It also has a safety function to open to provide a flow path for the charging pump mini-flow recirculation to return to the suction header of the charging pumps.

Basis:

This check valve is open during operation to provide the normal source of supply to the suction of the charging pumps. Exercising this valve during power operation would require alignment to the alternate supply which would result in injecting highly oxygenated, 2000 ppm borated water into the reactor coolant system. Injecting this water results in a negative reactivity addition to the reactor coolant system which could shut the plant down.

This valve cannot be tested for backflow during power operation as the only acceptable method of testing would be to perform hydros and measure for backleakage. This testing would require clearing pumps, entering ACTION Statements, and numerous valve and pump manipulations which affect the pressurizer level control and letdown temperature. This can cause cavitation in the letdown line.

This valve cannot be tested for backflow during cold shutdown as the only acceptable method of testing would be to perform hydros and measure for backleakage. This testing would require clearing pumps, entering ACTION Statements, and numerous valve and pump manipulations along with setting up the hydro testing equipment. NUREG-1482, Section 4.1.4, states that "the NRC has determined that the need to set up test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage."

The ability to open is proven during normal operations per section 4.2.1.5. Closure will be tested on a refueling outage frequency.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

NO. V-R012

Valves: 8740A, RHR to Hot Leg #1 Check Valve
8740B, RHR to Hot Leg #2 Check Valve

Category: A,C **Code Class:** 1

Function:

These valves have an active safety function to open to supply RHR flow to RCS Hot Legs 1 and 2.

Basis:

These valves cannot be exercised during power operation because the RHR Pumps do not develop sufficient head to overcome RCS pressure.

These valves cannot be exercised during cold shutdown because due to lack of instrumentation necessary to individually verify full-stroke capability of each valve.

These valves are not equipped with mechanical exercisers, position indicators or differential pressure instrumentation.

These vales will be non-intrusively tested (NIT) on a refueling outage frequency.

If any degradation is detected that interferes with a valve's operability then the valve will be disassembled, internally inspected, and manually full-stroke exercised during the same outage.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

NO. V-R013

Valves:	8818A,	RHR to Cold Leg #1 Check Valve
	8818B,	RHR to Cold Leg #2 Check Valve
	8818C,	RHR to Cold Leg #3 Check Valve
	8818D,	RHR to Cold Leg #4 Check Valve

Category: A,C Code Class: 1

Function:

These valves have an active safety function to open to supply RHR flow to RCS Hot Legs 1, 2, 3 and 4.

Basis:

These valves cannot be exercised during power operation because the RHR Pumps do not develop sufficient head to overcome RCS pressure.

These valves cannot be exercised during cold shutdown because due to lack of instrumentation necessary to individually verify full-stroke capability of each valve.

These valves are not equipped with mechanical exercisers, position indicators or differential pressure instrumentation.

These vales will be non-intrusively tested (NIT) on a refueling outage frequency.

If any degradation is detected that interferes with a valve's operability then the valve will be disassembled, internally inspected, and manually full-stroke exercised during the same outage.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

NO. V-R014

Valves: RCS-508, Relief Valve and Stem Leak Off Header to PRT Check Valve
RCS-8028, Relief Valve Discharge Header to PRT Isolation Inside Containment

Category: RCS-8028 A,C **Code Class:** 2
Category: RCS-508 C **Code Class:** 3

Function:

These valves have an active safety function to open to provide flow path for relief valves' discharge to PRT. RCS-8028 also has an active safety function to close to provide containment isolation.

Basis:

These valves cannot be full or part stroke exercised during power operation because the relief valve header is required to be in service during power operation. Test method employed to close stroke test RCS-8028 is local leak rate test which isolates the relief valve header from the relief valves.

These valves cannot be part or full-stroke exercised during cold shutdown because the relief valve header is required to be in service.

These valves are not equipped with mechanical exercisers, position indicators or differential pressure instrumentation.

