WASHINGTON PUBLIC POWER SUPPLY SYSTEM

NUCLEAR PLANT NO. 2

PUMP AND VALVE INSERVICE TEST PROGRAM PLAN

PUMP AND VALVE INSERVICE TEST
PROGRAM PLAN - REV. 4
WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PLANT NO. 2

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RECORD OF PROGRAM PLAN REVISIONS

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4	11/12/91	REVISION		DRDalton	R Rane.	Jas. Mauney
3b	10/5/87	REVISION		DRDalton	R Rane	TF Hoyle
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*Burns & Roe Flow Diagram Number

1.0 INTRODUCTION

This Pump and Valve Inservice Test Program Plan is applicable to the WPPSS Nuclear Project No. 2, hereinafter referred to as WNP-2. A single unit Boiling Water Reactor (BWR), the power plant is located 11 miles north of Richland, Washington, on the Hanford Reservation. The plant employs a General Electric (GE) supplied nuclear steam supply system designated as BWR/5. The reactor is contained within an over-under drywell/wetwell containment vessel designated Mark II. The plant rated electrical output is 1,145 MWe.

This program plan is referenced in the WNP-2 FSAR, Section 3.9.6, and has been prepared as the controlling document governing Pump and Valve Inservice Testing at WNP-2. The requirements for Pump and Valve Inservice Testing are outlined in the ASME Boiler and Pressure Vessel Code, Section XI, entitled "Rules for Inservice Inspection of Nuclear Power Plant Components." The scope of this plan encompasses the testing of ASME Section III Nuclear Class 1, 2 and 3 pumps and valves, as defined by Subsections IWP and IWV of the ASME Code Section XI. This program plan complies with the requirements of the ASME Code 1980 Edition, with addenda through Winter, 1980 (and with addenda through Winter, 1981), GL 89-04 and WNP-2 IST SER dated May 7, 1991. Specific exceptions to the Code, GL 89-04 and SER are handled on a case by case basis and documented either by reference in this IST plan or by separate correspondence. This is consistent with FSAR commitments and with federal requirements for component testing as stated in Title 10, Code of Federal Regulations, part 50 (10CFR50.55a(g)).

This Program Plan is comprised of two subprograms -- the Pump Inservice Test Program and the Valve Inservice Test Program. The detailed description of the scope, implementation, and administration of these two programs is detailed in subsequent sections (3.0 and 4.0).

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3.0 WNP-2 Pump Inservice Test Program

3.1 Introduction

Highly reliable safety related equipment is a vital consideration in the operation of a nuclear generating station. To help assure operability, the WNP-2 Pump Inservice Test Program has been developed. The Program is designed to detect and evaluate significant hydraulic or mechanical changes in the operating parameters of vital pumps and to initiate corrective action when necessary. The Program is based on the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWP. To the maximum extent practical the Program complies with the specifications of the approved Codes[1], Regulations[2], and Generic Letters[3]. |

The Supply System recognizes that design differences among plants may render impractical certain Code requirements. For example, it is not always practical to require suction pressure measurement on vertical turbine ("deep well") type pumps. Where such impracticalities exist, they have been substantiated as exceptions as allowed by the Code. Alternate testing requirements have been proposed when warranted. The Relief Requests which document the exceptions comprise Section 3.6.

The Supply System is confident that the WNP-2 Pump Inservice Test Program complies with the intent of the approved Codes[1], Regulations[2], and Generic Letters[3] and contributes to ensuring the safety of the general public. |

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1. ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWP, (1980 Edition with Addenda through Winter, 1980 and 1981).

2. 10CFR 50.55 a(g).

3. Generic Letter 89-04 |

3.2 Program Implementation

Surveillance testing is performed to detect equipment malfunction or degradation and to initiate corrective action. Since the safety related pumps are normally in a standby mode, periodic testing of this equipment is especially important. The WNP-2 Pump Inservice Test Program provides a schedule for testing safety related pumps. It will be implemented as part of the normal surveillance routine.

Reference values are established and maintained in accordance with IWP-3110 and measured in accordance with IWP-4000 of the ASME Code. In most cases, test parameters are measured with permanently installed plant instrumentation. This approach simplifies the test program and promotes timely completion of surveillance testing. When permanently installed instrumentation is not available, portable instrumentation is used to record the required parameters.

During subsequent surveillance tests, flow rate is normally selected as the independent test parameter and is set to match the reference flow rate. Then other hydraulic and mechanical performance parameters are measured in accordance with IWP-4000 and evaluated against the appropriate reference values in accordance with IWP-3200. The results of such evaluations determine whether or not corrective action is warranted.

Each pump in the Pump Test Program is tested according to a detailed test procedure. The procedure includes, as a minimum:

a) Statement of Test Purpose. This section identifies test objectives, references applicable Technical Specifications and may note the operating modes for which the test is appropriate.

b) Prerequisites for Testing. System valve alignment, equipment for proper pump operation (cooling water, ventilation, etc.) and additional instrumentation (e.g., portable temperature or vibration monitors) is noted. Identification numbers, range and calibration verification (IWP-4140) of instrumentation are recorded.

c) Test Instructions. Directions are sufficiently detailed to assure completeness and uniformity of testing. Instructions include provisions for returning system to its normal standby configuration following testing. (For informational purposes, proposed flow paths are illustrated in Section 3.7.)

d) Acceptance Criteria. The ranges within which test data is considered acceptable is established by the Supply System and included in the test procedure. In the event that the data fall outside the acceptable ranges, operator action is governed by approved Administrative Procedures.

e) Test Instruments. A description of instruments used.

f) Reference Values.

Finally it is recognized that the Pump Inservice Test Program sets forth minimum testing requirements. Additional testing will be performed, as required, after pump maintenance or as determined necessary by the Plant Staff.

3.3 Program Administration

Management of the IST Program Plan is controlled through NOS-34 ("Inservice Testing of Pumps and Valves"). The WNP-2 Plant Manager is responsible for implementing the testing requirements of the Program Plan. The Plant Technical Manager is responsible for development and maintenance of the Program Plan.

The IST Engineer has responsibility for preparation, review, revision and control (including distribution) of the IST Program Plan. These responsibilities are controlled by plant procedures. The IST Engineer will maintain the Master Copy of the Program Plan, which will contain the most recent changes to the plan.

Changes to the IST Program Plan that do not require a relief request for impractical Code requirements will be accomplished consistent with Generic Letter 89-04 and will be submitted to the Authorized Nuclear Inspector Inservice for concurrence prior to incorporation into the Program Plan. (SER REQUIREMENT)

Changes to the IST Program Plan involving a relief request from impractical Code requirements will be accomplished consistent with 10CFR50.55a and Generic Letter 89-04. These Relief Requests will be submitted to the NRC for review and approval prior to implementation. (SER REQUIREMENT)

Components failing to meet test requirements will be dispositioned by the Plant's Problem Evaluation Request program. Specific responsibilities are defined in the Plant procedures.

3.4 Pump Reference List

This list gives a brief description of each pump identified in the Pump Test Tables, Section 3.5.

CCH-P-1A, 1B

The emergency chilled water pumps circulate water in a hydraulically closed loop. The pumps discharge into an evaporative heat exchanger and then to cooling coils used in the emergency air conditioning system for the Control Room and back to pump suction.

DO-P-1A, 1B, 2

These pumps transfer diesel generator fuel oil from the subterranean storage tanks to the diesel's Day Tanks. Pump 2 is dedicated to the HPCS Diesel. The discharge lines of Pump 1A and 1B are cross tied, and each pump can supply fuel to either Diesel 1A or 1B.

FPC-P-1A, 1B

The Fuel Pool Circulation (FPC) pumps take suction on the spent fuel pool and discharge through the FPC heat exchangers and, during normal operation, through the Fuel Pool Filter/Demineralizers.

HPCS-P-1

The High Pressure Core Spray pump provides emergency cooling spray to the reactor core. It is capable of injecting coolant at pressures equal to or above normal reactor operating pressures. The pump can take suction from the Condensate Storage Tank or from the Suppression Pool.

HPCS-P-2

This pump is dedicated to providing cooling water to the HPCS Emergency Diesel Generator, the standby power source for the High Pressure Core Spray System. HPCS-P-2 is located in the Pump House and takes suction from the spray pond.

LPCS-P-1

A high capacity, low head pump, the Low Pressure Core Spray pump provides cooling spray to the reactor core upon receipt of loss of coolant signal. LPCS-P-1 takes suction from the suppression pool.

RCIC-P-1

The turbine driven Reactor Core Isolation Cooling pump supplies coolant to the core in the event of reactor vessel isolation. It can take suction from either the Condensate Storage Tank or from the suppression pool.

RHR-P-2A, 2B, 2C

The Residual Heat Removal pumps are high capacity, low head pumps which have multiple uses during normal and emergency plant conditions. Briefly the system:

a) In conjunction with other systems, restores and maintains reactor coolant inventory in the event of a LOCA

b) Removes decay heat after shutdown

c) Cools the suppression pool

d) Can provide cooling spray to upper and lower drywell and to the wetwell

e) Can assist in fuel pool cooling

f) Can provide a condensing spray to the reactor head

g) Provides a flow path for Standby Service Water in case containment flooding is required.

Pumps take suction from the suppression pool in the standby operating mode.

SLC-P-1A, 1B

The Standby Liquid Control pumps are used to inject negative reactivity (sodium pentaborate) into the core independently of the control rod system. Suction is obtained from a storage tank containing the sodium pentaborate solution.

SW-P-1A, 1B

The Standby Service Water pumps supply cooling water to separate trains of safety related equipment. The pumps take suction on their respective spray ponds but eventually discharge to the opposite pond. The two ponds are the ultimate heat sink during loss of offsite power conditions.

3.5 Pump Inservice Test Tables

The Test Table is the heart of the Pump Test Program. It presents a graphic display of the type and frequency of testing which the Supply System intends for its Class 1, 2 and 3 pumps. The Table incorporates the exceptions requested in Section 3.6 (Relief Requests).

Legend

Q = Quarterly (92 day interval) test
A = Annual test
N/A = Not applicable. See Relief Requests
NR = Not required
IWP - 4400 does not require pump speed measurement if pump is directly coupled to a constant speed motor driver.

WNP-2 Pump Inservice Test Table

IWP Parameter

Pump Ident.	ASME Code Class	Inlet Pressure, P_i	Discharge Pressure, P_o	Differential Pressure, P	Flowrate, Q	Vibration, V	Pump Speed, N	Lubrication Level/ Pressure	Relief Request(s)
CCH-P-1A	3	Q	Q	Q	Q	Q	NR	Q	1
CCH-P-1B	3	Q	Q	Q	Q	Q	NR	Q	1
DO-P-1A	3	Q	Q	Q	Q	Q	NR	N/A	1,5,6
DO-P-1B	3	Q	Q	Q	Q	Q	NR	N/A	1,5,6
DO-P-2	3	Q	Q	Q	Q	Q	NR	N/A	1,5,6
FPC-P-1A	3	Q	Q	Q	Q	Q	NR	Q	1
FPC-P-1B	3	Q	Q	Q	Q	Q	NR	Q	1
HPCS-P-1	2	Q	Q	Q	Q	Q	NR	Q	1
HPCS-P-2	3	N/A	Q	N/A	Q	Q	NR	Q	1,3
LPCS-P-1	2	Q	Q	Q	Q	Q	NR	Q	1

WNP-2 Pump Inservice Test Table

IWP Parameter

Pump Ident.	ASME Code Class	Inlet Pressure, P_i	Discharge Pressure, P_o	Differential Pressure, ΔP	Flowrate, Q	Vibration, V	Pump Speed, N	Lubrication Level/ Pressure	Relief Request(s)
RCIC-P-1	2	Q	Q	Q	Q	Q	Q	Q	1
RHR-P-2A	2	Q	Q	Q	Q	Q	NR	Q	1
RHR-P-2B	2	Q	Q	Q	Q	Q	NR	Q	1
RHR-P-2C	2	Q	Q	Q	Q	Q	NR	Q	1
SLC-P-1A	2	N/A	Q	N/A	Q	Q	NR	Q	1,2
SLC-P-1B	2	N/A	Q	N/A	Q	Q	NR	Q	1,2
SW-P-1A	3	N/A	Q	N/A	Q	Q	NR	Q	1,3
SW-P-1B	3	N/A	Q	N/A	Q	Q	NR	Q	1,3

3.6 Relief Requests From Certain IWP Requirements

Relief Requests identify Code requirements which are impractical for WNP-2 and provide technical justification for the requested exception. Where appropriate, they also propose alternate testing to be performed in lieu of the Code requirements.

RELIEF REQUEST RP-1

Pump(s)

CCH-P-1A, 1B	HPCS-P-1, 2	RHR-P-2A, 2B, 2C
DO-P-1A, 1B, 2	LPCS-P-1	SLC-P-1A, 1B
FPC-P-1A, 1B	RCIC-P-1	SW-P-1A, 1B

Section XI Code Requirement
for which Relief is Requested

Measure bearing temperature and vibration. (IWP-3100)

Basis for Request

1. Except for FPC, SLC, CCH, and RCIC pumps, these pumps are vertical line shaft ("deep well") type pumps and are immersed in the fluid being pumped. This precludes measuring pump bearing vibration except for inboard bearings or pump motor bearings as specified in ASME/ANSI OMa-1988, Part 6.

2. IWP-4300 only requires temperature measurement of "centrifugal pump bearings outside the main flow path". The outboard and intermediate bearings of all pumps are in the main flow path. Therefore, temperature measurement of these bearings is not required. The inboard bearings of the RHR pumps, LPCS-P-1 and HPCS-P-1, are cooled by the seal injection water which returns internally to the discharge flow. The inboard bearing on HPCS-P-2 (the head bearing), SW-P-1A and 1B, and DO-P-1A, 1B, and 2 are cooled by the pumped fluid which returns to the discharge flow with no provision for temperature measurement.

3. Although the bearings for the FPC, SLC, CCH, and RCIC pumps are accessible, bearing housing temperature is not a good predictor of bearing condition. Hence, temperature measurement is an unnecessary requirement with unreliable results.

4. The Fuel Pool Cooing (FPC) and Diesel Fuel Oil (DO) transfer pumps have a history of operating at high vibration levels. These pumps are currently being evaluated by the Supply System to try and reduce vibration levels to the OM-6 upper limits. The limits established in Alternate Testing Proposed, Item 4, will ensure that required action is taken if vibration levels increase, and also ensure the pump isn't prematurely declared inoperable. The Supply System will use these higher limits until the vibration is decreased and new limits, or those of OMa-1988, Part 6 can be used. These limits are based on a reasonable deviation from the reference valve.

RP-1 (Continued)

Alternate Testing Proposed

1. All pumps will be tested at approxiately the design flow rate of the pump. Hydraulic parameters will be taken in accordance with ASME Section XI; and the acceptance criteria of Section XI will be used.

2. Vibration testing will be conducted in accordance with all the vibration measurement requirements of ASME/ANSI OMa-1988, Part 6.

3. Vibration alert levels and Required Action levels in accordance with OMa-1988, Part 6 will be individually established for each pump and will be specified in the surveillance procedures. An exception is for DO-P-1A, 1B, 2 and FPC-P-1A, 1B. See Item 4 following.

4. The upper limit for vibration velocity for the following pumps shall not exceed:

	ALERT	REQUIRED ACTION
FPC-1A; 1B	.55 in/sec	.7 in/sec
DO-P-1A; 1B, 2	1.4 in/sec	1.6 in/sec

Quality/Safety Impact

Measurement of vibration velocity provides more concise and consistent information with respect to pump and bearing condition. The usage of vibration velocity measurements can provide information as to a change in the balance of rotating parts, misalignment of bearings, worn bearings, changes in internal hydraulic forces and general pump integrity prior to the condition degrading to the point where the component is jeopardized. Bearing temperature does not always predict such problems. An increase in bearing temperature may not occur until the bearing has deteriorated to a point where additional pump damage may occur. Bearing temperatures are also affected by the temperatures of the medium being pumped, which could yield misleading results. Vibration readings are not affected by the temperature of the medium being pumped, thus the readings are more consistent. The proposed alternate testing will result in the maximum meaningful data regarding pump bearing condition. Since vibration velocity analysis is more predictive in nature than bearing temperature measurement, the alternate testing serves to increase levels of safety and quality.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 2.1.2.1, 2.1.3.1, 2.1.4.1, 2.1.5.1

This relief request was granted with provisions that 1) all vibration requirements in ASME/ANSI OMa-1988, Part 6 be met and 2) that the pumps FPC-P-1A and -1B and DO-P-1A, -1B and -2 vibration limits specified in the relief request be reviewed and justified or reestablished by May 13, 1992, or the next refueling outage (R-7) whichever is later.

RELIEF REQUEST RP-2

Pump(s)

SLC-P-1A
SLC-P-1B

Section XI Code Requirement
for which Relief is requested

Measure pump inlet pressure, P_i, and pump differential pressure, $\triangle P$. (IWP-3100).

Basis for Request

1. The SLC pumps are positive displacement pumps which, at a constant speed, deliver essentially the same capacity at any pressure within the capability of the driver and the strength of the pump. The SLC pumps are directly coupled to constant speed drive motors.

2. Surveillance requirements specify system alignments which assure adequate NPSH for the pumps.

3. There is no provision for suction pressure instrumentation.

4. Acceptable discharge pressure and flowrate will suffice as proof of adequate suction pressure.

Alternate Testing Proposed

Pump discharge pressure and flowrate will be measured and recorded during testing.

Quality/Safety Impact

Measurement of these parameters assures acceptable level of quality and safety since inadequate suction pressure would be indicated by erratic discharge pressure indication, subnormal flow rates and increased pump vibration and noise. These abnormal indications will be investigated and corrected as required by IWP-3200.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 2.2.1

This relief was granted as requested.

RELIEF REQUEST RP-3

Pump(s)

HPCS-P-2 SW-P-1A
SW-P-1B

Section XI Code Requirement
for which Relief is Requested

Measure pump inlet pressure, P_i, and differential pressure, P. (IWP-3100)

Basis for Request

(1) SW-P-1A, 1B and HPCS-P-2 are vertical line shaft type pumps which are immersed in their water source. They have no suction line which can be instrumented.

(2) Technical Specifications state minimum allowable spray pond level to assure adequate NPSH and cooling water supplies.

(3) Difference between allowable maximum pond level and minimum level is only eighteen (18) inches of water or 0.7 psi. This small difference will not be significant to the Test Program and suction pressure will be considered essentially constant.

(4) Acceptable flowrate and discharge pressure will suffice as proof of adequate suction pressure.

Alternate Testing Proposed

Spray pond level and pump discharge pressure will be recorded during the testing of these pumps.

Quality/Safety Impact

The effect of setting the Code Acceptance Criteria on discharge pressure instead of differential pressure as specified in the Code will have no negative impact on detecting pump degradation. A review of the discharge gauge reading, which is uncorrected for elevation, compared to differential pressure readings shows that basing corrective action on discharge pressure is slightly more conservative than basing it on differential pressure for these pump installations.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 2.3.1

This relief was granted with the provision that acceptance criteria be assigned to discharge pressure that gives equivalent protection provided by the Code for ΔP.

RELIEF REQUEST RP-4

DELETED PRIOR TO SER REVIEW

RELIEF REQUEST RP-5

Pumps

DO-P-1A
DO-P-1B
DO-P-2

Section XI Code Requirement
For Which Relief is Requested

IWP-4600. Flow rate shall be measured using a rate or quantity meter installed in the pump test circuit.

Basis for Request

A rate or quantity meter is not installed in the test circuit. To have one installed would be costly and time consuming with few compensating benefits.

Alternate Testing Proposed

Pump flow rate will be determined by measuring the volume of fluid pumped and dividing by the corresponding pump run time. The volume of fluid pumped will be determined by the difference in fluid level in the day tank at the beginning and ending of the pump run time (day tank fluid level corresponds to volume of fluid in the tank). The pump flow rate calculation methodology meets the accuracy requirements of IWP-4110-1.

Quality/Safety Impact

The day tanks are horizontal cylindrical tanks with eliptical ends. The tank fluid volume is approximately 3,200 gallons. Fluid level measurement is accurate to an eighth inch which corresponds to an average volume error of approximately 11 gallons. The test methodology used to measure pump flow rate will provide results consistent with code requirements. This will provide adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference 2.4.1

The relief request was granted with the provision that the calculated pump flow rate meets the accuracy requirements of Table IWP-4110-1 for flow rate.

RELIEF REQUEST RP-6

Pumps

DO-P-1A
DO-P-1B
DO-P-2

Section XI Code Requirement
For Which Relief is Requested

IWP-3100. Inlet pressure (Pi) shall be measured before pump startup and during test.

Basis for Request

The storage tanks from which these pumps take suction are horizontal cylindrical tanks, twelve feet in diameter, and a volume of 60,000 gallons (except for DO-TK-2 which is 50,000 gallons). The storage tanks are significantly larger than the 3200 gallon capacity day tanks to which these pumps discharge. The change in storage tank level during the course of a pump operability test results in an insignificant change to suction pressure. Since the system is not instrumented for suction pressure measurement, suction pressure is determined by measuring storage tank level. Storage tank level increases when the pump starts, so accurate suction pressure measurements cannot be determined while the pump is running.

Alternate Testing Proposed

Suction pressure will only be determined prior to pump startup. This will contribute to uniform fluid density and accurate level measurements resulting in an accurate suction pressure measurement. The calculated pump inlet pressure meets the accuracy requirements of IWP-4110-1.

Quality/Safety Impact

Not measuring pump inlet pressure during test for these pumps will have no adverse effect on determining the operational readiness of these pumps. The relevant pump operability parameters are measured and evaluated consistent with code requirements. This will provide adequate assurance of material quality and of the operational readiness of these pumps in the interest of public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 2.4.2

Relief request granted provided pump inlet pressure is calculated based on the height of the fluid level above pump suction and the calculation accuracy meets Table IWP-4110-1 accuracy requirements.

RELIEF REQUEST RG-1

NRC Acceptance/SER Dated May 7, 1991

Relief request denied.
SER/TER 2.1.1.1

REQUEST FOR RELIEF NO. RP-7

Pumps

All

Section XI Code Requirements
For Which Relief if Requested

IWP-3100 - Vary the system resistance until either the measured differential pressure or measured flow rate equals the corresponding reference value.

Basis for Request

1. It is very difficult to adjust flow on some systems such as Service Water. These systems must be flow balanced to achieve proper performance.

2. Inaccuracies can result if a system is set close to the reference flow but not precisely on it.

3. The Code allows multiple reference points. This is an expansion of that philosophy.

Alternate Testing Proposed

A reference curve is established for each pump from data taken on that pump. The pump data is taken with the pump in its normal lineup that will be used in subsequent inservice tests.

The reference curves are based on flow rate with the acceptance criteria curves based on differential or discharge pressure as appropriate. See the attached sample SW-P-1A Acceptance Criteria Sheet. Area 1, 2, 3, 4 is the acceptable range for pump performance. Areas outside 1, 2, 3, 4 but within 5, 6, 7, 8 are the Alert area, and the area outside of 5, 6, 7, 8 is the Required Action range.

For RCIC-P-1, a variable speed pump, flowrate is set (currently +2%, -1% of the reference flow rate) and the reference curve is based on speed with acceptance criteria based on differential pressure. This is done because of the difficulty in setting speed as specified by the Code.

If a minimum flow rate is applicable, e.g. Technical Specification limits, it will be shown as to bound the required action area.

The reference curve is established only for the area of anticipated testing. This is typically within, plus 5% or minus 10% of the reference flow. Most systems will be tested at a very near ($\pm$2%) of a particular flow point.

RP-7 (Continued)

All pumps are tested at essentially full design flow rate.

Vibration data is taken at the reference point which is anticipated to be used during subsequent tests. It is not expected that pump vibration would change over the narrow range of the curve. Note that the code only requires vibration data at the reference point and if the pump degraded to 95% of the reference point additional data is not required.

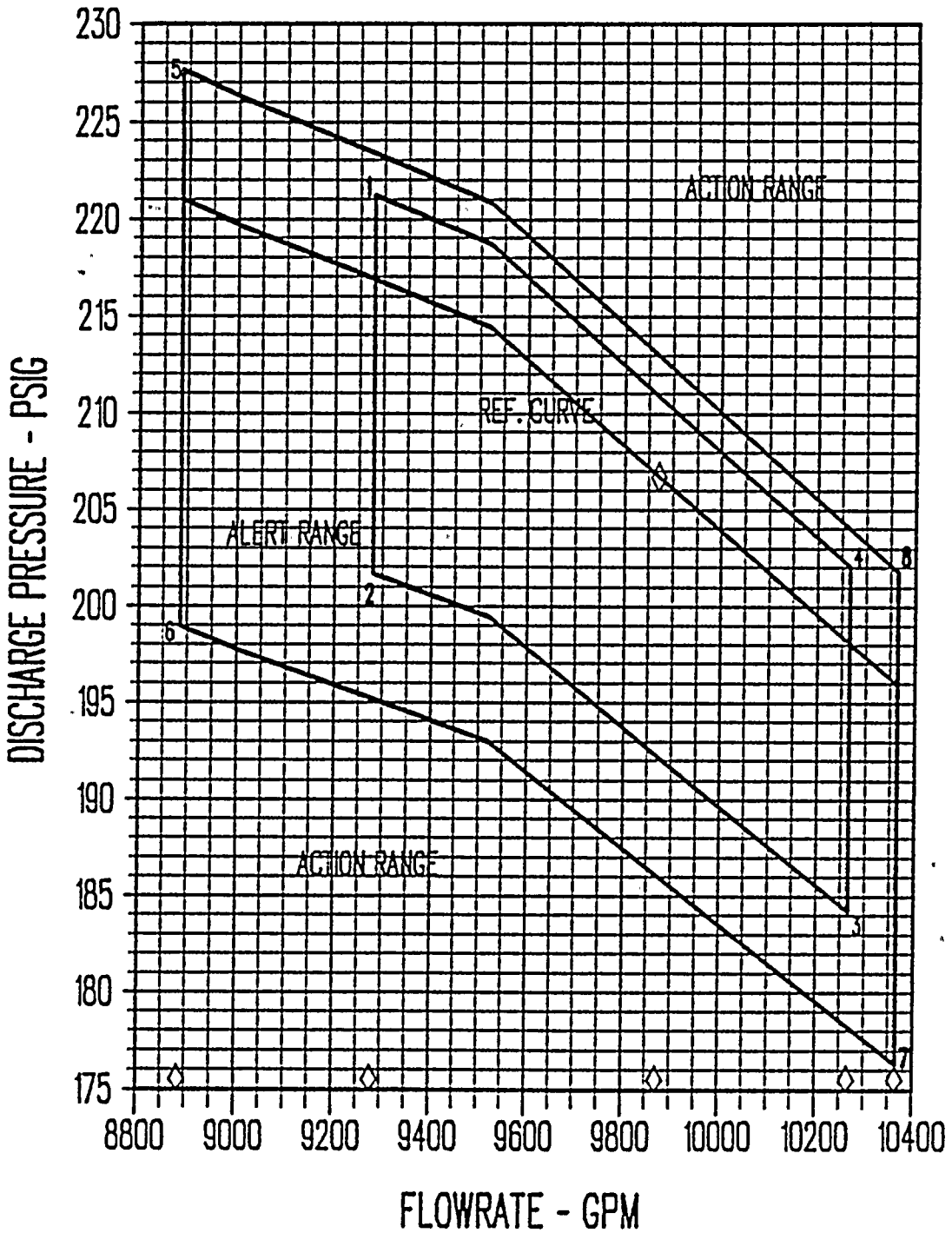
Quality/Safety Impact

The effect of granting this relief will have no adverse impact on plant safety. It is expected that the quality of the testing program will be enhanced by getting slightly better, more trendable data.

NRC Acceptance

Pending

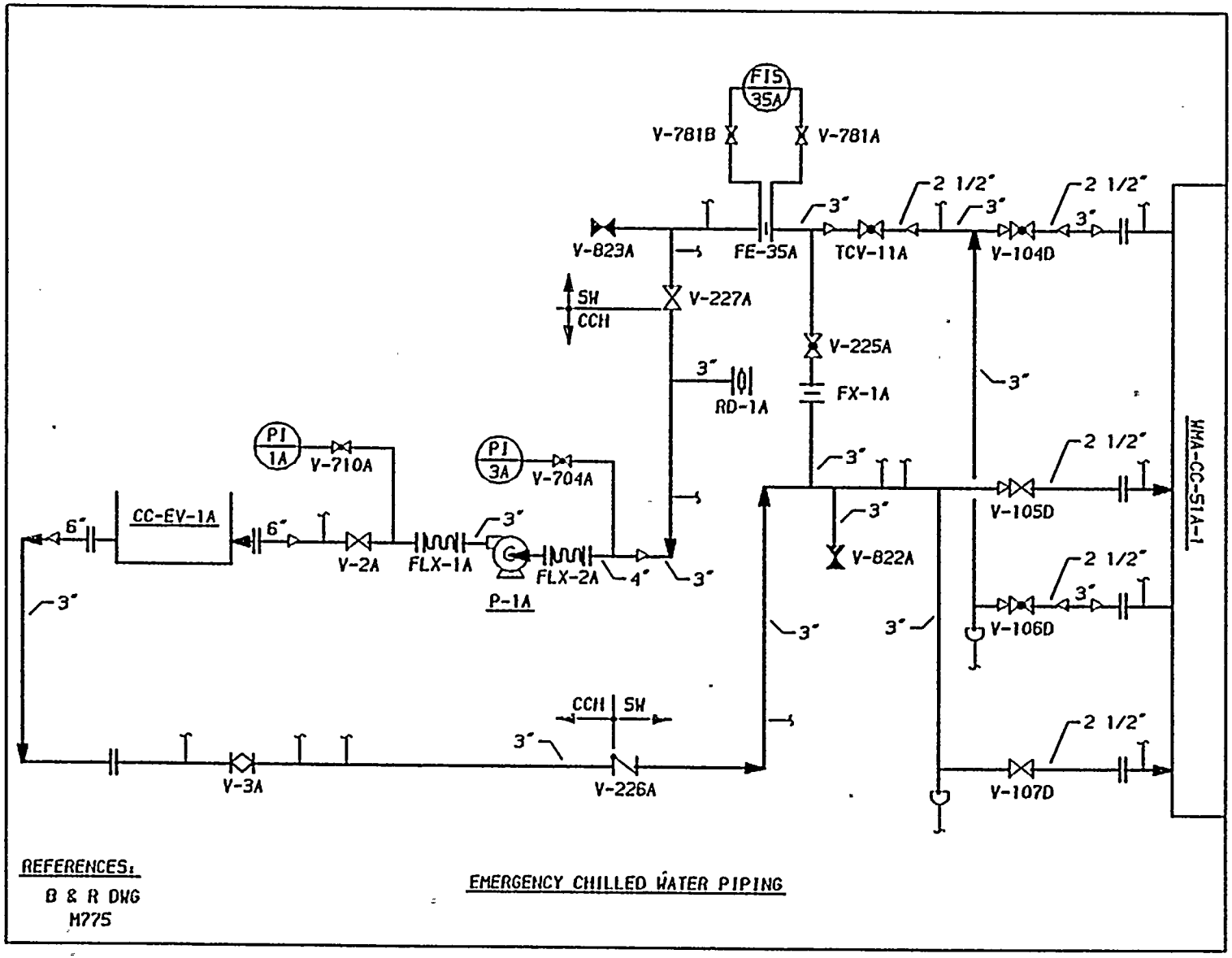
SW-P-1A ACCEPTANCE CRITERIA



ALERT RANGE = Area Outside 1-2-3-4 ACTION RANGE = Area Outside 5-6-7-8

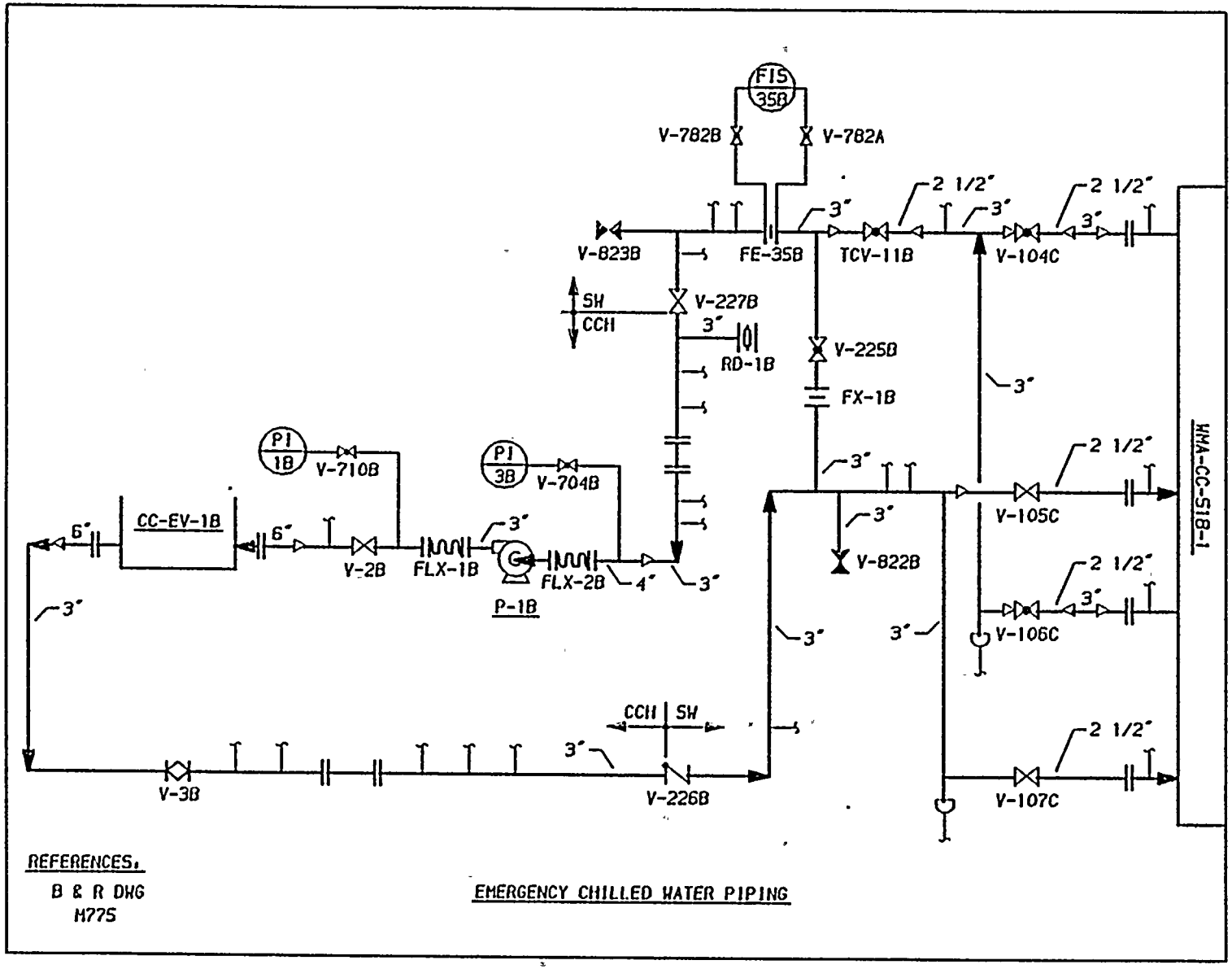
3.7 Proposed Pump Test Flow Paths

These flow paths are proposed for use during pump and valve testing. Surveillance procedures define actual system lineup for testing pumps and valves.