These vales will be disassembled and manually exercised on a refueling outage frequency.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

NO. V-R015

Valves: CCW-581, FCV-749 Bypass Check Valve
CCW-670, FCV-750 Bypass Check Valve
CVCS-8109, 8112 Bypass Check Valve

Category: A,C Code Class: 2

Function:

The Bypass Check Valves have a safety function to open to relieve pressure buildup in Containment Penetrations 20, 21 and 45 when the containment penetration is isolated. They also serve as containment isolation valves, so they have a safety function in the closed direction (this function is already included on V-RR2 for valve 8109).

Basis:

These Bypass Check Valves cannot be exercised during power operation because the test would require clearing the reactor coolant pumps which are required for power operations. The tests also require that test equipment be set up inside the containment building.

These valves cannot be tested during cold shutdown because the test requires setting up test equipment inside containment, clearing reactor coolant pumps, and numerous valve manipulations.

These valves are not equipped with mechanical exercisers, position indicators or differential pressure instrumentation.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e), and verifying closure by leak testing is preapproved per NUREG-1482, Section 4.1.4.

NO. V-R016

Valves: CCW-4, Suction Cross-tie Valve between CCW Headers B&C
CCW-5, Suction Cross-tie Valve between CCW Headers A&C

Category: B Code Class: 3

Function:

These valves perform an active safety function in that they are manually closed to provide CCW train separation in Emergency Operating Procedures.

Basis:

These normally sealed open manual valves cannot be exercised during power operation because closing them would isolate the suction side of two CCW Pumps from one of the vital CCW Headers. UFSAR Table 9.2-7 lists the failure of a CCW Pump to start as one of the malfunctions analyzed by the SAR. The closure of manual valve CCW-4 in conjunction with a failure of CCW Pump 1 to start would cause CCW Header B to be inoperable. The closure of CCW-5 in conjunction with the failure of CCW pump 3 to start would result in an inoperable CCW Header A.

Closure of these CCW Suction Header Cross-tie valves could also result in perturbations in CCW flow because return header flows are not equal and some flow through the suction cross-ties is needed during normal operations. These perturbations could adversely impact the ability of the CCW System to remove heat from various loads and are sufficient reason to not perform valve testing during transient plant conditions (i.e., forced outages).

Since these manual valves have very few failure mechanisms as opposed to power operated valves which have more failure mechanisms the risk of performing this test is not offset by the benefits of testing the valve and possibly identifying failure or degraded condition. The valves will be part stroke tested Quarterly and full stroke tested on a refueling outage frequency. The code committee is considering a five year frequency test for manual valves, so this is an indication of how much benefit there is to testing manual valves.

These manual valves cannot be stroked during Cold Shutdown because CCW is required to cool Residual Heat Removal System Heat Exchangers during cold shutdown, especially during the first few days of cold shutdown. The test would require splitting CCW Headers by manipulating several sealed open manual valves and aligning CCW into an abnormal system alignment.

Full stroke of these manual valves will be tested on a refueling outage frequency.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.2.1.2(e).

NO. V-R017

Valves: 8483, Charging Flow to Cold Legs Bypass Check Valve

Category: C **Code Class:** 1

Function:

This valve has a safety function to open to relieve pressure build up if normal and alternate charging valves 8146 and 8147 are both closed and Regenerative Heat Exchanger added heat to the charging line with resulting thermal expansion and pressure increase. The valve need only to partially open and allow flow to perform its safety function.

Basis:

This check valve cannot be exercised during power operation because opening this valve would require closing normal and alternate charging valves 8146 and 8147 which would isolate normal charging. This would result in thermal transient to be induced in the charging to RCS Cold Leg nozzles. This is per Westinghouse Infogram (WIG 90-025).

This valve cannot be tested for flow during Cold Shutdown as the only acceptable method of testing is to isolate normal and alternate charging thus isolating charging flow. The resultant differential pressure seen by 8146 or 8147 would be extremely high because all of the charging pump pressure would have to be reduced at the normal or alternate charging valve which is not set up to accomplish this. The valve can be tested during refueling outages when charging pump full flow tests using charging injection flow path are performed. During the charging pump full flow tests, the pressures differential across the normal or alternate charging valves is much lower.