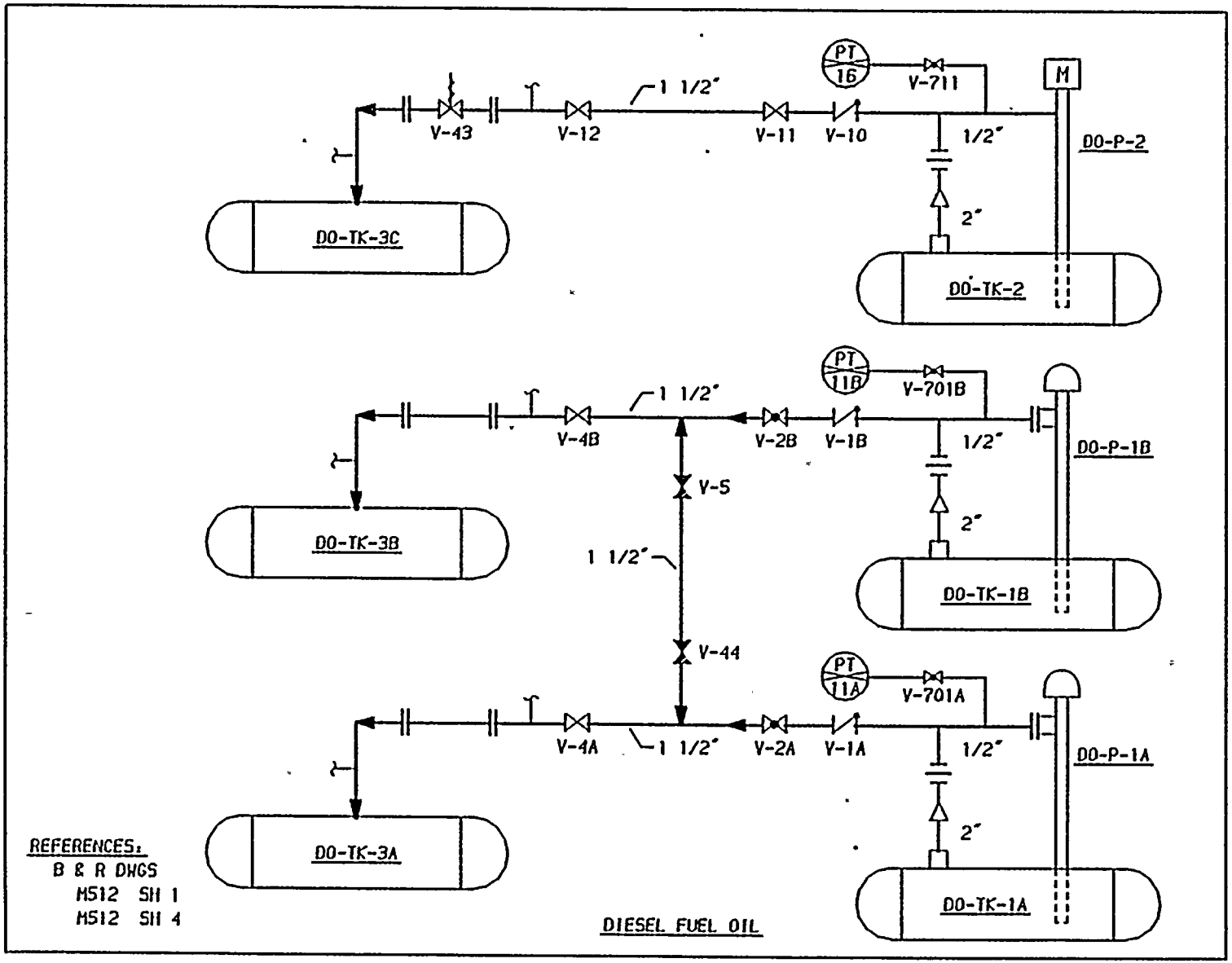


REFERENCES:
B & R DWG
M775

EMERGENCY CHILLED WATER PIPING

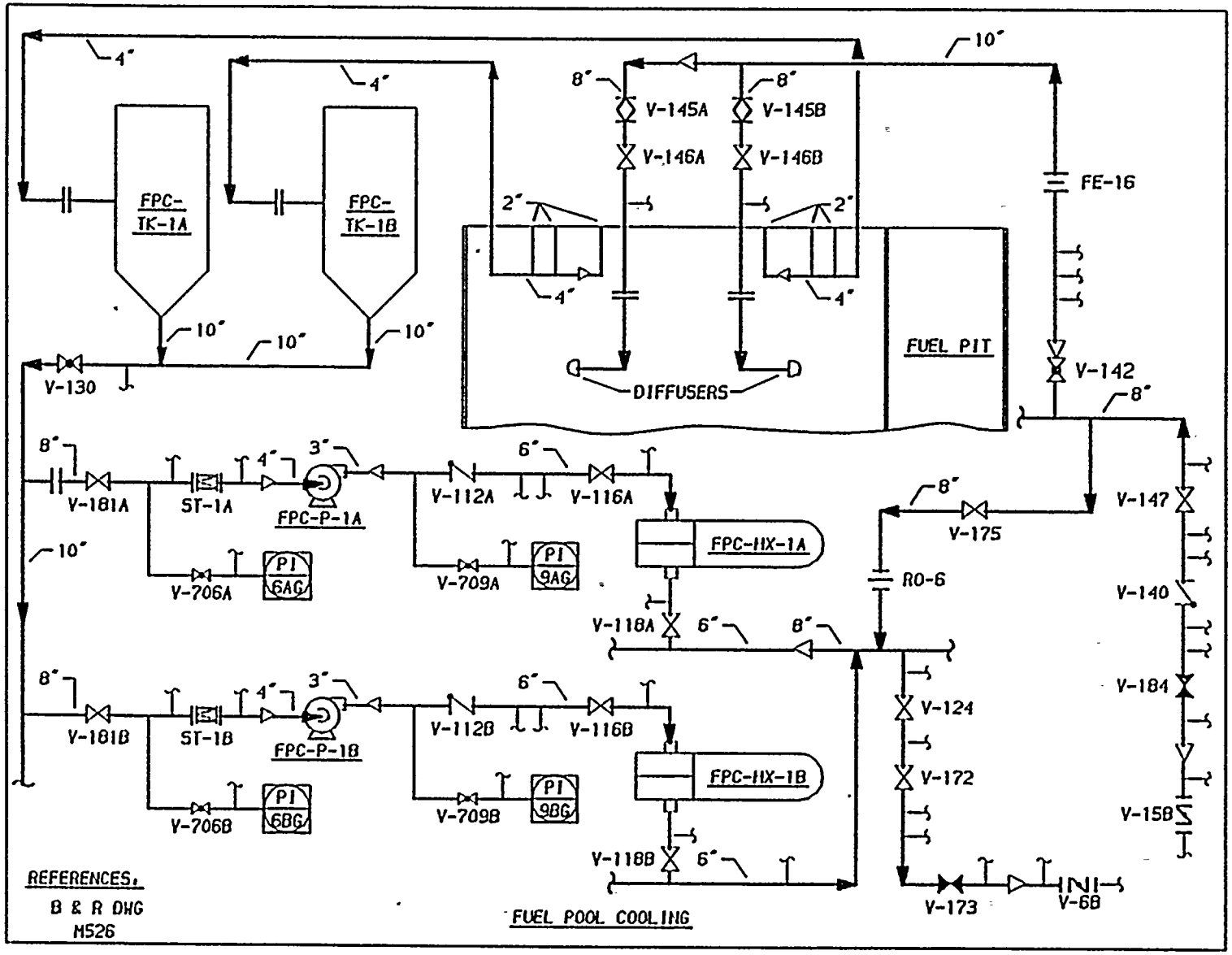


CCH-P-1B PUMP TEST FLOW PATH

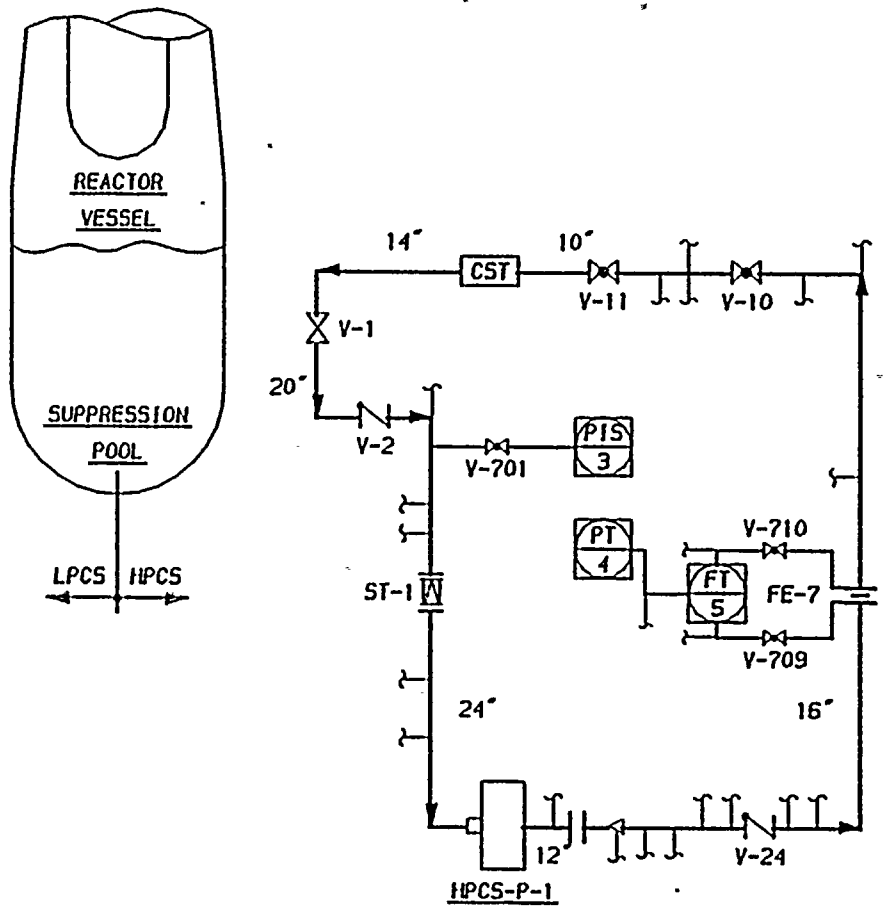


DO-P-1A, DO-P-1B & DO-P-2

PUMP TEST FLOW PATH



FPC-P-1A & FPC-P-1B
PUMP TEST FLOW PATH

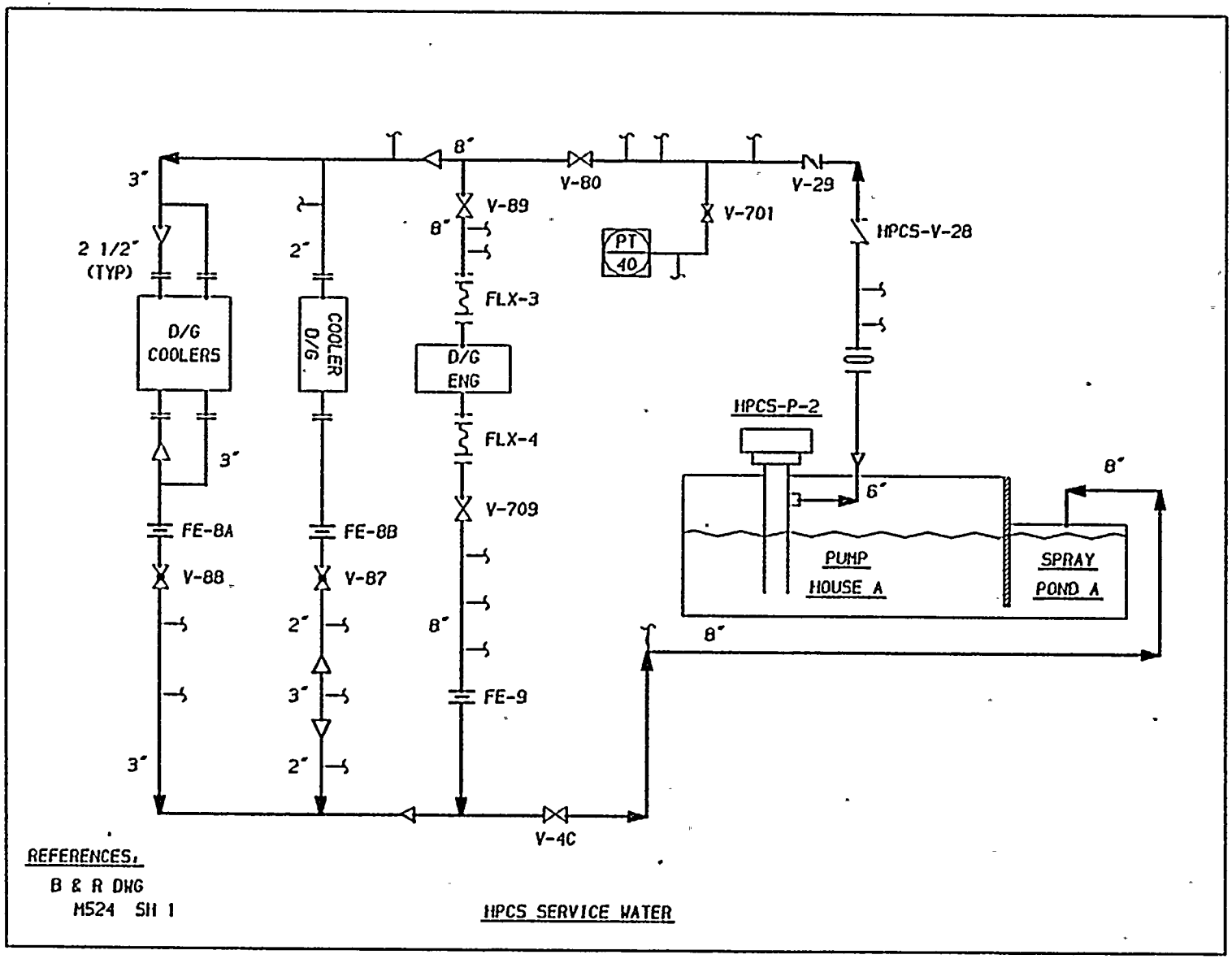


REFERENCES,

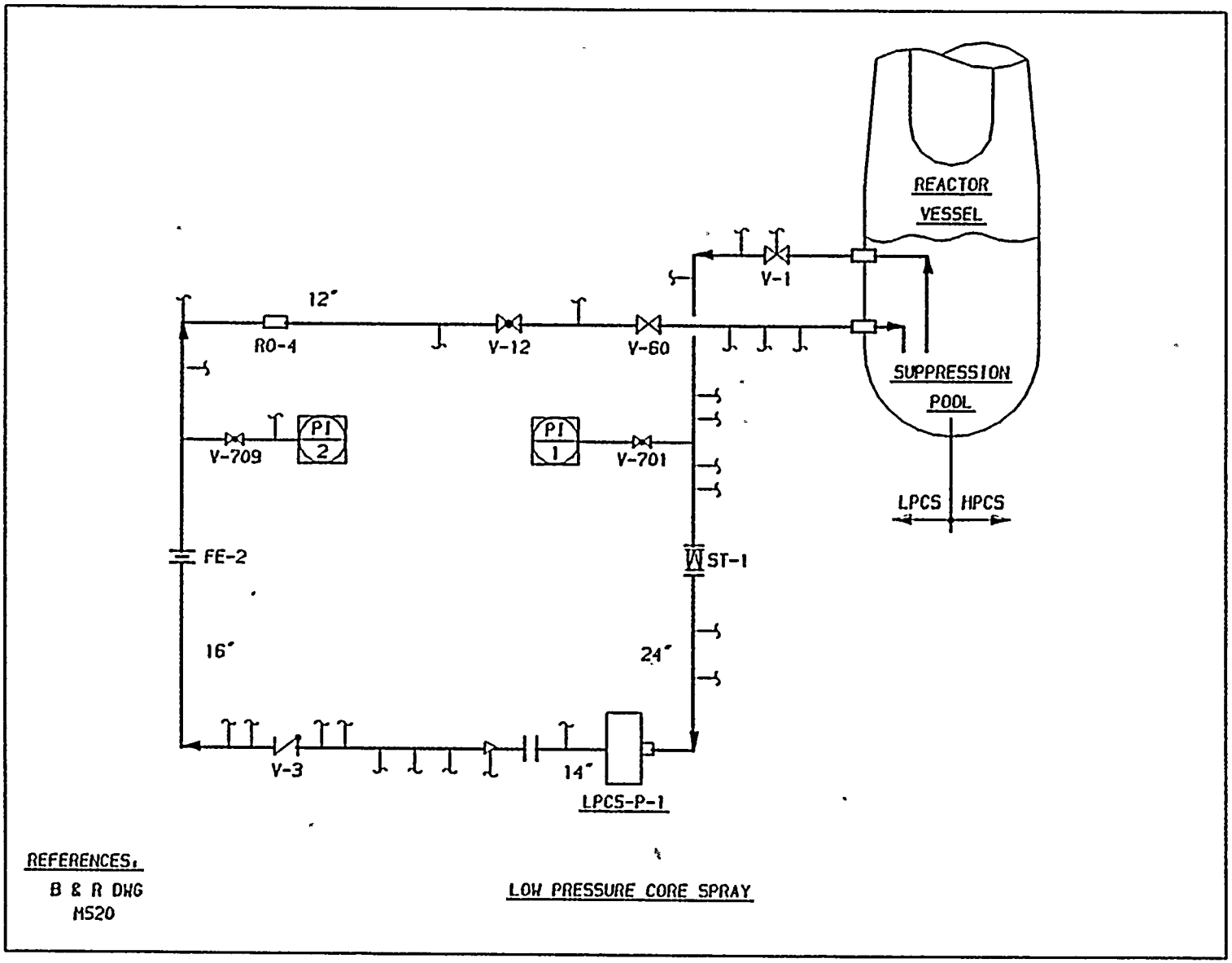
B & R DWG
M520

HIGH PRESSURE CORE SPRAY

HPCS-P-1 PUMP TEST FLOW PATH



HPCS-P-2 PUMP TEST FLOW PATH

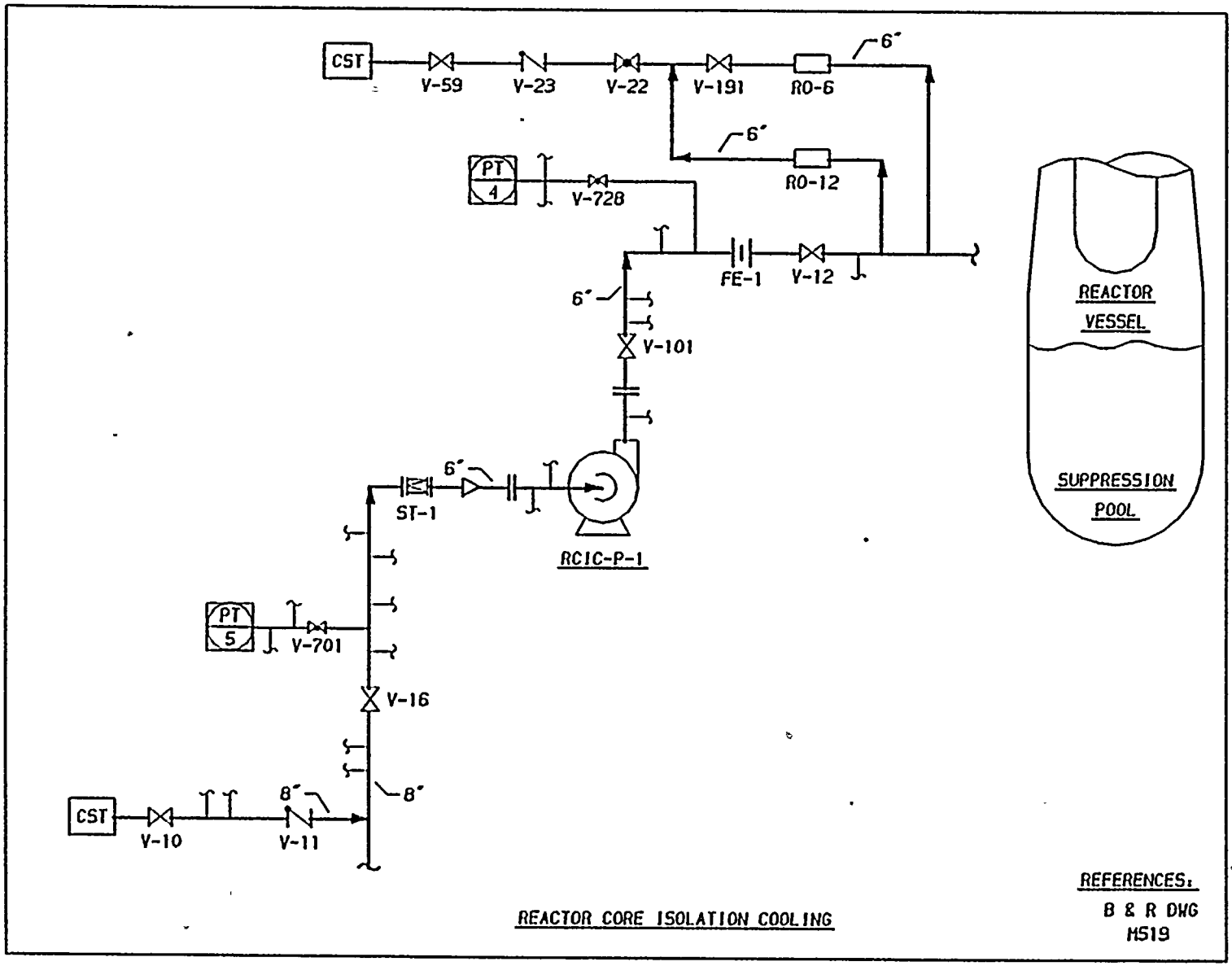


REFERENCES:

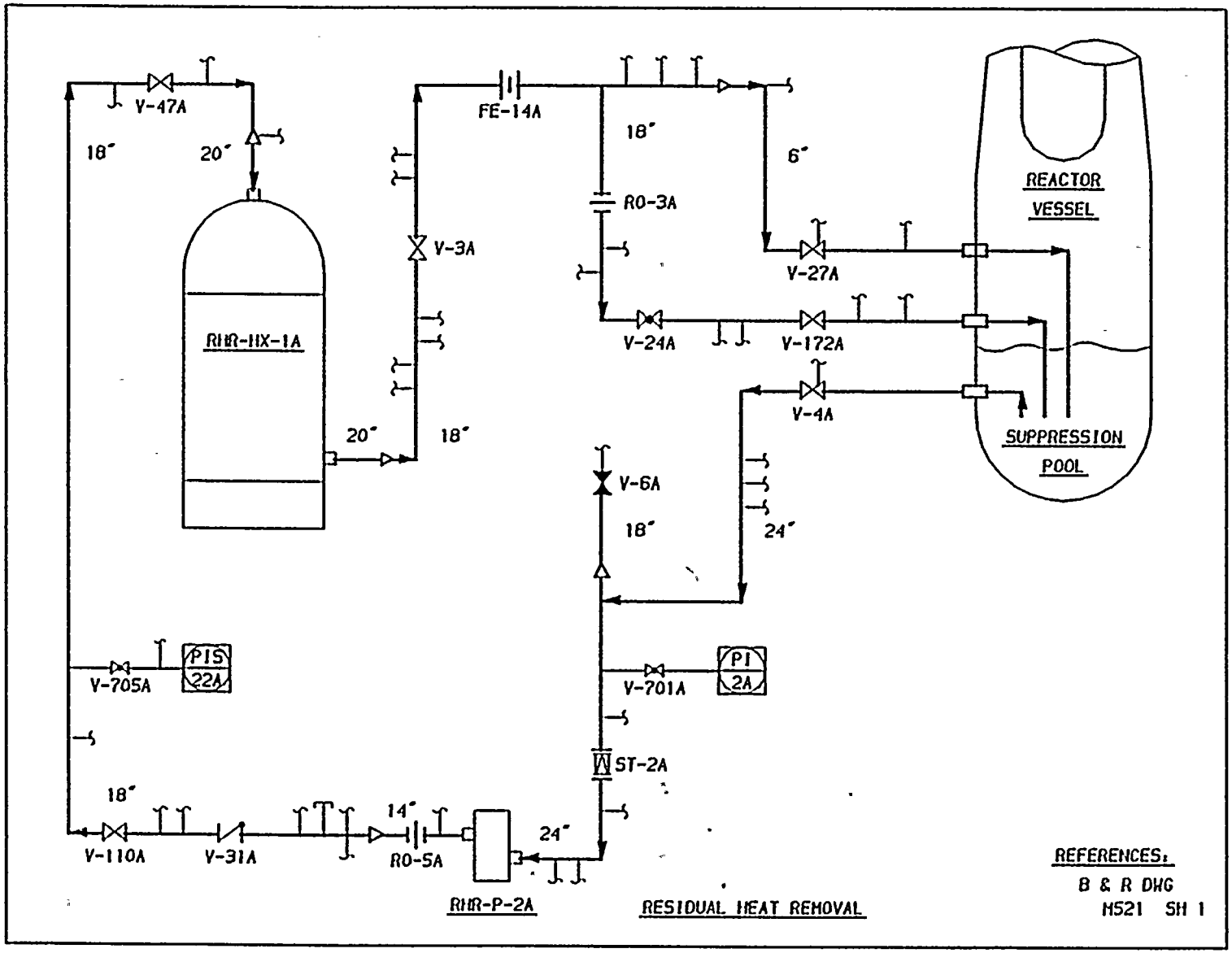
B & R DWG
M520

LOW PRESSURE CORE SPRAY

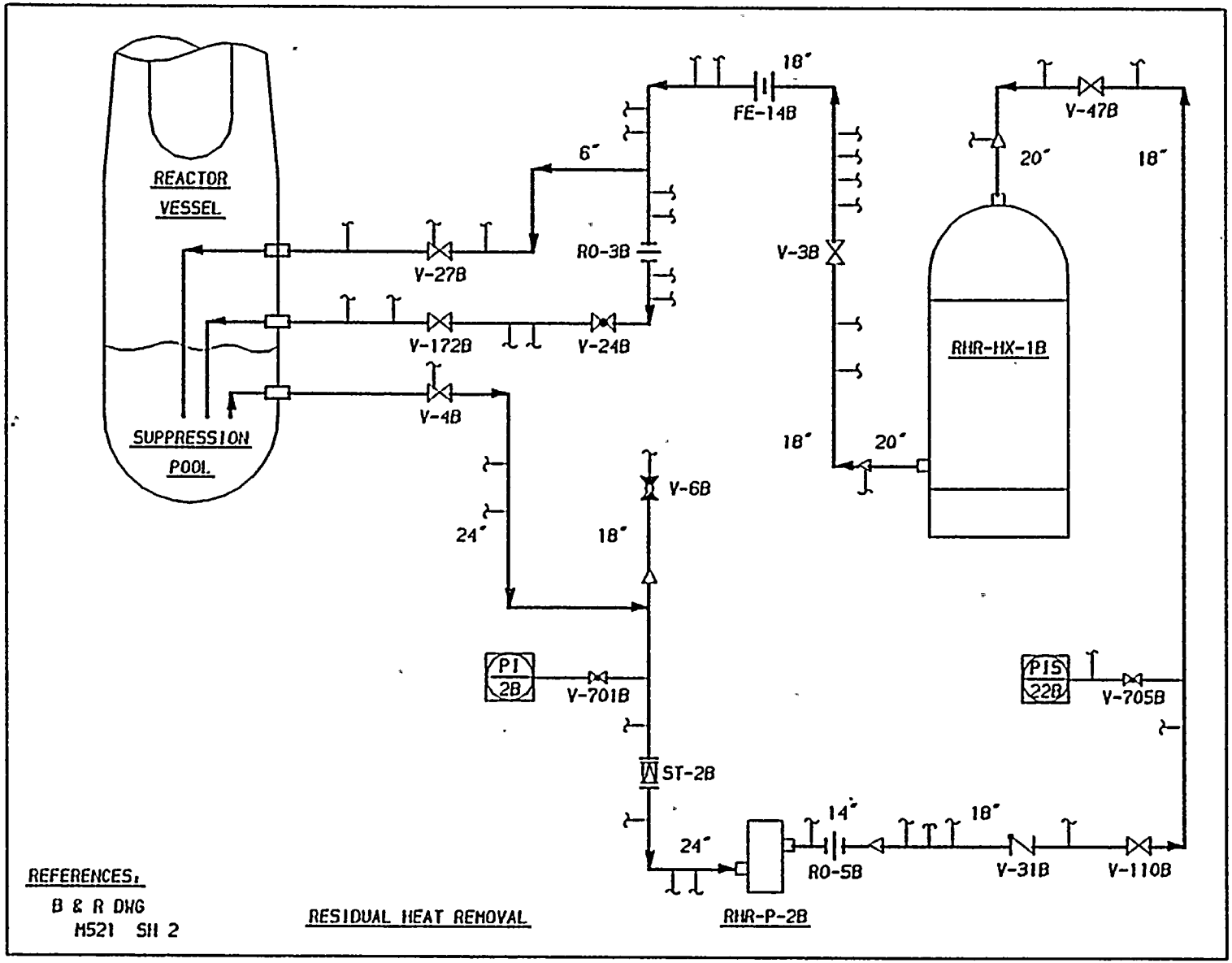
LPCS-P-1 PUMP TEST FLOW PATH



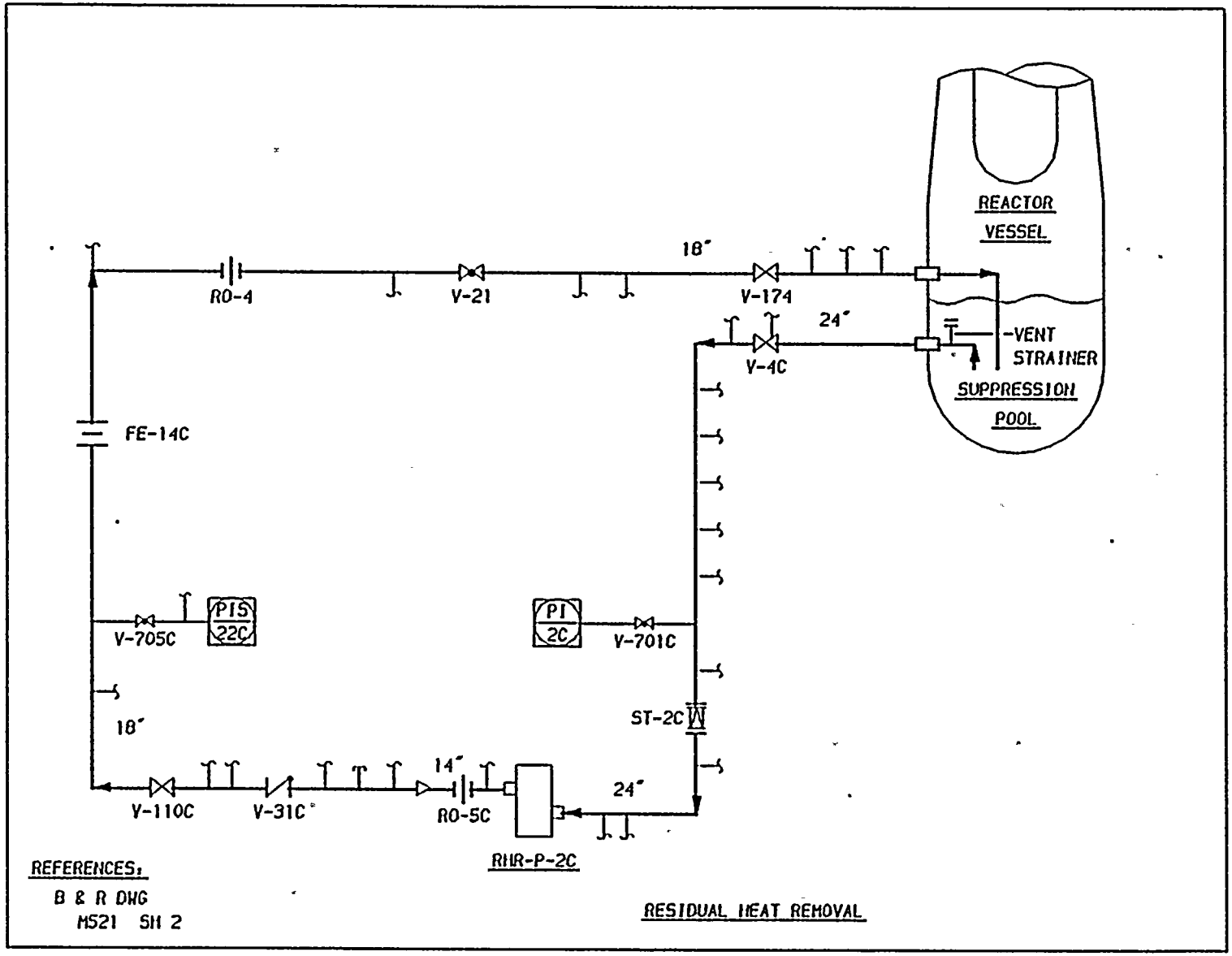
RCIC-P-1 PUMP TEST FLOW PATH



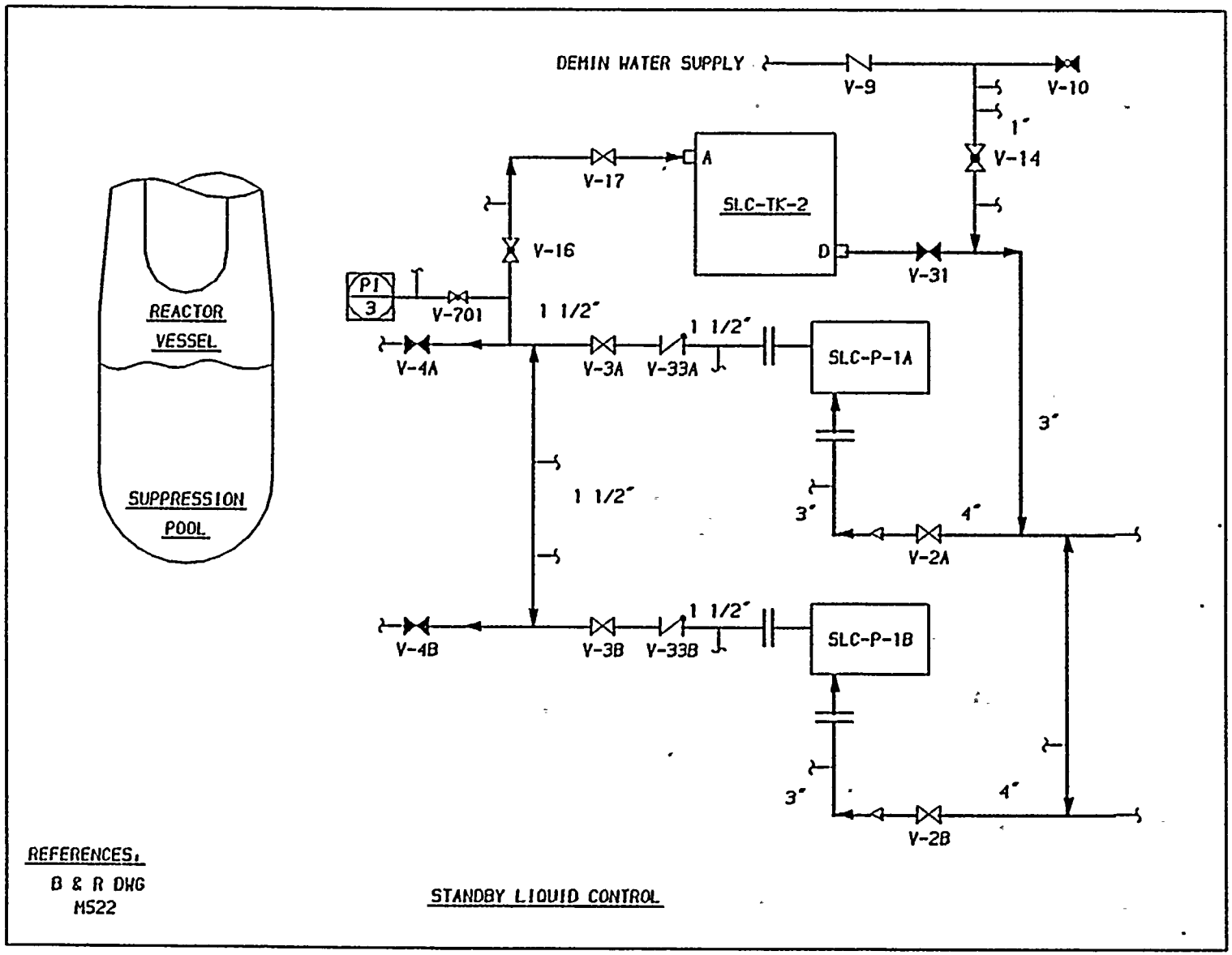
RHR-P-2A PUMP TEST FLOW PATH



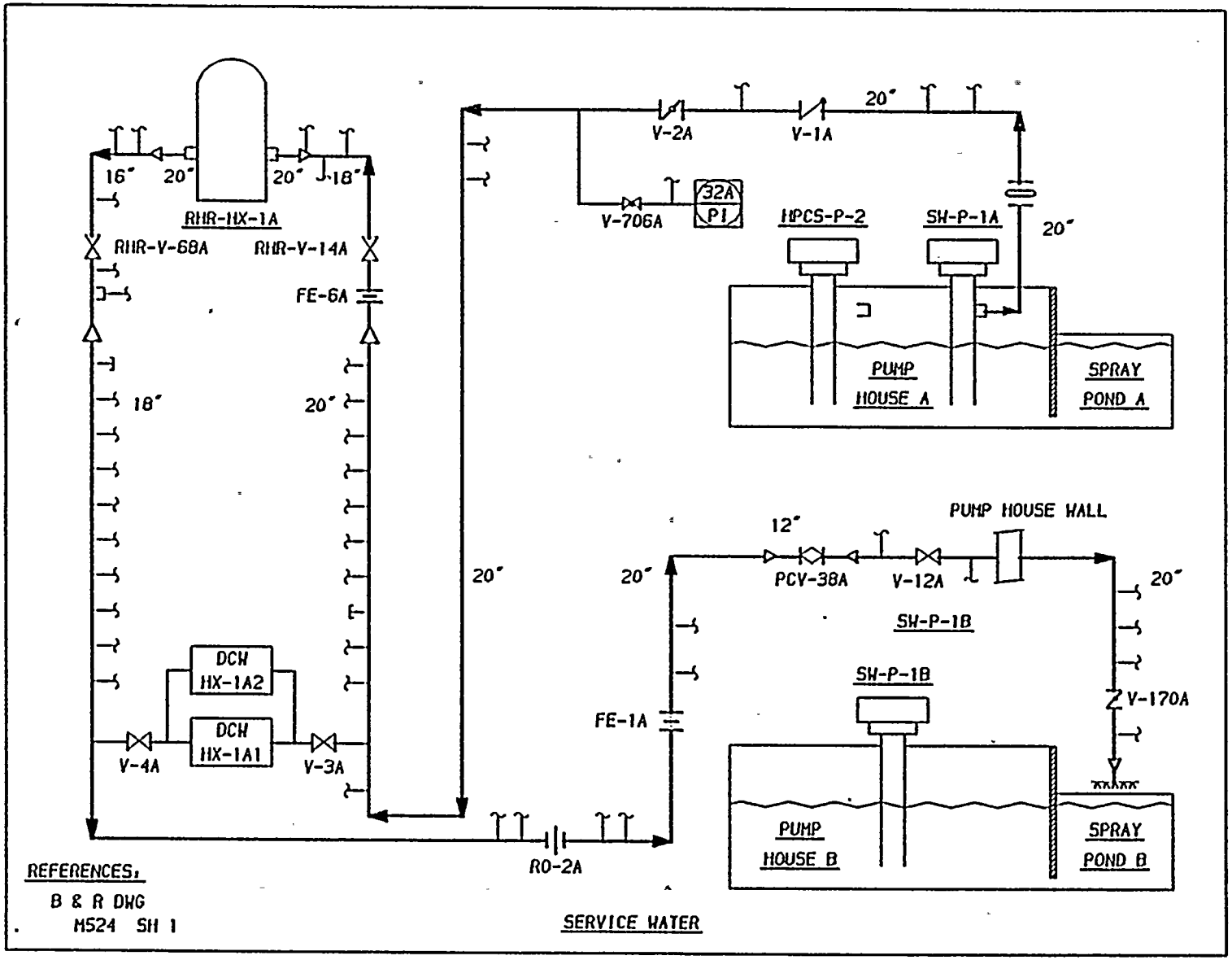
RHR-P-2B PUMP TEST FLOW PATH



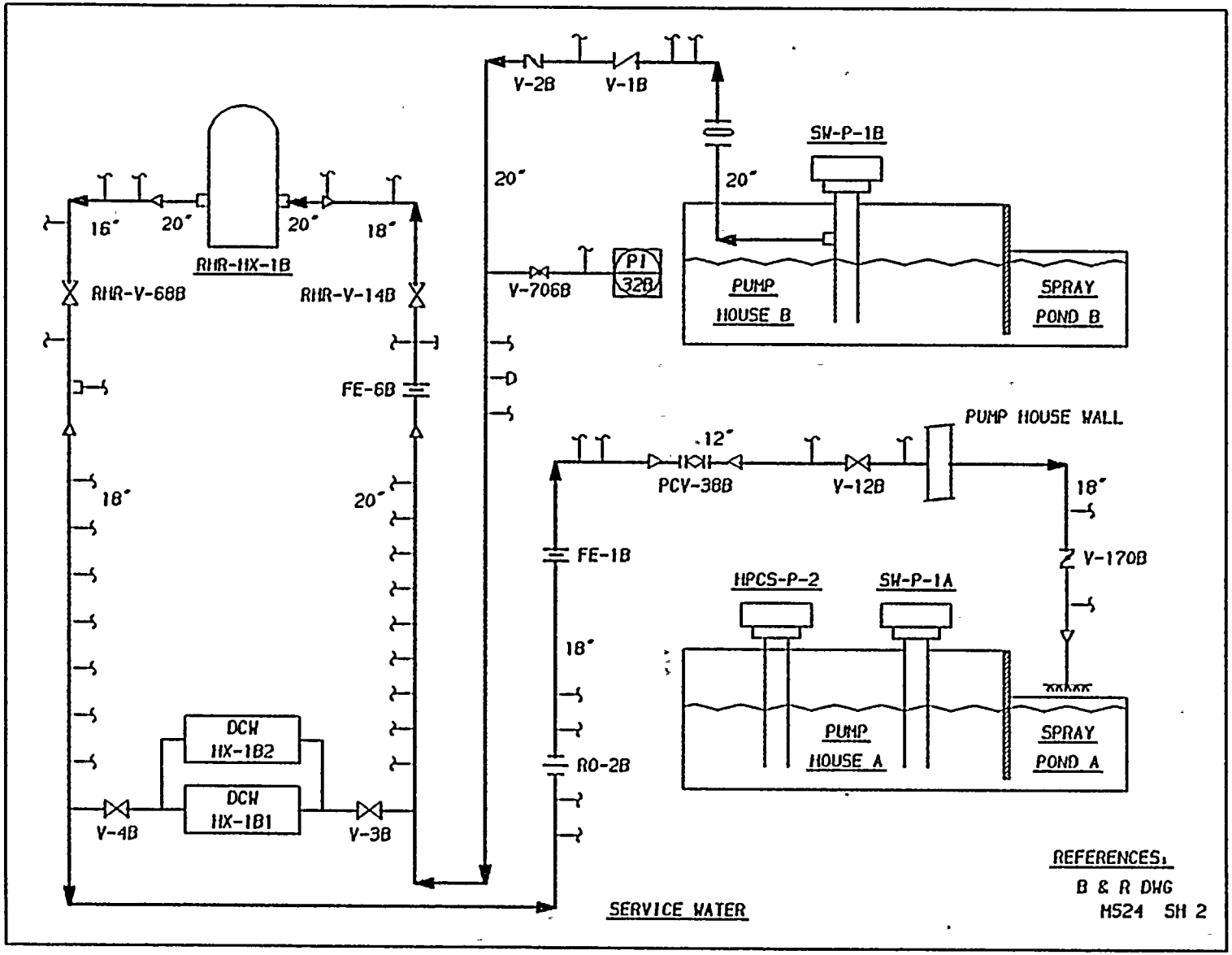
RHR-P-2C PUMP TEST FLOW PATH



SLC-P-1A & SLC-P-1B
PUMP TEST FLOW PATH



SW-P-1A PUMP TEST FLOW PATH



SW-P-1B PUMP TEST FLOW PATH

3.8 Records of Inservice Tests

Records of Pump Inservice Test results will be maintained in accordance with Article IWP-6000 of the Code. The files will contain the following:

1) Pump identification by equipment piece number, manufacturer, and serial number.

2) Inservice test plans. This may be by reference to the surveillance test procedure by which the pump is tested.

3) Summaries of corrective action.

The Pump Inservice Test Program, associated surveillance test procedures and results will be kept at the WNP-2 plant site. For informational purposes, a sample pump test data sheet is provided.

SAMPLE DATA SHEET

PUMP OPERABILITY DATA SHEET FOR LPCS-P-1

Test Parameters	Units	Refer Value	Action Lo(+1)	Alert Lo(+1)	Measured Value	Alert Hi(+1)	Action Hi(+1)
Driver Lubrication	NA	SAT	NA	NA		NA	UNSAT
Suction Pressure before pump start per LPCS-PI-1	PSIG	16.6	7.7	NA		NA	NA
Pump Lubrication	NA	SAT	NA	NA		NA	UNSAT
Suction Pressure at test flow per LPCS-PI-1	PSIG	16.0	4.7	NA		NA	NA
Discharge Pressure per TDAS 158 or (LPCS-PI-3)	PSIG	NA	NA	NA		NA	NA
Differential pressure dp (Discharge Pressure-Suction Pressure)	PSID	318	(+2)	(+3)		(+3)	(+2)
Flowrate per TDAS 164 (or LPCS-FI-600)	GPM	6350	≥ 6350	NA		6477	6541
Fluid Temperature CMS-TR-5 PT220	°F	NA	NA	NA		NA	NA
Motor Voltage Per E-EI-SM7	VAC	NA	NA	NA		NA	NA
Motor Current Per LPCS-AM-1	AMP	NA	NA	NA		NA	NA
Outboard Motor Bearing Temperature Per W128	°F	NA	NA	NA		NA	NA
Outboard Motor Bearing Temperature per W129	°F	NA	NA	NA		NA	NA
Inboard Motor Bearing Temperature per W130	°F	NA	NA	NA		NA	NA

(+1) For measured values beyond the Alert Value or Action Value refer to Precaution and Limitations 4.6 or 4.7, respectively.

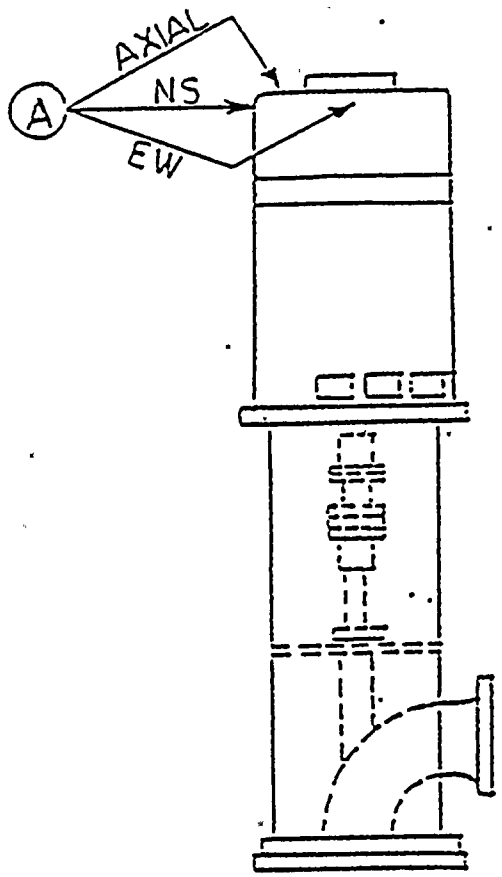
(+2) The ACTION RANGE is defined as outside the area described by points 5, 6, 7 and 8 on Attachment 9.4.

(+3) The ALERT RANGE is defined as outside the area described by points 1, 2, 3 and 4 on Attachment 9.4.

Attachment 9.2

SAMPLE DATA SHEET

VIBRATION DATA SHEET FOR LPCS-P-1



VIEW LOOKING WEST

IRD MODEL 320 (METER) ID NO. _____ CAL DUE DATE _____
IRD MODEL 970 (PROBE) ID NO. _____ CAL DUE DATE _____

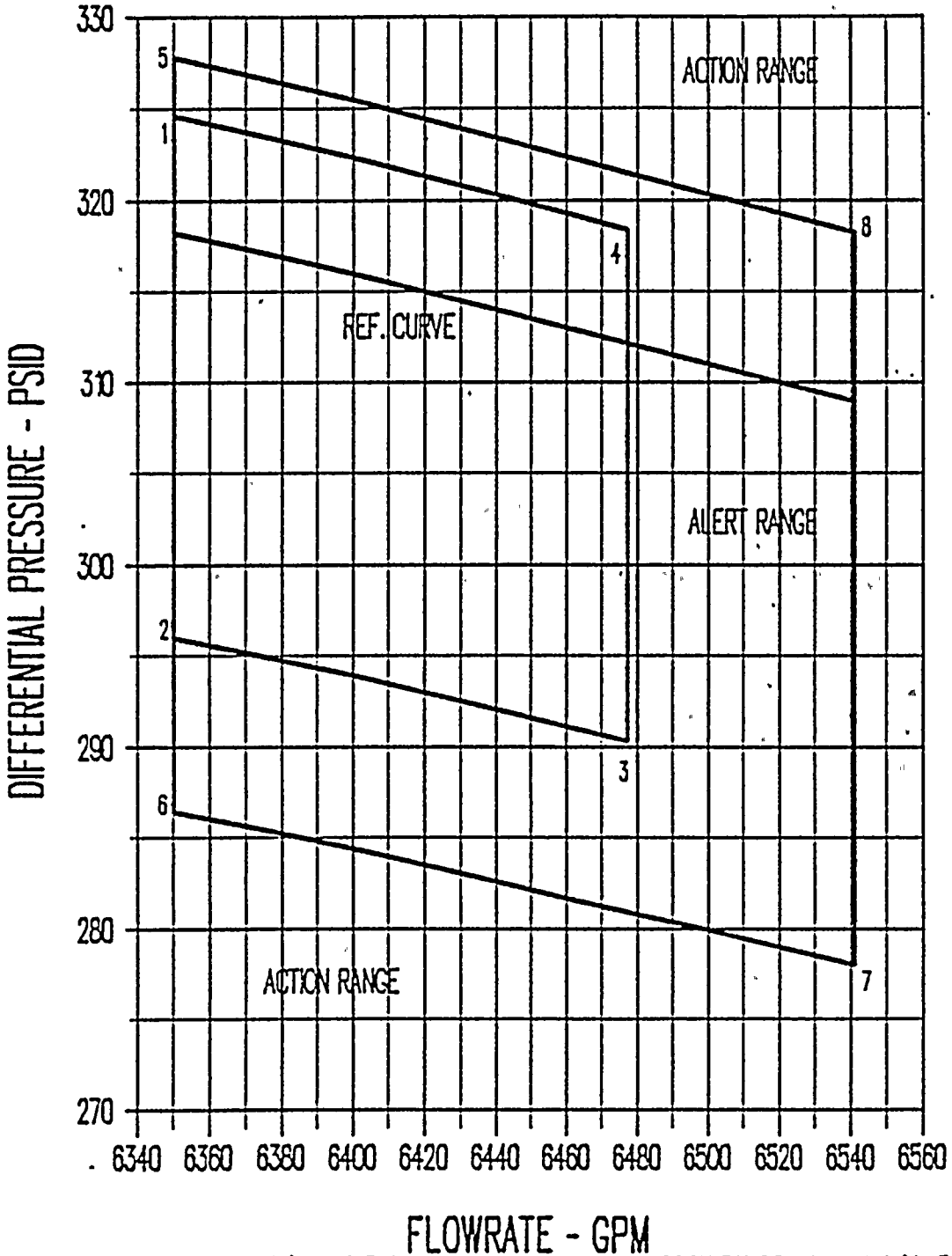
Bearing & Probe Location		Vibration Velocity (in/sec)				
		Refer Value	Measured Value	Alert HI (+1)	Action HI (+1)	
A	N-S	0.130		0.325	0.700	⚠(2.11)
	E-W	0.150		0.325	0.700	⚠(2.12)
	Axial	0.100		0.250	0.500	

(+1) For measured values beyond the Alert Value or Action Value refer to Precaution and Limitations 4.6 or 4.7, respectively.