Justification:

Refueling outage frequency testing is per Part 10, paragraph 4.3.2.2(e).

RELIEF REQUEST	COMPONENT	RELIEF REQUEST APPROVAL STATUS
1	Auxiliary Feedwater Pump suction check valves: FW-349, FW-353	Preapproved per GL 89-04, Attach 1, position 2
2	Category A/C check valves: AIR-I-587, CCW-585, CCW-695, LWS-60, VAC-21, VAC-116, VAC-252, VAC-253, 8046, 8047, 8109, 8368A, 8368B, 8368C, 8368D, 8916	Preapproved per NUREG-1482, section 4.1.4
3	Refueling water storage tank suction check valve: 8924	Preapproved per GL 89-04, Attach 1, position 2
4	Safety injection cold leg check valves: 8948A, 8948B, 8948C, 8948D	Preapproved per NUREG-1482, section 4.1.2
5	Accumulator discharge check valves: 8956A, 8956B, 8956C, 8956D	Preapproved per NUREG-1482, section 4.1.2
6	Refueling water storage tank suction check valve: 8977	Preapproved per GL 89-04, Attach 1, position 2
7	Deleted, See Refueling Justification #V-R012	
8	Containment spray ring header check valves: 9011A, 9011B	Preapproved per GL 89-04, Attach 1, position 2
9	Deleted, See Refueling Justification #V-R013	
10	Containment spray pump discharge check valves: 9002A, 9002B	Preapproved per GL 89-04, Attach 1, position 2

RELIEF REQUEST	COMPONENT	RELIEF REQUEST APPROVAL STATUS
11	AFW Pump steam supply check valves: MS-5166, MS-5167	Preapproved per GL 89-04, Attach 1, position 2

NO. V-RR1

Valves: FW-349, Aux Feedwater Pump #1 Suction Check from the Raw Water Storage Reservoir
FW-353, Aux Feedwater Pump #2 & #3 Suction Check from the Raw Water Storage Reservoir

Category: C Code Class: 3

Test Reqt: Part 10 does not provide for sampling.

Function:

These check valves have an active safety function to open to supply an additional source of water to the steam generators via the auxiliary feedwater pumps.

Basis:

These valves cannot be exercised with flow because the water from the Raw Water Storage Reservoir would contaminate the steam generators creating chemistry problems which could effect the integrity of the steam generator tubes.

These valves are not equipped with mechanical exercisers, position indicators or differential pressure instrumentation.

These valves will be disassembled, internally inspected, and manually full-stroke exercised on a rotational basis, one valve each refueling outage. If any degradation is detected that interferes with the valve's operability, then the opposite train valve will also be disassembled, internally inspected, and manual full-stroke exercised during the same outage.

Justification:

Disassembly and inspection each refueling outage is per Part 10, paragraph 4.3.2.4(c).

Disassembly and inspection sampling program is preapproved per NRC Generic Letter 89-04, Attachment 1, position 2.

NO. V-RR2

Valves:

AIR-I-587	Containment Normal Instrument Air Supply Isolation Check (OC)
CCW-585	CCW to RCP & Reactor Vessel Support Isolation Check (IC)
CCW-695	CCW to Excess Letdown Heat Exchanger Isolation Check (OC)
LWS-60	Nitrogen to RCDT Isolation Check (IC)
VAC-21	Containment Air Sample Return Isolation Check (IC)
VAC-116	Containment Air Sample Post-LOCA Return Isolation (IC)
VAC-252	Containment Hydrogen Sample Return Isolation Check (IC)
VAC-253	Containment Hydrogen Sample Return Isolation Check (IC)
8046	Primary Water to PRT Isolation Check (IC)
8047	Nitrogen to PRT Isolation Check (IC)
8109	RCP Seal Water Return Isolation Check (IC)
8368A	RCP-1 Seal Injection Isolation Check (IC)
8368B	RCP-2 Seal Injection Isolation Check (IC)
8368C	RCP-3 Seal Injection Isolation Check (IC)
8368D	RCP-4 Seal Injection Isolation Check (IC)
8916	Nitrogen Supply to Accumulator Isolation Check (IC)

Category: A,C **Code Class:** 2

Test Reqt: Part 10, section 4.3.2.1, "Exercising Test Frequency".