Attachment 9.3

SAMPLE DATA SHEET

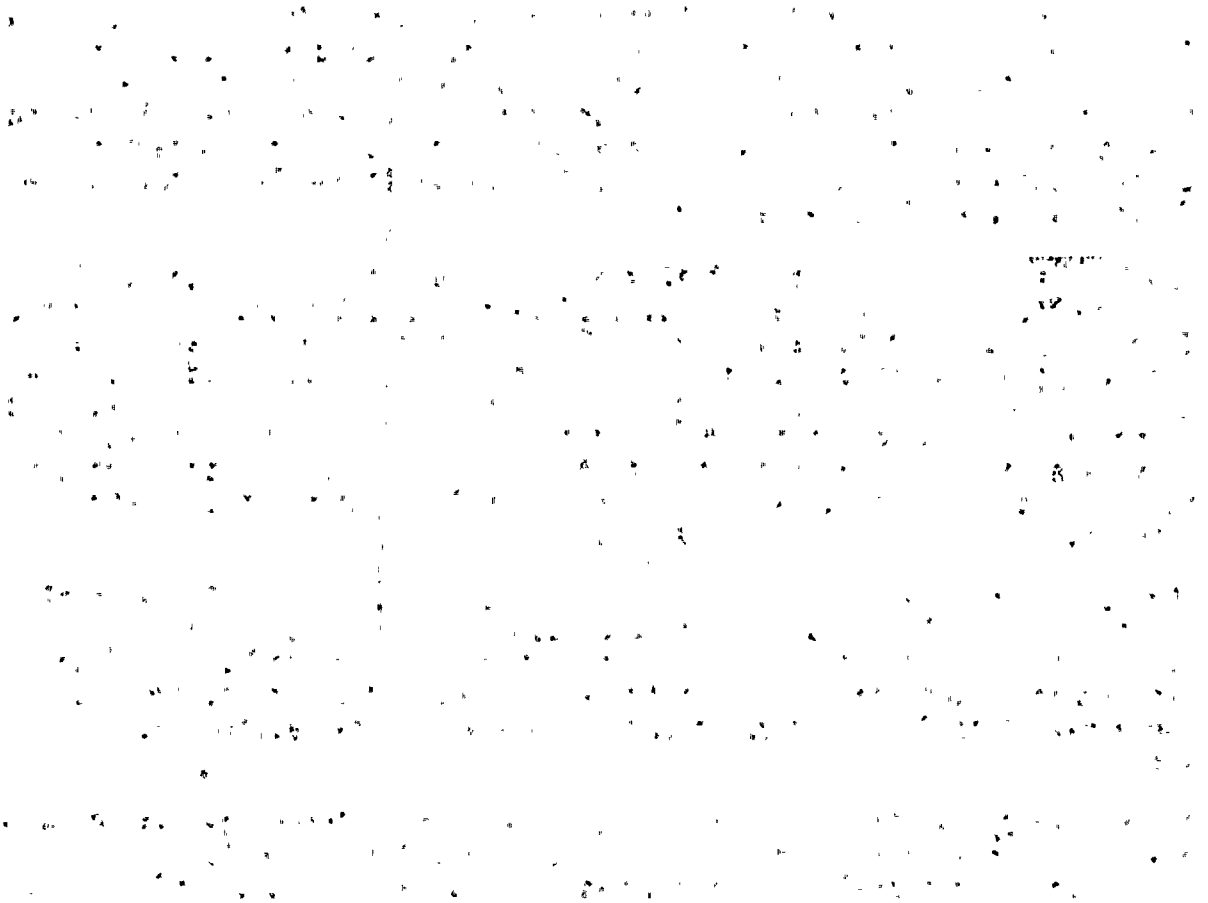
LPCS-P-1 ACCEPTANCE CRITERIA



ALERT RANGE - Area Outside 1-2-3-4

ACTION RANGE - Area Outside 5-6-7-8

Attachment 9.4



4.0 WNP-2 Valve Inservice Test Program

4.1 Introduction

Washington Public Power Supply System Nuclear Project Unit 2 (WNP-2) is a Boiling Water Reactor constructed in compliance with the ASME Boiler and Pressure Vessel Code. Section XI of the Code requires periodic testing of certain safety related valves in order to verify their operability and leak tight integrity. The WNP-2 Valve Inservice Test Program satisfies these requirements and conforms to FSAR commitments and Technical Specifications for ASME valve testing.

The Program will detect potentially adverse changes in the mechanical condition of valves within the scope of Section XI, Subsection IWV of the Code. The scope includes all valves "which are required to perform a specific function in shutting down a reactor to the cold shutdown condition or in mitigating the consequences of an accident". Many valves used in normal shutdown operations are not necessarily "required" nor would they necessarily be available for that purpose. Hence, the scope of IWV is restricted to valves required to shutdown the reactor in emergency situations and to mitigate accident consequences.

The Code recognized that certain of its requirements may be impractical for a specific plant and contains provisions for requesting relief from impractical requirements. The relief requests for the Valve Inservice Test Program (Section 4.5) identify testing impracticalities, provide technical basis for the request and propose alternate testing where warranted.

The Supply System is confident that the WNP-2 Valve Inservice Test Program complies with the intent of all applicable Codes, Regulations(1), and Generic Letters(2) and contributes to ensuring the safety of the general public.

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(1) 10CFR 50.55 a(g)(2)

(2) Generic Letter 89-04

4.2 Program Implementation

The Valve Inservice Test Program is executed as part of the normal plant surveillance routine. Two types of tests are conducted as part of this Program:

1) Valve Operability Tests
2) Valve Leak Rate Tests

Valve Operability Tests are only applicable to active valves of categories A, B, C, and D. These valves are listed in the Valve Test Tables provided in Section 4.4 of this Program.

The Valve Operability Tests based on the requirements specified in Section XI, Subsection IWV of the Code will verify 1) the valve responds to control commands including its fail safe response if applicable, 2) the valve stroke time is within specific limits and, 3) remote position indication accurately reflects the observed valve position. Baseline data for stroke times has been obtained from initial Valve Operability Tests. The initial Valve Operability Tests have met the requirements for preservice testing (IWV-3100). The limiting values of stroke times are stated in the test procedures.

Reference values, as stated above, are obtained from baseline tests or post maintenance tests. Many times the reference values are more accurately determined by an average of stroke times. This practice is in accordance with postion 5 of GL 89-04.

Fail safe valves as identified by the valve test tables are tested by observing the valve operation upon loss of electrical, pneumatic or hydraulic actuating power. In most cases, loss of electrical power causes loss of actuating fluid and can be accomplished using normal control circuits.

Subarticle IWV-3420 of the Code specifies that valve leak rate tests are required for category A valves.

The category A valves identified in this program and their associated leak testing requirements are implemented using a leak testing program which maximizes compliance with the various requirements and commitments, provides consistency in test methodology and reduces duplication of effort.

Valves in the Valve Test Program are tested according to detailed procedures. The procedure includes as a minimum:

a) Statement of Test Purpose. This section identifies test objectives, references applicable Technical Specifications and notes the operating modes for which the test is appropriate.

b) Prerequisites for Testing. System valve alignment and additional instrumentation (e.g., stop watch) is noted. Identification numbers, range and calibration verification of additional instrumentation is recorded.

c) Test Instructions. Directions are sufficiently detailed to assure completeness and uniformity of testing. Instructions include provisions for returning the system to its normal standby configuration following testing.

d) Acceptance Criteria. The ranges within which test data is considered acceptable has been established by the Supply System and included in the test procedure. In the event that the data falls outside the acceptable ranges, corrective action is governed by approved Administrative Procedures.

e) Reference Values.

Finally it is recognized that the Valve Inservice Test Program sets forth minimum testing requirements. Additional testing will be performed as required per IWV-3000, after valve maintenance, or as determined necessary by the Plant Staff.

4.3 Program Administration

The Valve Inservice Test Program is administered in a manner analogous to the Pump Inservice Test Program.

4.4 Valve Test Tables

The Valve Test Tables are the essence of the Supply System's Program to meet ASME Section XI, Subsection IWV requirements. The Tables include active valves which are required to operate in order to safely shutdown the reactor or mitigate the consequences of an accident and passive valves which require leak rate testing. The Tables reflect the positions taken in support of the relief requests.

To aid in the interpretation of the Tables, brief explanations of the Table headings and abbreviations are provided.

(1) Valve Number

Each piece of equipment in the plant has a unique "tag" number which identifies the system to which the equipment belongs, the type of equipment (flow control valve = FCV, relief valve = RV, rupture disc = RD, etc.), and a unique serial number.

(2) Code Class

ASME Code Class per Section III of the ASME Boiler and Pressure Vessel Code. These are roughly equivalent to the safety classes defined in Chapter 3 of the FSAR.

(3) Location on P&ID

The specific coordinates of each valve are supplied to facilitate location of the valves on the flow diagram (P&ID - Piping & Instrumentation Diagram) provided.

(4) Valve Category

Categories A, B, C, and D are defined by ASME Section XI, subsection IWV. Each valve has specific testing requirements which are determined by the category to which it belongs.

F — Category A Containment Isolation Valve (CIV) per FSAR (Table 6.2-16).

F -P — Passive Category A CIV per FSAR.

T — Category A CIV per FSAR and a high-low pressure boundary valve per Technical Specifications.

NOTE: The designation of Category A valves with a "T" or "F" is intended to be an informational courtesy. A change to the referenced portion of the Technical Specification and FSAR may not necessitate a revision to this Program.

(5) Size

Nominal pipe diameter to which the valve connects is given in inches.

(6) Valve Type

The following abbreviations are used to describe valve type:

BF	= Butterfly valve	RD	= Rupture disc.
CK	= Check valve	RV	= Relief Valve
DIA	= Diaphragm valve	SC	= Stopcheck valve
GB	= Globe valve	SHEAR	= Shear Valve
GT	= Gate Valve	S/R	= Safety/Relief Valve
PLUG	= Plug Valve	SV	= Solenoid Valve
3-WAY	= Three Way Valve		

(7) Actuator Type

The following abbreviations are used to describe actuator types. Valves may be actuated in more than one way.

AO = Air operated
EXPL = Explosive Charge Actuator
HO = Hydraulic operated
MAN = Manually operated
MO = Motor operated
SA = Self actuated (actuated by a change in system parameters such as flow or pressure, e.g., check and relief valves).
SOL = Solenoid operated

(8) Normal/Failed Position — This column identifies the valve's normal position and failed position.

FAI = Fail As Is	NA = Not Applicable
FC = Failed Close	NC = Normally Closed
FO = Failed Open	NO = Normally Open
LC = Locked Close	NT = Normally Throttled

(9) Exercise Frequency — This column identifies the required testing frequency for exercising the valve in accordance with IWV-3410 or IWV-3520 as applicable.

Legend	Meaning
Q	Quarterly--To be tested at least once every 92 days.
C	Cold shutdown--To be tested as often as cold shutdown conditions occur, but not required to be tested twice in the same quarter. Valve testing shall commence within 48 hours after cold shutdown is achieved and continue until complete or until the plant is ready to return to power.
I	Cold Shutdown with Containment De-Inerted--Same as "C" but the containment must be deinerted.
R	Refueling--To be tested as often as refueling outages occur. At least every 18 months.
N	Not Applicable--No stroke testing is required.

(10) Test Code

This column lists a code corresponding to the test requirements applicable to that valve. Test requirements will be as stated, except as modified by referenced notes and requests for relief.

G	IWV-3300--Verify the accuracy of remote position indicators.
H	IWV-3412 or IWV-3520 (for check valves)--Full stroke exercise the valve to its required position.
J	IWV-3413--Measure the stroke time of power operated valves.
K	IWV-3415--Operability verification of valves with fail-safe actuators.
L	IWV-3420--Valve Leak Rate Test.
P	IWV-3510--Safety and relief valve operability test.
V	IWV-3610--Operability test for explosively actuated valves.
W	IWV-3620--Rupture discs shall be tested per manufacturer's instructions.

(11) Notes

This column is used to provide reference to explanatory notes located at the end of the Valve Test Tables.

(12) Relief Requests

This column is used to cross reference documentation which requests waiver of certain code requirements. A valve may have more than one associated relief request.

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
CAC-FCV-1A	2	H10 M554 _	F	2.5	GB	HO	NC	FC	Q	GHJKL...	_____	1, 4,20
CAC-FCV-1B	2	H6 M554 _	F	2.5	GB	HO	NC	FC	Q	GHJKL...	_____	1, 4,20
CAC-FCV-2A	2	G10 M554 _	F	2.5	GB	HO	NC	FC	Q	GHJKL...	_____	1, 4,20
CAC-FCV-2B	2	G6 M554 _	F	2.5	GB	HO	NC	FC	Q	GHJKL...	_____	1, 4,20
CAC-FCV-3A	2	D10 M554 _	F	2.5	GB	HO	NC	FC	Q	GHJKL...	_____	1, 4,20
CAC-FCV-3B	2	D6 M554 _	F	2.5	GB	HO	NC	FC	Q	GHJKL...	_____	1, 4,20
CAC-FCV-4A	2	F10 M554 _	F	2.5	GB	HO	NC	FC	Q	GHJKL...	_____	1, 4,20
CAC-FCV-4B	2	E6 M554 _	F	2.5	GB	HO	NC	FC	Q	GHJKL...	_____	1, 4,20
CAC-FCV-5A	2	F14 M554 _	B	1	GB	HO	NC	FC	Q	GHJK....	_____	20
CAC-FCV-5B	2	F2 M554 _	B	1	GB	HO	NC	FC	Q	GHJK....	_____	20
CAC-RD-1A	2	D12 M554 _	D	2	RD	SA	NC	NA	N	.....W	10	_____
CAC-RD-1B	2	D3 M554 _	D	2	RD	SA	NC	NA	N	.....W	10	_____
CAC-RV-63A	3	E12 M554 _	C	1 X 2	RV	SA	NC	NA	N	.....P..	_____	_____
CAC-RV-63B	3	E4 M554 _	C	1 X 2	RV	SA	NC	NA	N	.....P..	_____	_____
CAC-RV-65A	2	D13 M554 _	C	1.5 X 3	RV	SA	NC	NA	N	.....P..	_____	_____
CAC-RV-65B	2	D4 M554 _	C	1.5 X 3	RV	SA	NC	NA	N	.....P..	_____	_____
CAC-V-1A	2	F15 M554 _	B	2	DIA	HO	NC	FC	Q	GHJK....	_____	20
CAC-V-1B	2	F1 M554 _	B	2	DIA	HO	NC	FC	Q	GHJK....	_____	20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
CAC-V-2	2	G10 M554 _	F	4	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
CAC-V-2A	2	F12 M554 _	B	4	DIA	MO	NC	FC	Q	GHJK....	_____	20
CAC-V-2B	2	F5 M554 _	B	4	DIA	MO	NC	FC	Q	GHJK....	_____	20
CAC-V-4	2	E10 M554 _	F	4	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
CAC-V-6	2	H10 M554 _	F	4	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
CAC-V-8	2	D10 M554 _	F	4	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
CAC-V-11	2	G6 M554 _	F	4	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
CAC-V-13	2	E6 M554 _	F	4	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
CAC-V-15	2	H6 M554 _	F	4	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
CAC-V-17	2	D6 M554 _	F	4	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
CAS-V-730	2	K9 M510 _	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
CAS-VX-82e	2	K9 M510 _	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
CCH-RD-1A	3	G8 M775 _	D	3	RD	SA	NC	NA	N	.......H	10	_____
CCH-RD-1B	3	C7 M775 _	D	3	RD	SA	NC	NA	N	.......H	10	_____
CCH-RV-2A	3	F7 M775 _	C	.75 X 1	RV	SA	NC	NA	N	.....P..	_____	_____
CCH-RV-2B	3	B7 M775 _	C	.75 X 1	RV	SA	NC	NA	N	.....P..	_____	_____
CEP-V-1A	2	J13 M543 1	F	30	BF	AO	NC	FC	Q	GHJKL...	_____	4,20
CEP-V-1B	2	J13	F	2	GB	AO	NC	FC	Q	GHJKL...	_____	4,20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
CEP-V-2A	2	J13 M543 1	F	30	BF	AO	NC	FC	Q	GHJKL...	_____	4,20
CEP-V-2B	2	J13 M543 1	F	2	GB	AO	NC	FC	Q	GHJKL...	_____	4,20
CEP-V-3A	2	C14 M543 1	F	24	BF	AO	NC	FC	Q	GHJKL...	_____	4,20
CEP-V-3B	2	C14 M543 1	F	2	GB	AO	NC	FC	Q	GHJKL...	_____	4,20
CEP-V-4A	2	C14 M543 1	F	24	BF	AO	NC	FC	Q	GHJKL...	_____	4,20
CEP-V-4B	2	C14 M543 1	F	2	GB	AO	NC	FC	Q	GHJKL...	_____	4,20
CIA-RV-5A	3	H11 M556 1	C	.75	RV	SA	NC	NA	N	.....P..	_____	_____
CIA-RV-5B	3	D11 M556 1	C	.75	RV	SA	NC	NA	N	.....P..	_____	_____
CIA-SPV-1A THRU 15A	3	G12 M556 1	B	.5	SV	SOL	NC	FO	C	.H.K....	1M,8	24
CIA-SPV-1B THRU 19B	3	B12 M556 1	B	.5	SV	SOL	NC	FO	C	.H.K....	1M,8	24
CIA-V-20	2	K8 M556 1	F	.75	GB	MO	NO	FAI	Q	GHJ.L...	_____	4,20
CIA-V-21	2	K6 M556 1	FC	.75	CK	SA	NO	NA	R	.H..L...	_____	3, 4
CIA-V-30A	2	G9 M556 1	F	.5	GB	MO	NO	FAI	Q	GHJ.L...	_____	4,20
CIA-V-30B	2	F8 M556 1	F	.5	GB	MO	NO	FAI	Q	GHJ.L...	_____	4,20
CIA-V-31A	2	G7 M556 1	FC	.5	CK	SA	NO	NA	R	.H..L...	_____	3, 4
CIA-V-31B	2	F7 M556 1	FC	.5	CK	SA	NO	NA	R	.H..L...	_____	3, 4
CIA-V-39A	3	J10 M556 1	B	.5	GB	AO	NO	FC	C	GHJK....	11	20
CIA-V-39B	3	E10	B	.5	GB	AO	NO	FC	C	GHJK....	11	20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
CIA-V-40 (TYP 7)	2	J5-B5 M556 1	AC	.5	CK	SA	NO	NA	R	.H..L...	_____	3, 7
CIA-V-52A THRU 66A	3	G12 M556 1	C	.5	CK	SA	NC	NA	C	.H.....	1M	_____
CIA-V-52B THRU 70B	3	C12 M556 1	C	.5	CK	SA	NC	NA	C	.H.....	1M	_____
CIA-V-103A	3	H13 M556 1	C	.5	CK	SA	NC	NA	C	.H.....	1M	_____
CIA-V-103B	3	D12 M556 1	C	.5	CK	SA	NC	NA	C	.H.....	1M	_____
CIA-V-104A	3	H13 M556 1	B	.5	GB	MAN	NC	NA	C	.H.....	1M	_____
CIA-V-104B	3	D12 M556 1	B	.5	GB	MAN	NC	NA	C	.H.....	1M	_____
CRD-V-10	2	K6 M528 _	B	1	GB	AO	NO	FC	Q	GHJK....	_____	14,20
CRD-V-11	2	F6 M528 _	B	2	GB	AO	NO	FC	Q	GHJK....	_____	14,20
CRD-V-180	2	K6 M528 _	B	1	GB	AO	NO	FC	Q	GHJK....	_____	14,20
CRD-V-181	2	F6 M528 _	B	2	GB	AO	NO	FC	Q	GHJK....	_____	14,20
CSP-V-1	2	D6 M543 1	F	30	BF	AO	NC	FC	Q	GHJKL...	_____	4,20
CSP-V-2	2	D6 M543 1	F	30	BF	AO	NC	FC	Q	GHJKL...	_____	4,20
CSP-V-3	2	C5 M543 1	F	24	BF	AO	NC	FC	Q	GHJKL...	_____	4,20
CSP-V-4	2	C5 M543 1	F	24	BF	AO	NC	FC	Q	GHJKL...	_____	4,20
CSP-V-5	2	C5 M543 1	F	24	BF	AO	NC	FO	Q	GHJKL...	_____	4,20
CSP-V-6	2	B14 M543 1	F	24	BF	AO	NC	FO	Q	GHJKL...	_____	4,20
CSP-V-7	2	C5 M543 1	FC	24	CK	AO,SA	NC	NA	Q	GH..L...	6	4

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
CSP-V-8	2	B14 M543 1	FC	24	CK	AO,SA	NC	NA	Q	GH..L...	6	4
CSP-V-9	2	B6 M543 1	F	24	BF	AO	NC	FO	Q	GHJKL...	_____	4,20
CSP-V-10	2	B6 M543 1	FC	24	CK	AO,SA	NC	NA	Q	GH..L...	6	4
CSP-V-93	2	F5 M783 _	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
CSP-V-96	2	H4 M783 _	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
CSP-V-97	2	H4 M783 _	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
CSP-V-98	2	F5 M783 _	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
CVB-V-1A	2	B12 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1B	2	B12 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1C	2	B12 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1D	2	B12 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1E	2	B11 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1F	2	B11 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1G	2	B11 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1H	2	B11 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1J	2	B9 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1K	2	B9 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1L	2	B8	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
CVB-V-1M	2	B8 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1N	2	B8 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1P	2	B8 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1Q	2	B7 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1R	2	B7 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1S	2	B7 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
CVB-V-1T	2	B7 M543 1	AC	24	CK	AO,SA	NC	NA	Q	GH.....	6	6
DO-V-1A	3	J12 M512 4	C	1.5	CK	SA	NC	NA	Q	.H.....	--------	-------
DO-V-1B	3	F12 M512 4	C	1.5	CK	SA	NC	NA	Q	.H.....	--------	-------
DO-V-1O	3	C8 M512 1	C	1.5	CK	SA	NC	NA	Q	.H.....	--------	-------
DSA-GPV-5A1/2	D	F10 M512 2	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	
DSA-SPV-5A1/4	D	E10 M512 2	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	
DSA-SPV-5A2/2	D	F6 M512 2	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	
DSA-SPV-5A2/4	D	E6 M512 2	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	
DSA-SPV-5B1/2	D	F10 M512 3	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	
DSA-SPV-5B1/4	D	E10 M512 3	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	
DSA-SPV-5B2/2	D	F6 M512 3	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	
DSA-SPV-5B2/4	D	E6 M512 3	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
DSA-SPV-5C1/1	D	E9 M512 1	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	
DSA-SPV-5C1/2	D	F9 M512 1	B	2	3-WAY	SOL	NC	FAI	A	.HJ.....	12	
DW-V-156	2	G8 M517 _	F -P	2	GT	MAN	LC	NA	N	....L...	_____	4
DW-V-157	2	G8 M517 _	F -P	2	GT	MAN	LC	NA	N	....L...	_____	4
EDR-V-19	2	D9 M537 _	F	3	GT	AO	ND	FC	Q	GHJKL...	_____	4,20
EDR-V-20	2	D9 M537 _	F	3	GT	AO	ND	FC	Q	GHJKL...	_____	4,20
FDR-V-3	2	D6 M539 _	F	3	BALL	AO	ND	FC	Q	GHJKL...	_____	4,20
FDR-V-4	2	D6 M539 _	F	3	BALL	AO	ND	FC	Q	GHJKL...	_____	4,20
FPC-RV-117A	3	D11 M526 _	C	.75 X 1	RV	SA	NC	NA	N	.....P..	_____	_____
FPC-RV-117B	3	C11 M526 _	C	.75 X 1	RV	SA	NC	NA	N	.....P..	_____	_____
FPC-V-112A	3	D12 M526 _	C	6	CK	SA	NC	NA	Q	.H.....	_____	_____
FPC-V-112B	3	D12 M526 _	C	6	CK	SA	NC	NA	Q	.H.....	_____	_____
FPC-V-127	3	E9 M526 _	C	2	CK	SA	NC	NA	Q	.H.....	_____	_____
FPC-V-140	3	C9 M526 _	C	8	CK	SA	ND	NA	Q	.H.....	_____	_____
FPC-V-146A	3	K11 M526 _	C	8	CK	SA	ND	NA	Q	.H.....	_____	_____
FPC-V-146B	3	K10 M526 _	C	8	CK	SA	ND	NA	Q	.H.....	_____	_____
FPC-V-149	2	D9 M526 _	F	6	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
FPC-V-153	2	B11	F	6	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
FPC-V-154	2	B11 M526 _	F	6	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
FPC-V-156	2	C11 M526 _	F	6	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
FPC-V-172	__	C9 M526 _	B	8	GT	MO	NO	FAI	Q	GHJ.....	3	20
FPC-V-173	__	C8 M526 _	B	8	GT	MO	NO	FAI	Q	GHJ.....	3	20
FPC-V-175	__	C9 M526 _	B	8	GT	MO	NC	FAI	Q	GHJ.....	3	20
FPC-V-181A	__	D14 M526 _	B	8	GT	MO	NO	FAI	Q	GHJ.....	3	20
FPC-V-181B	__	D14 M526 _	B	8	GT	MO	NO	FAI	Q	GHJ.....	3	20
FPC-V-184	__	C9 M526 _	B	8	GT	MO	NO	FAI	Q	GHJ.....	3	20
HCU-V-114 (TYP 185)	D	C2 M528 _	C	.75	CK	SA	NC	NA		.H.....	11	_____
HCU-V-115 (TYP 185)	D	C5 M528 _	C	1	CK	SA	NC	NA		.H.....	11	_____
HCU-V-126 (TYP 185)	D	C4 M528 _	B	1	GB	AO	NC	FO		.H.....	11	_____
HCU-V-127 (TYP 185)	D	C3 M528 _	B	.75	GB	AO	NC	FO		.H.....	11	_____
HCU-V-138 (TYP 185)	D	C4 M528 _	C	.75	CK	SA	NO	NA		.H.....	11	_____
HPCS-RV-14	2	C6 M520 _	FC	1X1	RV	SA	NC	NA	N	.....P..	9	_____
HPCS-RV-35	2	C4 M520 _	FC	1X2	RV	SA	NC	NA	N	.....P..	9	_____
HPCS-V-1	2	C6 M520 _	B	14	GT	MO	NO	FAI	Q	GHJ.....	_____	20
HPCS-V-2	2	C6 M520 _	C	20	CK	SA	NC	NA	Q	.H.....	_____	_____
HPCS-V-4	1	G7 M520 _	T	12	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
HPCS-V-5	1	H8 M520 _	TC	12	CK	AO,SA	NC	NA	I	GH..L...	6	4, 9
HPCS-V-6	2	C5 M520 _	C	1.5	SC	SA,MAN	NO	NA	Q	.H.....	_____	_____
HPCS-V-7	2	C5 M520 _	C	1.5	CK	SA	NO	NA	Q	.H.....	_____	17
HPCS-V-10	2	E3 M520 _	B	10	GB	MO	NC	FAI	Q	GHJ.....	_____	20
HPCS-V-11	2	E3 M520 _	B	10	GB	MO	NC	FAI	Q	GHJ.....	_____	20
HPCS-V-12	2	D5 M520 _	F	4	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
HPCS-V-15	2	D7 M520 _	F	18	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
HPCS-V-16	2	E6 M520 _	C	24	CK	SA	NC	NA	Q	.H.....	_____	_____
HPCS-V-23	2	E4 M520 _	F	12	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
HPCS-V-24	2	D5 M520 _	C	16	CK	SA	NC	NA	Q	.H.....	_____	_____
HPCS-V-28	3	G6 M524 1	C	8	CK	SA	NC	NA	Q	.H.....	_____	_____
HPCS-V-65	2	H7 M520 _	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
HPCS-V-68	2	H7 M520 _	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
HY-V-17A	2	E13 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-17B	2	E5 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-18A	2	E13 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-18B	2	E5 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-19A	2	E13 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
HY-V-19B	2	E5 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-20A	2	E13 M530 _	F	.75	GB	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-20B	2	E5 M530 _	F	.75	GB	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-33A	2	E13 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-33B	2	E5 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-34A	2	E13 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-34B	2	E5 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-35A	2	E13 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-35B	2	E5 M530 _	F	.75	GT	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-36A	2	E13 M530 _	F	.75	GB	SOL	NO	FC	C	GHJK....	1G	4,20
HY-V-36B	2	E5 M530 _	F	.75	GB	SOL	NO	FC	C	GHJK....	1G	4,20
LPCS-FCV-11	2	B13 M520 _	F	3	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
LPCS-RV-18	2	F12 M520 _	FC	1.5X2	RV	SA	NC	NA	N	.....P..	9	_____
LPCS-RV-31	2	C12 M520 _	FC	1X1	RV	SA	NC	NA	N	.....P..	9	_____
LPCS-V-1	2	D11 M520 _	F	24	GT	MO	NO	FAI	Q	GHJ.L...	_____	4,20
LPCS-V-3	2	B13 M520 _	C	16	CK	SA	NC	NA	Q	.H.....	_____	_____
LPCS-V-5	1	G11 M520 _	T	12	GT	MO	NC	FAI	C	GHJ.L...	1L	4,20
LPCS-V-6	1	H9	TC	12	CK	AO,SA	NC	NA	1	GH..L...	6	4, 9

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
LPCS-V-12	2	F14 M520 _	F	12	GB	MO	NC	FAI	Q	GHJ.L...	_____	4.20
LPCS-V-33	2	C12 M520 _	C	1.5	CK	SA	NO	NA	Q	.H.....	_____	17
LPCS-V-34	2	C12 M520 _	C	1.5	SC	SA,MAN	NO	NA	Q	.H.....	_____	_____
LPCS-V-66	2	H10 M520 _	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
LPCS-V-67	2	H10 M520 _	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
MS-RV-1A	1	F10 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-1B	1	E11 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-1C	1	F6 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-1D	1	E7 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-2A	1	F10 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-2B	1	E10 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-2C	1	F7 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-2D	1	E7 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-3A	1	F9 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-3B	1	E9 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-3C	1	F7 M529 _	C	6 X 10	S/R	AO,SA	NC	NA	N	.....P..	7	_____
MS-RV-3D	1	E8 M529 _	BC	6 X 10	S/R	AO,SA	NC	NA	R	.H...P..	_____	13
MS-RV-4A	1	F9	BC	6 X 10	S/R	AO,SA	NC	NA	R	.H...P..	_____	13

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
MS-RV-4B	1	E9 M529 _	BC	6 X 10	S/R	AO,SA	NC	NA	R	.H...P..	_____	13
MS-RV-4C	1	F8 M529 _	BC	6 X 10	S/R	AO,SA	NC	NA	R	.H...P..	_____	13
MS-RV-4D	1	E8 M529 _	BC	6 X 10	S/R	AO,SA	NC	NA	R	.H...P..	_____	13
MS-RV-5B	1	E9 M529 _	BC	6 X 10	S/R	AO,SA	NC	NA	R	.H...P..	_____	13
MS-RV-5C	1	F8 M529 _	BC	6 X 10	S/R	AO,SA	NC	NA	R	.H...P..	_____	13
MS-V-16	1	B13 M529 _	F	3	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
MS-V-19	1	B14 M529 _	F	3	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
MS-V-22A	1	F12 M529 _	F	26	GB	AO	NO	FC	Q	GHJKL...	_____	4,20
MS-V-22B	1	E12 M529 _	F	26	GB	AO	NO	FC	Q	GHJKL...	_____	4,20
MS-V-22C	1	F5 M529 _	F	26	GB	AO	NO	FC	Q	GHJKL...	_____	4,20
MS-V-22D	1	E5 M529 _	F	26	GB	AO	NO	FC	Q	GHJKL...	_____	4,20
MS-V-28A	1	F13 M529 _	F	26	GB	AO	NO	FC	Q	GHJKL...	_____	4,20
MS-V-28B	1	E13 M529 _	F	26	GB	AO	NO	FC	Q	GHJKL...	_____	4,20
MS-V-28C	1	F4 M529 _	F	26	GB	AO	NO	FC	Q	GHJKL...	_____	4,20
MS-V-28D	1	E4 M529 _	F	26	GB	AO	NO	FC	Q	GHJKL...	_____	4,20
MS-V-37 (TYP 18)	2	C6-C11 M529 _	C	10	CK	SA	NC	NA	I	.H.....	_____	18
MS-V-38 (TYP 18)	2	C6-C11 M529 _	C	10	CK	SA	NC	NA	I	.H.....	_____	18
MS-V-67A	1	F13 M529	F	1.5	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
MS-V-67B	1	F13 M529 _	F	1.5	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
MS-V-67C	1	F4 M529 _	F	1.5	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
MS-V-67D	1	D4 M529 _	F	1.5	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
MS-V-146	2	B7 M502 1	B	24	GT	MO	NO	FAI	C	GHJ.....	1S	20
MSLC-V-1A	2	B7 M557 _	B	1.5	GT	MO	NC	FAI	Q	GHJ.....	_____	20
MSLC-V-1B	2	B5 M557 _	B	1.5	GT	MO	NC	FAI	Q	GHJ.....	_____	20
MSLC-V-1C	2	D7 M557 _	B	1.5	GT	MO	NC	FAI	Q	GHJ.....	_____	20
MSLC-V-1D	2	D5 M557 _	B	1.5	GT	MO	NC	FAI	Q	GHJ.....	_____	20
MSLC-V-2A	1	C8 M557 _	B	1.5	GT	MO	NC	FAI	C	GHJ.....	1R	20
MSLC-V-2B	1	C8 M557 _	B	1.5	GT	MO	NC	FAI	C	GHJ.....	1R	20
MSLC-V-2C	1	E8 M557 _	B	1.5	GT	MO	NC	FAI	C	GHJ.....	1R	20
MSLC-V-2D	1	E8 M557 _	B	1.5	GT	MO	NC	FAI	C	GHJ.....	1R	20
MSLC-V-3A	1	C9 M557 _	F	1.5	GT	MO	NC	FAI	C	GHJ.L...	1R	4,20
MSLC-V-3B	1	C8 M557 _	F	1.5	GT	MO	NC	FAI	C	GHJ.L...	1R	4,20
MSLC-V-3C	1	E8 M557 _	F	1.5	GT	MO	NC	FAI	C	GHJ.L...	1R	4,20
MSLC-V-3D	1	E8 M557 _	F	1.5	GT	MO	NC	FAI	C	GHJ.L...	1R	4,20
MSLC-V-4	2	J5 M557 _	B	1.5	GT	MO	NC	FAI	C	GHJ.....	1R	20
MSLC-V-5	2	J5	B	1.5	GT	MO	NC	FAI	C	GHJ.....	1R	20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
MSLC-V-9	2	H5 M557 _	B	1.5	GT	MO	NC	FAI	C	GHJ.....	1R	20
MSLC-V-10	2	H5 M557 _	B	1.5	GT	MO	NC	FAI	C	GHJ.....	1R	20
PI-EFC-X18A	1	G9 M557 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X18B	1	G9 M557 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X18C	1	G9 M557 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X18D	1	F9 M557 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X29b	2	H7 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X29f	2	H7 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X30a	2	G13 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X30f	2	F13 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X37e	1	D6 M521 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X37f	1	D6 M521 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X38a	1	C13 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X38b	1	D13 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X38c	1	G6 M519 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X38d	1	G6 M519 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X38e	1	G6 M519 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X38f	1	G6 M519 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
PI-EFC-X39a	1	C13 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X39b	1	D13 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X39d	1	H13 M521 2	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X39e	1	H13 M521 2	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X40c	1	F12 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X40d	1	F12 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X40e	2	C14 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X40f	2	C14 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X41c	1	B4 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X41d	1	C4 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X41e	2	C4 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X41f	2	C4 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X42a	1	C4 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X42b	1	C4 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X42c	2	E6 M543 2	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X42f	2	H5 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X44Aa	1	E2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X44Ab	1	E2 M530	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
PI-EFC-X44Ac	1	E2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Ad	1	E2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Ae	1	J6 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Af	1	E2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Ag	1	E2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Ah	1	E2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Aj	1	E2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Ak	1	J6 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Al	1	H6 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Am	1	H6 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Ba	1	F2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Bb	1	F2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Bc	1	F2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Bd	1	F2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Be	1	J11 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Bf	1	F2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Bg	1	F2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Bh	1	F2	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
PI-EFC-X44BJ	1	F2 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Bk	1	J11 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Bl	1	H11 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X44Bm	1	H11 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X61a	1	F12 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X61b	1	F12 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X61c	1	G5 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X62b	2	H12 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X62c	1	F6 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X62d	1	F6 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X66	2	C6 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X67	2	B14 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X69a	1	D4 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X69b	1	D4 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X69e	1	G6 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X69f	1	H12 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X70a	1	E4 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X70b	1	E4 M529	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
PI-EFC-X70c	1	E13 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X70d	1	E13 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X70e	1	B14 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X70f	1	B14 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X71a	1	E4 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X71b	1	E4 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X71c	1	G6 M519 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X71d	1	G6 M519 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X71e	1	G6 M519 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X71f	1	G6 M519 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X72a	1	J6 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X72f	2	F12 M543 1	FC	1	CK	SA	NO	NA	I	.H..L...	_____	4.11
PI-EFC-X73a	1	J8 M520 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X73e	2	F7 M543 1	FC	1	CK	SA	NO	NA	I	.H..L...	_____	4.11
PI-EFC-X74a	1	G12 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X74b	1	H5 M521 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X74e	1	H11 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X74f	1	H11	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
PI-EFC-X75a	1	G6 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X75b	1	G12 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X75c	1	E12 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X75d	1	E12 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X75e	1	F5 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X75f	1	F5 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X78a	2	E14 M543 2	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X78b	1	J10 M520 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X78c	1	F12 M523 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X78f	1	H12 M530 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X79a	1	F15 M523 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X79b	1	F15 M523 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X82b	2	B14 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X84a	2	B6 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X86A	2	B14 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X86B	2	B14 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X87A	2	B6 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15
PI-EFC-X87B	2	B6	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4.15

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
PI-EFC-X106	1	H12 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X107	1	H12 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X108	1	G12 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X109	1	H5 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X110	1	H5 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X111	1	H5 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X112	1	H5 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X113	1	H5 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X114	1	H12 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X115	1	H12 M529 _	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-EFC-X119	2	C6 M543 1	FC	1 X .5	CK	SA	NO	NA	R	GH.....	_____	4,15
PI-V-X42d	2	F5 M521 1	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
PI-V-X54Bf	2	H13 M521 2	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
PI-V-X61f	2	G5 M521 1	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
PI-V-X62f	2	D12 M521 2	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
PI-V-X69c	2	F13 M521 2	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
PI-VX-216	2	F6 M521 1	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
PI-VX-218	2	H13 M521 2	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
PI-VX-219	2	H6 M521 1	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
PI-VX-220	2	D11 M521 2	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
PI-VX-221	2	F12 M521 2	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
PI-VX-250	2	F13 M543 1	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
PI-VX-251	2	F13 M543 1	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
PI-VX-253	2	F13 M543 1	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
PI-VX-256	2	F7 M543 1	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
PI-VX-257	2	F7 M543 1	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
PI-VX-259	2	F7 M543 1	F	1	SV	SOL	NO	FC	Q	GHJKL...	_____	1, 4
PI-VX-262	2	G13 M543 2	F	1	SV	SOL	NO	FC	Q	GHJK....	_____	1, 4
PI-VX-263	2	G13 M543 2	F	1	SV	SOL	NO	FC	Q	GHJK....	_____	1, 4
PI-VX-264	2	F13 M543 2	F	1	SV	SOL	NO	FC	Q	GHJK....	_____	1, 4
PI-VX-265	2	C14 M543 2	F	1	SV	SOL	NO	FC	Q	GHJK....	_____	1, 4
PI-VX-266	2	G7 M543 2	F	1	SV	SOL	NO	FC	Q	GHJK....	_____	1, 4
PI-VX-268	2	F7 M543 2	F	1	SV	SOL	NO	FC	Q	GHJK....	_____	1, 4
PI-VX-269	2	C5 M543 2	F	1	SV	SOL	NO	FC	Q	GHJK....	_____	1, 4
PSR-V-X73-1	2	J14 M896	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4,23
PSR-V-X73-2	2	J12	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
PSR-V-X77A1	1	E14 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4,23
PSR-V-X77A2	1	E12 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4
PSR-V-X77A3	1	F14 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4,23
PSR-V-X77A4	1	F12 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4
PSR-V-X80-1	2	K14 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4,23
PSR-V-X80-2	2	K12 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4
PSR-V-X82-1	2	B12 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4,23
PSR-V-X82-2	2	B11 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4
PSR-V-X82-7	2	G12 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4,23
PSR-V-X82-8	2	G11 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4
PSR-V-X83-1	2	J13 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4,23
PSR-V-X83-2	2	J12 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4
PSR-V-X84-1	2	H12 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4,23
PSR-V-X84-2	2	H11 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4
PSR-V-X88-1	2	D13 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4,23
PSR-V-X88-2	2	D11 M896 _	F	1	GT	SOL	NC	FC	Q	GHJKL...	_____	1, 4
RCC-RV-34A	3	H5 M525 _	C	.75 X 1	RV	SA	NC	NA	N	.....P..	_____	_____
RCC-RV-34B	3	F5 M525	C	.75 X 1	RV	SA	NC	NA	N	.....P..	_____	_____

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
RCC-V-5	2	D10 M525	F	10	GT	MO	NO	FAI	C	GHJ.L...	1D	4,20
RCC-V-21	2	D10 M525	F	10	GT	MO	NO	FAI	C	GHJ.L...	1D	4,20
RCC-V-40	2	D10 M525	F	10	GT	MO	NO	FAI	C	GHJ.L...	1D	4,20
RCC-V-104	2	E10 M525	F	10	GT	MO	NO	FAI	C	GHJ.L...	1D	4,20
RCC-V-129	3	E5 M525	B	8	GT	MO	NO	FAI	Q	GHJ.....	-------	20
RCC-V-130	3	E6 M525	B	8	GT	MO	NO	FAI	Q	GHJ.....	-------	20
RCC-V-131	3	E6 M525	B	8	GT	MO	NO	FAI	Q	GHJ.....	-------	20
RCC-V-133A	3	H5 M525	C	6	CK	SA	NO	NA	Q	.H.....	-------	-------
RCC-V-133B	3	F5 M525	C	6	CK	SA	NO	NA	Q	.H.....	-------	-------
RCIC-RD-1	2	D11 M519	D	10	RD	SA	NC	NA	N	.......W	2,10	-------
RCIC-RD-2	2	C12 M519	D	10	RD	SA	NC	NA	N	.......W	2,10	-------
RCIC-RV-17	2	C13 M519	C	1X1	RV	SA	NC	NA	N	.....P..	2	-------
RCIC-RV-19	2	D9 M519	C	2X3	RV	SA	NC	NA	N	.....P..	2	-------
RCIC-V-1	2	E11 M519	B	3	GT	MO	NO	FAI	Q	GHJ.....	2	20
RCIC-V-8	1	F6 M519	F	4	GT	MO	NO	FAI	Q	GHJ.L...	4	4,20
RCIC-V-10	2	B14 M519	B	8	GT	MO	NO	FAI	Q	GHJ.....	2	20
RCIC-V-11	2	B13 M519	C	8	CK	SA	NC	NA	Q	.H.....	2	-------
RCIC-V-13	1	H7	T	6	GT	MO	NC	FAI	C	GHJ.L...	1K	4,20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
RCIC-V-19	2	E7 M519 _	F	2	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RCIC-V-21	2	E8 M519 _	C	2	CK	SA	NC	NA	Q	.H.....	2	_____
RCIC-V-22	2	J8 M519 _	B	6	GB	MO	NC	FAI	Q	GHJ.....	2	20
RCIC-V-28	2	D8 M519 _	FC	1.5	CK	SA	NC	NA	Q	.H..L...	_____	4
RCIC-V-30	2	C7 M519 _	C	8	CK	SA	NC	NA	Q	.H.....	2	_____
RCIC-V-31	2	C7 M519 _	F	8	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RCIC-V-40	2	D8 M519 _	FC	10	CK	SA	NC	NA	Q	.H..L...	_____	4
RCIC-V-45	2	F11 M519 _	B	4	GB	MO	NC	FAI	Q	GHJ.....	2,4	20
RCIC-V-46	2	F11 M519 _	B	2	GB	MO	NC	FAI	Q	GHJ.....	2	20
RCIC-V-59	2	J9 M519 _	B	6	GT	MO	NC	FAI	Q	GHJ.....	2	20
RCIC-V-63	1	H3 M519 _	F	10	GT	MO	NO	FAI	Q	GHJ.L...	4	4,20
RCIC-V-64	1	G6 M519 _	F -P	10	GT	MO	LC	NA	N	....L...	_____	4
RCIC-V-65	1	H6 M519 _	C	6	CK	AO,SA	NC	NA	I	GH.....	2,6	9
RCIC-V-66	1	J4 M519 _	TC	6	CK	AO,SA	NC	NA	I	GH..L...	6	4, 9
RCIC-V-68	2	E7 M519 _	F	10	GT	MO	NO	FAI	Q	GHJ.L...	_____	4,20
RCIC-V-69	2	D7 M519 _	F	1.5	GT	MO	NO	FAI	Q	GHJ.L...	_____	4,20
RCIC-V-76	1	H3 M519 _	F	1	GB	MO	NC	FAI	Q	GHJ.L...	4	4,20
RCIC-V-86	2	A13	C	2	CK	SA	NC	NA	Q	.H.....	2	_____