Function:

These check valves have the safety function to prevent reverse flow from containment to the system outside of containment.

Basis:

These check valves can only be verified closed by leakrate testing. They will be leakrate tested each refueling outage.

Justification:

Extension of test interval to refueling outage for check valves verified closed by leak testing is preapproved per NUREG-1482, section 4.1.4.

NO. V-RR3

Valves: 8924 RWST to Charging Pump Check Valve

Category: C **Code Class:** 2

Test Reqt: Part 10 does not provide for sampling.

Function:

This check valve has an active safety function to open to supply borated water from the RWST to the suction of the charging pumps. This valve also has a safety function in the closed position (backflow) to limit potential post-LOCA recirculation leakage to the RWST.

Basis:

This valve cannot be exercised during power operation because this would require injecting borated water from the RWST into the RCS, which could result in a plant shutdown.

The valve cannot be full-stroke exercised during cold shutdown because one of the centrifugal charging pumps is required to be disabled for low temperature overpressure protection per TS 4.5.3.2, and full flow testing of this valve requires operating both centrifugal charging pumps. Additionally, closure verification cannot be performed because there are no test connections or taps installed that will allow testing.

The valve is not equipped with mechanical exercisers, position indicators or differential pressure instrumentation; therefore, valve open or closure capability cannot be verified.

Valve 8924 will be part-stroke tested during cold shutdown and disassembled, internally inspected, and manually full-stroke exercised on a rotational basis with valve 8977(*), one valve each refueling outage, to verify its capability to open and close. 8924 will be full-flow tested after reassembly. If any degradation is detected that interferes with the valve's operability, then valve 8977 will also be disassembled, internally inspected, and manual full-stroke exercised during the same outage.

(*)**NOTE:** Valves 8924 and 8977 are combined in the same disassembly inspection group because of their similarities in safety function, design (same manufacturer, size, model number, and materials of construction) and service conditions (normally closed, located in sections of piping not normally in service, horizontal orientation, located in the Aux. Building with the same external environmental conditions, similar design rated accident flows). There are no known differences in valve degradation mechanisms. Therefore, disassembly inspection of one valve each outage provides sufficient assurance that degradation in any valve will be detected.

NO. V-RR3 (cont.)

Justification:

Disassembly and inspection each refueling outage is per Part 10, paragraph 4.3.2.4(c).

Disassembly and inspection sampling program is preapproved per NRC Generic Letter 89-04, Attachment 1, position 2.

NO. V-RR4

Valves:	8948A	Safety Injection to Cold Leg #1 Check Valve
	8948B	Safety Injection to Cold Leg #2 Check Valve
	8948C	Safety Injection to Cold Leg #3 Check Valve
	8948D	Safety Injection to Cold Leg #4 Check Valve

Category: A,C **Code Class:** 1

Test Reqt: Part 10 does not provide for sampling.

Function:

These check valves have an active safety function to open to supply safety injection flow to the RCS cold legs.

Basis:

These valves cannot be exercised during power operation because the accumulators, RHR pumps, and SI pumps do not develop sufficient head to overcome RCS pressure.

These valves cannot be tested during cold shutdown due to lack of instrumentation necessary to individually verify full-stroke capability of each valve.

These valves are not equipped with mechanical exercisers, position indicators or differential pressure instrumentation.