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
RCIC-V-110	2	E7 M519 _	B	2	GT	MO	NO	FAI	Q	GHJ.....	4	20
RCIC-V-111	2	E7 M519 _	C	2	CK	SA	NC	NA	Q	.H.....	2,4A	---
RCIC-V-112	2	E7 M519 _	C	2	CK	SA	NC	NA	Q	.H.....	2,4A	---
RCIC-V-113	2	E6 M519 _	B	2	GT	MO	NO	FAI	Q	GHJ.....	4	20
RCIC-V-184	2	H5 M519 _	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
RCIC-V-204	2	B14 M519 _	C	8	CK	SA	NC	NA	Q	.H.....	2	
RCIC-V-740	2	H5 M519 _	F -P	1	GB	MAN	LC	NA	N	....L...	_____	4
RCIC-V-742	1	J6 M519 _	F -P	.75	GB	MAN	LC	NA	N	....L...		4
RFW-V-10A	1	G12 M529 _	FC	24	CK	SA	NO	NA	C	GH..L...	1F	4
RFW-V-10B	1	G5 M529 _	FC	24	CK	SA	NO	NA	C	GH..L...	1F	4
RFW-V-32A	1	G13 M529 _	FC	24	CK	AO,SA	NO	NA	C	GH..L...	1F,6	4
RFW-V-32B	1	G5 M529 _	FC	24	CK	AO,SA	NO	NA	C	GH..L...	1F,6	4
RFW-V-65A	1	G13 M529 _	F	24	GT	MO	NO	FAI	C	GHJ.L...	1F	4,20
RFW-V-65B	1	G4 M529 _	F	24	GT	MO	NO	FAI	C	GHJ.L...	1F	4,20
RHR-FCV-64A	2	C12 M521 1	F	3	GB	MO	NO	FAI	Q	GHJ.L...	_____	4,20
RHR-FCV-64B	2	C6 M521 2	F	3	GB	MO	NO	FAI	Q	GHJ.L...	_____	4,20
RHR-FCV-64C	2	E6 M521 2	F	3	GB	MO	NO	FAI	Q	GHJ.L...	_____	4,20
RHR-RV-1A	2	H13	FC	.75X1.5	RV	SA	NC	NA	N	.....P..	9	_____

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
RHR-RV-1B	2	H5 M521 2	FC	.75X1.5	RV	SA	NC	NA	N	.....P..	9	_____
RHR-RV-5	2	C8 M521 1	FC	1X2	RV	SA	NC	NA	N	.....P..	9	_____
RHR-RV-25A	2	D10 M521 1	FC	1X2	RV	SA	NC	NA	N	.....P..	9	_____
RHR-RV-25B	2	C10 M521 2	FC	1X2	RV	SA	NC	NA	N	.....P..	9	_____
RHR-RV-25C	2	E8 M521 2	FC	1X2	RV	SA	NC	NA	N	.....P..	9	_____
RHR-RV-30	2	C4 M521 2	FC-P	1X2	RV	SA	NC	NA	N	....L...	_____	4
RHR-RV-36	2	F12 M521 1	FC-P	6 X 8	RV	SA	NC	NA	N	....L...	_____	4
RHR-RV-88A	2	C7 M521 1	FC	.75 X 1	RV	SA	NC	NA	N	.....P..	9	_____
RHR-RV-88B	2	B8 M521 2	FC	.75 X 1	RV	SA	NC	NA	N	.....P..	9	_____
RHR-RV-88C	2	D8 M521 2	FC	.75 X 1	RV	SA	NC	NA	N	.....P..	9	_____
RHR-V-3A	2	H10 M521 1	B	18	GT	MO	NO	FAI	Q	GHJ.....	_____	20
RHR-V-3B	2	J9 M521 2	B	18	GT	MO	NO	FAI	Q	GHJ.....	_____	20
RHR-V-4A	2	B6 M521 1	F	24	GT	MO	NO	FAI	Q	GHJ.L...	_____	4,20
RHR-V-4B	2	B12 M521 2	F	24	GT	MO	NO	FAI	Q	GHJ.L...	_____	4,20
RHR-V-4C	2	B11 M521 2	F	24	GT	MO	NO	FAI	Q	GHJ.L...	_____	4,20
RHR-V-6A	2	B8 M521 1	B	18	GT	MO	NC	FAI	Q	GHJ.....	_____	20
RHR-V-6B	2	B7 M521 1	B	18	GT	MO	NC	FAI	Q	GHJ.....	_____	20
RHR-V-8	1	E6 M521 1	T	20	GT	MO	NC	FAI	C	GHJ.L...	1C	4,20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
RHR-V-9	1	D5 M521 1	T	20	GT	MO	NC	FAI	C	GHJ.L...	1C	4,20
RHR-V-11A	2	E11 M521 1	F -P	4	GT	MO	LC	NA	N	....L...	_____	4
RHR-V-11B	2	C11 M521 2	F -P	4	GT	MO	LC	NA	N	....L...	_____	4
RHR-V-16A	2	H7 M521 1	F	16	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-16B	2	D10 M521 2	F	16	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-17A	2	H6 M521 1	F	16	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-17B	2	D11 M521 2	F	16	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-21	2	E7 M521 2	F	18	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-23	1	K13 M521 2	T	6	GB	MO	NC	FAI	C	GHJ.L...	1C	4,20
RHR-V-24A	2	E10 M521 1	F	18	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-24B	2	C10 M521 2	F	18	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-27A	2	D7 M521 1	F	6	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-27B	2	D10 M521 2	F	6	GT	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-31A	2	D14 M521 1	C	18	CK	SA	NC	NA	Q	.H.....	_____	_____
RHR-V-31B	2	D3 M521 2	C	18	CK	SA	NC	NA	Q	.H.....	_____	_____
RHR-V-31C	2	D5 M521 2	C	18	CK	SA	NC	NA	Q	.H.....	_____	_____
RHR-V-40	2	G4 M521 2	B	4	GB	MO	NC	FAI	Q	GHJ.....	_____	20
RHR-V-41A	1	G5 M521 1	TC	14	CK	AO,SA	NC	NA	I	GH..L...		4, 9

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
RHR-V-41B	1	G13 M521 2	TC	14	CK	AO,SA	NC	NA	I	GH..L...		4, 9
RHR-V-41C	1	E13 M521 2	TC	14	CK	AO,SA	NC	NA	I	GH..L...	6	4, 9
RHR-V-42A	1	G7 M521 1	T	14	GT	MO	NC	FAI	C	GHJ.L...	1L	4,20
RHR-V-42B	1	G12 M521 2	T	14	GT	MO	NC	FAI	C	GHJ.L...	1L	4,20
RHR-V-42C	1	E11 M521 2	T	14	GT	MO	NC	FAI	C	GHJ.L...	1L	4,20
RHR-V-46A	2	C10 M521 1	C	6	CK	SA	NC	NA	Q	.H.....	--------	-------
RHR-V-46B	2	C6 M521 2	C	6	CK	SA	NC	NA	Q	.H.....	--------	-------
RHR-V-46C	2	E8 M521 2	C	6	CK	SA	NC	NA	Q	.H.....	--------	-------
RHR-V-47A	2	J13 M521 1	B	18	GT	MO	NO	FAI	Q	GHJ.....	--------	20
RHR-V-47B	2	J3 M521 2	B	18	GT	MO	NO	FAI	Q	GHJ.....	--------	20
RHR-V-48A	2	J11 M521 1	B	18	GB	MO	NO	FAI	Q	GHJ.....	--------	20
RHR-V-48B	2	J8 M521 2	B	18	GB	MO	NO	FAI	Q	GHJ.....	--------	20
RHR-V-49	2	G4 M521 2	B	4	GT	MO	NC	FAI	Q	GHJ.....	--------	20
RHR-V-50A	1	F5 M521 1	TC	12	CK	AO,SA	NC	NA	I	GH..L...	6	4, 9
RHR-V-50B	1	F13 M521 2	TC	12	CK	AO,SA	NC	NA	I	GH..L...	6	4, 9
RHR-V-53A	1	E6 M521 1	T	12	GT	MO	NC	FAI	C	GHJ.L...	1C	4,20
RHR-V-53B	1	E11 M521 2	T	12	GT	MO	NC	FAI	C	GHJ.L...	1C	4,20
RHR-V-60A	2	H11	B	.75	SV	SOL	NC	FC	Q	GHJK...	--------	1

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
RHR-V-60B	2	H8 M521 2	B	.75	SV	SOL	NC	FC	Q	GHJK....	_____	1
RHR-V-68A	3	D13 M524 1	B	16	GT	MO	NO	FAI	Q	GHJ.....	_____	20
RHR-V-68B	3	G14 M524 2	B	16	GT	MO	NO	FAI	Q	GHJ.....	_____	20
RHR-V-73A	2	H14 M521 1	F	2	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-73B	2	H5 M521 2	F	2	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-75A	2	G11 M521 1	B	.75	SV	SOL	NC	FC	Q	GHJK....	_____	1
RHR-V-75B	2	G9 M521 2	B	.75	SV	SOL	NC	FC	Q	GHJK....	_____	1
RHR-V-84A	2	D14 M521 1	C	1.5	CK	SA	NC	NA	Q	.H.....	_____	17
RHR-V-84B	2	B3 M521 2	C	1.5	CK	SA	NC	NA	Q	.H.....	_____	17
RHR-V-84C	2	C6 M521 2	C	1.5	CK	SA	NC	NA	Q	.H.....	_____	17
RHR-V-85A	2	D14 M521 1	C	1.5	SC	SA,MAN	NC	NA	Q	.H.....	_____	_____
RHR-V-85B	2	B3 M521 2	C	1.5	SC	SA,MAN	NC	NA	Q	.H.....	_____	_____
RHR-V-85C	2	C6 M521 2	C	1.5	SC	SA,MAN	NC	NA	Q	.H.....	_____	_____
RHR-V-89	2	J10 M521 2	C	14	CK	AO,SA	NC	NA	Q	GH.....	6	_____
RHR-V-115	2	J8 M521 2	B	14	GT	MO	NC	FAI	Q	GHJ.....	_____	20
RHR-V-116	2	J9 M521 2	B	14	GB	MO	NC	FAI	Q	GHJ.....	_____	20
RHR-V-120	2	C11 M521 1	F -P	3	GT	MAN	LC	NA	N	....L...	_____	4
RHR-V-121	2	C11	F -P	3	GT	MAN	LC	NA	N	....L...	_____	4

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
RHR-V-123A	1	E5 M521 1	T	1	GT	MO	LC	FAI	C	GHJ.L...	1P	4,20
RHR-V-123B	1	E13 M521 2	T	1	GT	MO	LC	FAI	C	GHJ.L...	1P	4,20
RHR-V-124A	2	B14 M521 1	F -P	1.5	GB	MO	LC	NA	N	....L...	_____	4
RHR-V-124B	2	C12 M521 1	F -P	1.5	GB	MO	LC	NA	N	....L...	_____	4
RHR-V-125A	2	D4 M521 2	F -P	1.5	GB	MO	LC	NA	N	....L...	_____	4
RHR-V-125B	2	D3 M521 2	F -P	1.5	GB	MO	LC	NA	N	....L...	_____	4
RHR-V-134A	2	F14 M521 1	F	2	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-134B	2	F5 M521 2	F	2	GB	MO	NC	FAI	Q	GHJ.L...	_____	4,20
RHR-V-209	1	D5 M521 1	TC	.75	CK	SA	NC	NA	R	.H..L...		4,8
RRC-V-13A	2	C13 M530 _	FC	.75	CK	SA	NO	NA	C	.H..L...	1J	4
RRC-V-13B	2	B13 M530 _	FC	.75	CK	SA	NO	NA	C	.H..L...	1J	4
RRC-V-16A	2	C14 M530 _	F	.75	GT	MO	NO	FAI	C	GHJ.L...	1J	4,20
RRC-V-16B	2	B14 M530 _	F	.75	GT	MO	NO	FAI	C	GHJ.L...	1J	4,20
RRC-V-19	1	F11 M530 _	F	.75	SV	SOL	NC	FC	Q	GHJKL...	_____	1, 4
RRC-V-20	1	F12 M530 _	F	.75	SV	SOL	NC	FC	Q	GHJKL...	_____	1, 4
RRCU-V-1	1	F15 M523 _	F	6	GT	MO	NO	FAI	C	GHJ.L...	1N	4,20
RRCU-V-4	1	E15 M523 _	F	6	GT	MO	NO	FAI	C	GHJ.L...	1N	4,20
RRCU-V-40	1	H11 M523	F	6	GT	MO	NO	FAI	C	GHJ.L...	1N	4,20

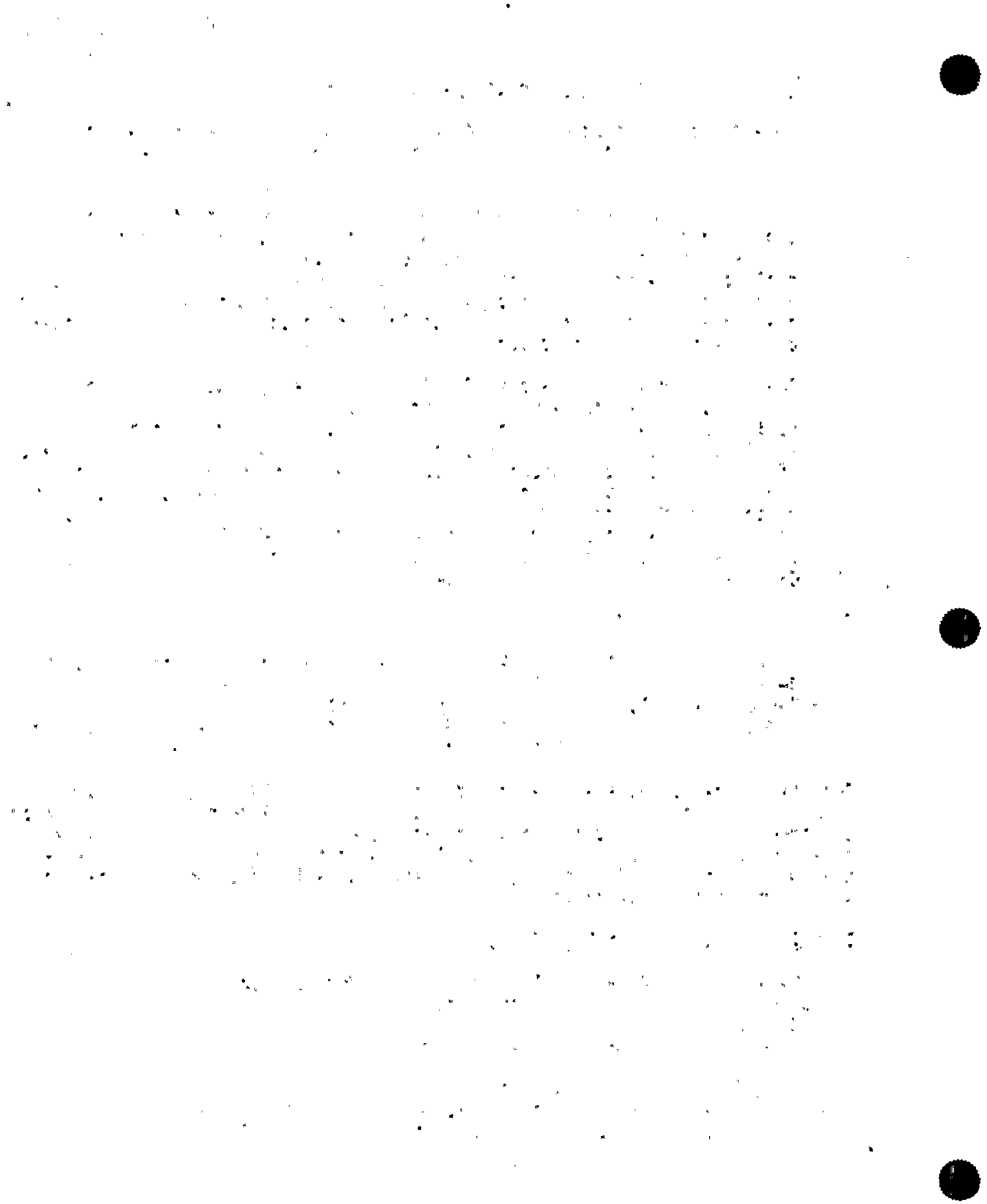
VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
8A-V-109	2	J6 M510 _	F -P	2	GT	MAN	LC	NA	N	....L...	_____	4
SLC-RV-29A	2	E6 M522 _	C	1 X 2	RV	SA	NC	NA	N	.....P..	_____	_____
SLC-RV-29B	2	D6 M522 _	C	1 X 2	RV	SA	NC	NA	N	.....P..	_____	_____
SLC-V-1A	2	E4 M522 _	B	4	GB	MO	NC	FAI	Q	GHJ.....	_____	20
SLC-V-1B	2	D4 M522 _	B	4	GB	MO	NC	FAI	Q	GHJ.....	_____	20
SLC-V-4A	1	F8 M522 _	FD	1.5	SHEAR	EXPL	NC	NA	N	....L.V.	_____	4
SLC-V-4B	1	D8 M522 _	FD	1.5	SHEAR	EXPL	NC	NA	N	....L.V.	_____	4
SLC-V-6	1	F11 M522 _	C	1.5	CK	SA	NC	NA	R	.H.....	_____	2
SLC-V-7	1	F13 M522 _	FC	1.5	CK	SA	NC	NA	R	.H..L...	_____	2, 4
SLC-V-33A	2	F7 M522 _	C	1.5	CK	SA	NC	NA	Q	.H.....	_____	_____
SLC-V-33B	2	D7 M522 _	C	1.5	CK	SA	NC	NA	Q	.H.....	_____	_____
SW-RV-1A	3	C14 M524 1	C	1	RV	SA	NC	NA	N	.....P..	_____	_____
SW-RV-1B	3	F14 M524 2	C	1	RV	SA	NC	NA	N	.....P..	_____	_____
SW-TCV-11A	3	G5 M775 _	B	2.5	GB	MO	NT	FO	Q	.H.K....	_____	22
SW-TCV-11B	3	C6 M775 _	B	2.5	GB	MO	NT	FO	Q	.H.K....	_____	22
SW-TCV-15A	3	J10 M775 _	B	2.5	GB	MO	NT	FO	Q	.H.K....	_____	22
SW-TCV-15B	3	E10 M775 _	B	2.5	GB	MO	NT	FO	Q	.H.K....	_____	22
SW-V-1A	3	H5	C	20	CK	SA	NC	NA	Q	.H.....	_____	_____

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
SW-V-1B	3	G5 M524 2	C	20	CK	SA	NC	NA	Q	.H.....		
SW-V-2A	3	H6 M524 1	B	20	BF	MO	NC	FAI	Q	GHJ.....		20
SW-V-2B	3	G6 M524 2	B	20	BF	MO	NC	FAI	Q	GHJ.....		20
SW-V-4A	3	E9 M524 1	B	8	GT	MO	NO	FAI	Q	GHJ.....		20
SW-V-4B	3	G9 M524 2	B	8	GT	MO	NO	FAI	Q	GHJ.....		20
SW-V-4C	3	F7 M524 1	B	8	GT	MO	NO	FAI	Q	GHJ.....		20
SW-V-12A	3	G3 M524 1	B	18	GT	MO	NC	FAI	Q	GHJ.....		20
SW-V-12B	3	G3 M524 2	B	18	GT	MO	NC	FAI	Q	GHJ.....		20
SW-V-24A	3	G9 M524 1	B	2	GT	MO	NO	FAI	Q	GHJ.....		20
SW-V-24B	3	F10 M524 2	B	2	GT	MO	NO	FAI	Q	GHJ.....		20
SW-V-24C	3	K10 M524 2	B	2	GT	MO	NO	FAI	Q	GHJ.....		20
SW-V-29	3	G6 M524 1	B	8	BF	MO	NC	FAI	Q	GHJ.....		20
SW-V-34	3	C11 M524 2	B	1.5	GB	SOL	NO	FO	Q	GHJK....		1
SW-V-44	3	E9 M524 1	B	2	GT	MO	NO	FAI	Q	GHJ.....		20
SW-V-54	3	F7 M524 1	B	2	GT	MO	NO	FAI	Q	GHJ.....		20
SW-V-75A	3	A13 M524 1	B	2	GB	MO	NC	FAI	Q	GHJ.....		20
SW-V-75B	3	B14 M524 2	B	2	GB	MO	NC	FAI	Q	GHJ.....		20
SW-V-187A	3	G14	B	6	GT	MO	NO	FAI	Q	GHJ.....	3	20