These valves will be non-intrusively tested (NIT), on a sampling program, per NUREG-1482. This program will NIT one valve each refueling outage, on a rotating schedule, while partial flow testing the other three valves.

If any degradation is detected that interferes with a valve's operability then the valve will be disassembled, internally inspected, and manually full-stroke exercised during the same outage. In addition, the other three valves in this group will be NIT during the same outage.

Justification:

Preapproved per NUREG-1482, section 4.1.2.

NO. V-RR5

Valves:	8956A	Accumulator #1 Discharge Check Valve
	8956B	Accumulator #2 Discharge Check Valve
	8956C	Accumulator #3 Discharge Check Valve
	8956D	Accumulator #4 Discharge Check Valve

Category: A,C Code Class: 1

Test Reqt: Part 10 does not provide for sampling.

Function:

These check valves have an active safety function to open to supply flow from the accumulators to the RCS during an accident condition. They also have a passive safety function to prevent backflow from the RCS into the accumulators during normal operations.

Basis:

These valves cannot be exercised during power operation because the accumulators cannot overcome RCS pressure.

These valves cannot be exercised during cold shutdowns because this could result in a possible low temperature overpressurization of the RCS.

Full flow testing of these valves during refueling outages is not feasible because of the resulting water surge into the reactor vessel and potential for high airborne radiation problems.

These valves are not equipped with mechanical exercisers, position indicators or differential pressure instrumentation.

These valves will be non-intrusively tested (NIT), on a sampling program, per NUREG-1482. This program will NIT one valve each refueling outage, on a rotating schedule, while partial flow testing the other three valves.

If any degradation is detected that interferes with a valve's operability then the valve will be disassembled, internally inspected, and manually full-stroke exercised during the same outage. In addition, the other three valves in this group will be NIT during the same outage.

Justification:

Preapproved per NUREG-1482, section 4.1.2.

NO. V-RR6

Valves: 8977 RWST to Safety Injection Pump Check Valve

Category: C **Code Class:** 2

Test Reqt: Part 10 does not provide for sampling.

Function:

This check valve has an active safety function to open to supply borated water from the RWST to the suction of the safety injection pumps. This valve also has a safety function in the closed position (backflow) to limit potential post-LOCA recirculation leakage to the RWST.

Basis:

This valve cannot be full-stroke exercised during power operation because the safety injection pumps do not develop sufficient head to overcome RCS pressure.

The valve cannot be exercised during cold shutdown because the safety injection pumps are required to be inoperable per Technical Specification Surveillance Requirement 4.5.3.2 to protect against a low temperature overpressurization of the RCS.

Closure verification cannot be performed because there are no test connections or taps installed that will allow testing.

The valve is not equipped with mechanical exercisers, position indicators or differential pressure instrumentation; therefore, valve open or closure capability cannot be verified.

Valve 8977 will be part-stroke exercised quarterly and disassembled, internally inspected, and manually full-stroke exercised on a rotational basis with valve 8924(*), one valve each refueling outage, to verify its capability to open and close. 8977 will be full-flow tested after reassembly. If any degradation is detected that interferes with the valve's operability, then valve 8924 will also be disassembled, internally inspected, and manual full-stroke exercised during the same outage.

(*)NOTE: Valves 8924 and 8977 are combined in the same disassembly inspection group because of their similarities in safety function, design (same manufacturer, size, model number, and materials of construction) and service conditions (normally closed, located in sections of piping not normally in service, horizontal orientation, located in the Aux. Building with the same external environmental conditions, similar design rated accident flows). There are no known differences in valve degradation mechanisms. Therefore, disassembly inspection of one valve each outage provides sufficient assurance that degradation in any valve will be detected.

NO. V-RR6 (cont.)

Justification:

Disassembly and inspection each refueling outage is per Part 10, paragraph 4.3.2.4(c).

Disassembly and inspection sampling program is preapproved per NRC Generic Letter 89-04, Attachment 1, position 2.

NO. V-RR8

Valves: 9011A, Containment Spray Header A Isolation Check Valve (IC)
9011B, Containment Spray Header B Isolation Check Valve (IC)

Category: A,C **Code Class:** 2

Test Reqt: Part 10 does not provide for sampling.

Function:

These check valves have an active safety function to open to allow full containment spray flow following an accident. They also have a safety function in the closed position (back leakage) to provide containment isolation.

Basis:

These valves cannot be exercised during power operations, cold shutdown, or refueling outages because flow through these valves would result in spraying containment.

These valves are not equipped with mechanical exercisers, position indicators or differential pressure instrumentation.

These valves will be disassembled, internally inspected, and manually full-stroke exercised on a rotational basis, one valve each refueling outage. If any degradation is detected that interferes with the valve's operability, then the opposite train valve will also be disassembled, internally inspected, and manual full-stroke exercised during the same outage.

Justification:

Disassembly and inspection each refueling outage is per Part 10, paragraph 4.3.2.4(c).

Disassembly and inspection sampling program is preapproved per NRC Generic Letter 89-04, Attachment 1, position 2.

NO. V-RR10

Valves: 9002A Containment Spray Pump #1 Discharge Check Valve
9002B Containment Spray Pump #2 Discharge Check Valve

Category: C **Code Class:** 2

Test Reqt: Part 10 does not provide for sampling.

Function:

These check valves function to allow full-flow during containment spray following a LOCA. They close to prevent backflow of recirculating post-LOCA sump water back to the RWST in the event that valve 9001A or 9001B is open.

Basis:

These check valves cannot be exercised during power operation because the system alignment for testing would require a containment entry to manually isolate the spray headers for testing and require placing the RHR system in an unanalyzed condition.

It is impractical to test these valves during shutdowns as the flowpath through these valves disables a train of the RHR system. The shutdown test alignment for partial or full stroking the valves places the RHR system in a degraded and precarious operating configuration, and creates the potential for inadvertent spraying of containment, inadequate RHR flow to the RCS, or overfilling of the reactor vessel or refueling cavity. The valves are located in essentially dry pipe and are not subject to cycling; therefore, potential degradation mechanisms are minimal.

These valves will be disassembled, internally inspected, and manually full-stroke exercised, one valve each refueling outage. If any degradation is detected that interferes with the valve's operability, then the remaining valve will also be disassembled, internally inspected, and manually full-stroke exercised during the same outage.

Justification:

Disassembly and inspection each refueling outage is per Part 10, paragraph 4.3.2.4(c).

Disassembly and inspection sampling program is preapproved per NRC Generic Letter 89-04, Attachment 1, position 2.

NO. V-RR11

Valves: MS-5166, SG-2 Steam to Auxiliary Feedwater Pump #1 Check Valve
MS-5167, SG-3 Steam to Auxiliary Feedwater Pump #1 Check Valve

Category: C **Code Class:** 2

Test Reqt: Part 10 does not provide for sampling.

Function:

These check valves function to supply steam to the turbine driven auxiliary feedwater pump. The valves also have a safety function in the closed (reverse-flow) position to prevent an intact steam generator from blowing down to containment through the turbine driven AFW pump steam supply line following a MSLB.

Basis:

Full-stroke opening is verified on a cold shutdown basis, but valve reclosure capability cannot be verified.

These valves are not equipped with mechanical exercisers, position indicators or differential pressure instrumentation. There are no test connections or taps installed that would allow reverse-flow seating verification for these check valves. Alternatively, the ability of the valve to close following actuation will be verified by disassembly and internal inspection on a rotational basis, one valve each refueling outage. If any degradation is detected that interferes with the valve's operability, then the opposite train valve will also be disassembled and internally inspected during the same outage. The valves will be part-stroke tested after reassembly.

Justification:

Disassembly and inspection each refueling outage is per Part 10, paragraph 4.3.2.4(c).

Disassembly and inspection sampling program is preapproved per NRC Generic Letter 89-04, Attachment 1, position 2.