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
SW-V-187B	3	C13 M524 2	B	6	GT	MO	NO	FAI	Q	GHJ.....	3	20
SW-V-188A	3	H13 M524 1	B	6	GT	MO	NO	FAI	Q	GHJ.....	_____	20
SW-V-188B	3	D12 M524 2	B	6	GT	MO	NO	FAI	Q	GHJ.....	_____	20
SW-V-223A	3	K5 M775 _	C	3	CK	SA	NC	NA	Q	.H.....	_____	_____
SW-V-223B	3	E5 M775 _	C	3	CK	SA	NC	NA	Q	.H.....	_____	_____
SW-V-228A	3	F7 M775 _	C	3	CK	SA	NC	NA	Q	.H.....	_____	_____
SW-V-228B	3	B6 M775 _	C	3	CK	SA	NC	NA	Q	.H.....	_____	_____
SW-V-931A	3	K4 M524 1	C	1	CK	SA	NO	NA	Q	.H.....		
SW-V-931B	3	J4 M524 2	C	1	CK	SA	NO	NA	Q	.H.....		
TIP-V-1	2	GH12 M604 _	F	.375	BALL	SO	NC	FC	Q	GHJKL...	_____	1, 4
TIP-V-2	2	GH12 M604 _	F	.375	BALL	SO	NC	FC	Q	GHJKL...	_____	1, 4
TIP-V-3	2	GH12 M604 _	F	.375	BALL	SO	NC	FC	Q	GHJKL...	_____	1, 4
TIP-V-4	2	GH12 M604 _	F	.375	BALL	SO	NC	FC	Q	GHJKL...	_____	1, 4
TIP-V-5	2	GH12 M604 _	F	.375	BALL	SO	NC	FC	Q	GHJKL...	_____	1, 4
TIP-V-6	2	GH12 M604 _	FC	1	CK	SA	NO	NA	I	.H..L...	_____	4,11
TIP-V-7	2	GH12 M604 _	FD	.375	SHEAR	EXPL	NO	FO	N	.....V.	_____	4
TIP-V-8	2	GH12 M604 _	FD	.375	SHEAR	EXPL	NO	FO	N	.....V.	_____	4
TIP-V-9	2	GH12	FD	.375	SHEAR	EXPL	NO	FO	N	.....V.	_____	4

VALVE NUMBER	CODE CLASS	LOCATION ON P&ID	VALVE CATEGORY	SIZE IN INCHES	VALVE TYPE	ACTUATOR TYPE	--POSITION--- NORMAL	FAILED	EXER. FREQ.	TEST CODE	NOTES	RELIEF REQUESTS
TIP-V-10	2	GH12 M604	FD	.375	SHEAR	EXPL	NO	FO	N	......V.		4
TIP-V-11	2	GH12 M604	FD	.375	SHEAR	EXPL	NO	FO	N	......V.		4
TIP-V-15	2	GH12 M604	F	1	SV	SOL	NO	FC	Q	GHJKL...		1, 4

TOTAL COUNT = 597



1. Valve Exercising Test Frequency -- Exceptions

IWV-3411 states that category A and B valves shall be exercised at least once every 3 months, except as provided by IWV-3412(a). IWV-3412(a) states:

Valves shall be exercised to the position required to fulfill their function unless such operation is not practical during plant operation. If only limited operation is practical during plant operation, the valve shall be part-stroke exercised during plant operation and full stroke exercised during cold shutdowns. Valves that cannot be exercised during plant operations shall be specifically identified by the Owner and shall be full-stroke exercised during cold shutdowns.

The following valves are specifically identified by the Owner as being impractical to exercise during plant operations and will therefore be full-stroke exercised during cold shutdowns. The testing of these valves shall commence immediately (within 48 hours) following the establishment of cold shutdown conditions in accordance with the owner's established schedule. Testing shall continue only as long as the plant is scheduled to be in cold shutdown to perform required maintenance. All of these valves will be tested during each refueling outage. The valves are identified by unique valve numbers and Code identification as to Code Class and Valve Category. See RV-25.

C)

Valve Number	Code Id.	Function
RHR-V-8	1, A	Isolation valves in RHR shutdown cooling suction line from recirculation loop A
RHR-V-9	1, A	
RHR-V-23	1, A	RHR supply to vessel head spray
RHR-V-53A, B	1, A	Loop A, B outboard isolation valve for shutdown cooling return

Justification--Valves are interlocked with reactor coolant system pressure such that valves automatically close to protect the RHR pump suction line from elevated reactor coolant system pressures. Opening circuit is disabled by the same pressure interlocks. Overpressurization of the suction line may cause the loss of shutdown RHR cooling capability. Interlocks cannot be bypassed with normal control circuits.

D)

Valve Number	Code Id.	Function
RCC-V-5	2, A	Isolation valves for reactor closed cooling water lines
RCC-V-21	2, A	
RCC-V-40	2, A	
RCC-V-104	2, A	

Justification--Closure of any isolation valve will interrupt cooling water flow to the Reactor Recirculation (RRC) Pump seals, to the RRC pump motor coolers and to the Drywell Air Coolers possibly causing failure of this equipment.

F)

Valve Number	Code Id.	Function
RFW-V-10A, B	1, A-C	Reactor feedwater inboard check valves
RFW-V-32A, B	1, A-C	Reactor feedwater outboard check valves
RFW-V-65A, B	1, A	Reactor feedwater stop valves

Justification

1) Closure of either Category A valve (RFW-V-65A, 65B) would result in a loss of flow to the reactor vessel and cause a significant reduction of reactor coolant inventory.

2) Category A-C valves are held open by feedwater flow and cannot be closed during power operations.

G)

Valve Number	Code Id.	Function
HY-V-17A, B	2, B	Valves provide hydraulic control fluid to the reactor recirculation flow control valve hydraulic operators. Recirculation flow control valves are RRC-V-60A and RCC-V-60B.
HY-V-18A, B	2, B	
HY-V-19A, B	2, B	
HY-V-20A, B	2, B	
HY-V-33A, B	2, B	
HY-V-34A, B	2, B	
HY-V-35A, B	2, B	
HY-V-36A, B	2, B	

Justification--Exercising of the hydraulic valves may cause repositioning of the reactor recirculation flow control valve, causing undesirable reactivity changes in the core.

I)

Valve Number	Code Id.	Function
CIA-V-39A, B	3, B	These valves cross connect the normal nitrogen supply for the Main Steam Isolation Valves and Main Steam Relief Valves (including the 7 ADS Valves) accumulators to the backup nitrogen supply for the 7 ADS valves.

Justification--Testing these valves requires securing the backup nitrogen supply to the ADS valve accumulators. This is unsafe to do while the plant is operating.

J)

Valve Number	Code Id.	Function
RRC-V-13A, B	2, A-C	Inboard and outboard isolation valves for the recirculation pumps seal purge line.
RRC-V-16A, B	2, A	

Justification--Closure of Category A valves (RCC-V-16A, B) would terminate seal purge water flow to recirculation Pump 1A or 1B, respectively. Loss of purge flow may result in excessive seal wear and possibly failure of the seal.

Category A-C valves (RRC-V-13A, B) are held open by purge water flow and cannot be closed during power operations.

K)

Valve Number	Code Id.	Function
RCIC-V-13	1, A	RCIC pump discharge isolation, and containment isolation, and reactor coolant pressure isolation valve.

Justification--Opening this valve during normal power operations increases the possibility of an intersystem LOCA.

L)

Valve Number	Code Id.	Function
LPCS-V-5	1, A	LPCS discharge isolation to the reactor vessel.
RHR-V-42A,B,C	1, A	RHR discharge isolation to the reactor vessel.

Justification--The risk of injuring plant personnel, overpressurizing the associated pump and piping, or causing an intersystem LOCA makes the opening of these valves imprudent during power operations.

M)

Valve Number	Code Id.	Function
CIA-SPV-1B-19B CIA-SPV-1A-15A	3, B 3, B	Emergency nitrogen supply isolation valve.
CIA-V-52A-66A CIA-V-52B-70B	3, C 3, C	Emergency nitrogen supply check mode.
CIA-V-103A & B	3, C	Remote Emergency nitrogen supply check valve.
CIA-V-104A & B	3, C	Remote Emergency nitrogen supply isolation valve.

Justification--Valve testing requires overriding valve control circuitry. This would inhibit the system from performing its designed safety function in case of an emergency.

N)

Valve Number	Code Id.	Function
RWCU-V-1	1, A	Containment Iso., RWCU Pump Suction Iso.
RWCU-V-4	1, A	Containment Iso., RWCU Pump Suction Iso.
RWCU-V-40	1, A	Containment Iso., RWCU Pump Discharge Iso.

Justification--Testing these valves during power operations leads to overheating of the pumps, significantly increasing the potential for equipment damage.

P)

Valve Number	Code Id.	Function
RHR-V-123A	1, A	CIV, HI-LO Pressure Iso.
RHR-V-123B	1, A	CIV, HI-LO Pressure Iso.

Justification--This valve is normally closed during power operations and functions as a Reactor Coolant Pressure Boundary/Containment Isolation Valve. Opening this valve for the sole purpose of verifying its ability to close in accordance with IWV-3410 requirements is not prudent, as it presents an unnecessary challenge to the containment and increases the potential for an intersystem LOCA.

R) Valve Number	Code Id.	Function
MSLC-V-2A	1, B	Prevent Radioactive Material Release
MSLC-V-3A	1, A	CIV, Prevent Radioactive Material Release
MSLC-V-2B	1, B	Prevent Radioactive Material Release
MSLC-V-3B	1, A	CIV, Prevent Radioactive Material Release
MSLC-V-2C	1, B	Prevent Radioactive Material Release
MSLC-V-3C	1, A	CIV, Prevent Radioactive Material Release
MSLC-V-2D	1, B	Prevent Radioactive Material Release
MSLC-V-3D	1, A	CIV, Prevent Radioactive Material Release
MSLC-V-4	2, B	Prevent Radioactive Material Release
MSLC-V-5	2, B	Prevent Radioactive Material Release
MSLC-V-9	2, B	Prevent Radioactive Material Release
MSLC-V-10	2, B	Prevent Radioactive Material Release

Justification--Testing the valves quarterly when the plant is in normal operation subjects the valves to operation with 1005 psi across the seat. While the valves and operators are designed for the 1005 psi differential, this results in excessive wear and tear on the valves that may affect their performance when required to operate to allow the MSLC System to operate or maintain isolation if inboard MSIV fails to close.

The valves perform two functions: (1) isolation during normal plant operation and in case of failure of the inboard MSIV to close adequately for the MSLC system to operate and (2) open to allow the inboard MSLC to operate. Since the valves are normally in the closed position during plant operation and will be required to open or close with only 35 psi across them in case of an accident, taking a risk of shutting the plant down if they don't seal after a test and subjecting the valve to severe duty compared to what it operates against is not considered prudent.

S) Valve Number	Code Id.	Function
MS-V-146	2, B	Isolation Valve, Main Steam Supply to Auxiliary Equipment

Justification

This valve is normally open at power. Closing this valve at power would isolate steam from the following equipment.

1) Reactor Feed Water Pumps and result in loss of RPV level and a reactor scram,

2) Main Steam Bypass Valves and result in a Technical Specification violation,

3) Main Steam Air Ejectors and result in loss of Main Condenser vacuum.

2. Only those valves which are required to perform a specific function in shutting down a reactor to the cold shutdown condition or in mitigating the consequences of an accident are required to be tested per Subsection IWV of the Code. Using this criteria the following valves are not required to be tested per Subsection IWV, but due to their functional importance are included in the valve list at the Owner's discretion.

   RCIC-V-1, 10, 11, 21, 22, 30, 45, 46, 59, 65, 86, 111, 112, 204
   RCIC-RV-17, 19
   RCIC-RD-1, 2

   RCIC-V-30 will be partial-stroke exercised quarterly and full-stroke exercised during refueling outages. A relief request is not required for these valves since they are not required to be included in the IST program.

3. These valves are not ASME Class 3. They have been assigned Washington State Special Numbers and are considered as SA105 material welded to an ASME code system pressure boundary. The vendor's hydrostatic test was not maintained for sufficient time to meet ASME requirements. This does not affect the valves ability to perform its safety function.

   SW-V-187A, B
   FPC-V-172, 173, 175, 181A, 181B, 184

4. Valve closes automatically if Reactor Vessel pressure is less than 47 psig. Therefore, if cold shutdown conditions extend beyond a 3 month period, IWV testing frequency may not be met. However, valves will be tested prior to resuming power operations as per IWV-3416.

   RCIC-V-8, 45, 63, 76, 110, 113 .

   a. RCIC-V-111 and V-112 are check valves isolated by RCIC-V-110 and V-113 which close automatically if reactor vessel pressure is less than 47 psig.

5. Deleted

6. The valve actuator was installed to facilitate stroke testing of the valve. It is not intended for use in normal system operations and is therefore, exempt from IWV-3413 (stroke-time measurement) and IWV-3415 (operation of fail-safe actuators) requirements.

   RCIC-V-65, 66
   HPCS-V-5
   LPCS-V-6
   RHR-V-41C, 50A, 50B, 89
   RFW-V-32A, 32B
   CVB-V-1A, B, C, D, E, F, G, H, J, K, L, M, N, P, Q, R, S, T
   CSP-V-7, 8, 10

7. These valves are categorized BC. The only required safety function of these valves is its self-actuating overpressure relief function (Category C). The valve operator's safety function is passive (Category B). No stroke testing is required by the code for passive Category B valves, therefore these valves will be tested in accordance with the code as Category C safety/relief valves (i.e., operability tests every 5 years).

   MS-RV-1A, 1B, 1C, 1D
   MS-RV-2A, 2B, 2C, 2D
   MS-RV-3A, 3B, 3C

8. These valves are operated by a programmer with a geared nylon wheel. The programmer is activated by a pressure switch which trips on low header pressure. The nylon wheel rotates one position to deenergize a solenoid and open a valve. If the low pressure condition persists, in 30 seconds, the nylon gear rotates and another solenoid is deenergized to open another nitrogen bottle isolation valve. The geared nylon wheel is equipped with a window through which a number 1 thru 20 may be seen. Each number corresponds to the number of solenoids deenergized in its rotational sequence which corresponds directly with the number of valves that are open.

   It is the owner's position that this is not a "Valve Position Indicator" as used in IWV-3300. At best it is an indicator of whether or not specific solenoids are energized or not.

   CIA-SPV-1A through 15A
   CIA-SPV-1B through 19B

9. Containment isolation valves (relief valves) tested per IWV-3510 are not required to be additionally tested per IWV-3420. Reference IWV-3512. These valves are not listed under Relief Request RV-4.

   HPCS-RV-14, 35
   LPCS-RV-18, 31
   RHR-RV-1A, 1B, 5, 25A, 25B, 25C, 88A, 88B, 88C

10. These rupture discs are of a nontestable design. Therefore, no testing is required per IWV-3620.

    CAC-RD-1A, 1B
    CCH-RD-1A, 1B
    RCIC-RD-1,2

11. The following HCU valves (typical of 185 valves) perform a function important to safety. These valves are non-ASME and as such are not required to be included in the IST program by the subject SER or by GL 89-04. However, because of their safety significance and because ISTC of the OM Code will require these valves to be added to the IST program in the future, the subject HCU valves are being added to the IST program at this time. These valves will be tested per WNP-2 Technical Specifications referenced against each valve. This alternate testing complies with position 7 of GL 89-04.

Valve	Category	Function	Tested Per Technical Specifications
HCU-114	C	Check vlv to scram hdr	4.1.3.2 (a, b, & c)
HCU-115	C	Charging wtr ck vlv	4.1.3.5.b.2
HCU-126	B	Drive water AOV	4.1.3.2(a, b, & c)
HCU-127	B	Withdraw AOV	4.1.3.2 (a, b, & c)
HCU-138	C	Cooling wtr ck vlv	4.1.3.1.2.a

    Reference: SER Appendix B, item 15

12. The following emergency diesel generator air start system valves perform a function important to safety. These valves are non-ASME and as such are not required to meet the requirements of ASME Section XI. These valves will be tested annually during DG Air Starter Motor Test. Note that two valves will be tested at a time but a failure of a single valve would be detected.

Valve	Category
DSA-SPV-5A 1/2	B
-5A 1/4	B
-5A 2/2	B
-5A 2/4	B
-5B 1/2	B
-5B 1/4	B
-5B 2/2	B
-5B 2/4	B
-5C 1/1	B
-5C 1/2	B

    Reference: SER Appendix B, item 14

4.5 Relief Requests from Certain IWV Requirements

Relief Requests are presented to document differences between the Code and WNP-2's Valve Test Program. The requests include technical justification for the differences and, where appropriate, propose alternate testing.

RELIEF REQUEST NO. RV-1

System

Various

Valves

Rapid acting valves. (Applies to Open Position, Closed Position or Both Positions.)

Code Testing Requirement

Corrective action based on an increase in stroke time (IWV-3417(a)).

Basis for Relief

Some valves (generally solenoid valves) are very rapid acting. Since stroke times are to be measured to the nearest second, a 50% increase in stroke time cannot be consistently measured with present methodology.

Alternate Testing to be Performed

A limiting stroke time of two seconds will be assigned to these valves. Valves exceeding this limit will be corrected in accordance with IWV-3417(b).

Quality/Safety Impact

The corrective action based on an increase in stroke time (per IWV-3417(a)) is in this case, an impractical requirement due to the rapid-acting nature of these valves. Measured stroke times in excess of the two second limit will identify valves with operability problems in a consistent and timely manner. Hence, the proposed testing will provide adequate assurance of material quality and public safety. This alternate testing complies with Position 6 of GL 89-04 and with OM-10.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.1.1.1

Relief request is granted as requested.

TABLE RV-1[1]

Valve	Code Class	Category	Function
CAC-FCV-1A	2	A	Hydrogen Recombiner Flow Control & Isolation
CAC-FCV-1B	2	A	Hydrogen Recombiner Flow Control & Isolation
CAC-FCV-2A	2	A	Hydrogen Recombiner Flow Control & Isolation
CAC-FCV-2B	2	A	Hydrogen Recombiner Flow Control & Isolation
CAC-FCV-3A	2	A	Hydrogen Recombiner Flow Control & Isolation
CAC-FCV-3B	2	A	Hydrogen Recombiner Flow Control & Isolation
CAC-FCV-4A	2	A	Hydrogen Recombiner Flow Control & Isolation
CAC-FCV-4B	2	A	Hydrogen Recombiner Flow Control & Isolation
CSP-V-93	2	A	Containment Isolation
CSP-V-96	2	A	Containment Isolation
CSP-V-97	2	A	Containment Isolation
CSP-V-98	2	A	Containment Isolation

1. For information only. Not part of relief request.

TABLE RV-1 (CONTINUED)

Valve	Code Class	Category	Function
PI-VX-251	2	A	Radiation monitor RAD-RE-12B inlet valve
PI-VX-250	2	A	Radiation monitor RAD-RE-12B outlet valve
PI-VX-253	2	A	Radiation monitor RAD-RE-12B outlet valve
PI-VX-256	2	A	Radiation monitor RAD-RE-12A inlet valve
PI-VX-257	2	A	Radiation monitor RAD-RE-12A inlet valve
PI-VX-259	2	A	Radiation monitor RAD-RE-12A outlet valve
PI-VX-262	2	B	Hydrogen-oxygen monitor sample iso. valve
PI-VX-263	2	B	Hydrogen-oxygen monitor sample iso. valve
PI-VX-264	2	B	Hydrogen-oxygen monitor sample iso. valve
PI-VX-265	2	B	Hydrogen-oxygen monitor sample iso. valve
PI-VX-266	2	B	Hydrogen-oxygen monitor sample iso. valve
PI-VX-268	2	B	Hydrogen-oxygen monitor sample iso. valve
PI-VX-269	2	B	Hydrogen-oxygen monitor sample iso. valve
PSR-V-X73-1, 2	2	A	Containment Isolation
PSR-V-X77A1, 2	1	A	Containment Isolation
PSR-V-X77A3, 4	1	A	Containment Isolation
PSR-V-X80-1, 2	2	A	Containment Isolation
PSR-V-X82-1, 2	2	A	Containment Isolation
PSR-V-X82-7, 8	2	A	Containment Isolation
PSR-V-X83-1, 2	2	A	Containment Isolation
PSR-V-X84-1, 2	2	A	Containment Isolation
PSR-V-X88-1, 2	2	A	Containment Isolation
RHR-V-60A	2	B	Loop A sample (inboard)
RHR-V-60B	2	B	Loop B sample (inboard)
RHR-V-75A	2	B	Loop A sample (outboard)
RHR-V-75B	2	B	Loop B sample (outboard)
RRC-V-19	1	A	Reactor recirculation sampling Iso valve.
RRC-V-20	1	A	Reactor recirculation sampling Iso valve.
SW-V-34	3	B	Cooling Water Isolation
TIP-V-1	2	A	Containment Isolation
TIP-V-2	2	A	Containment Isolation
TIP-V-3	2	A	Containment Isolation
TIP-V-4	2	A	Containment Isolation
TIP-V-5	2	A	Containment Isolation
TIP-V-15	2	A	Containment Isolation

RELIEF REQUEST NO. RV-2

System	Standby Liquid Control (SLC)
Valve(s)	SLC-V-6, SLC-V-7
ASME Classification	Code Class: 1 Category: B-C (SLC-V-6) A-C (SLC-V-7)
Function	Standby Liquid Control discharge to reactor vessel.
Code Testing Requirement	1. Quarterly exercising (IWV-3521) 2. Cold shutdown exercising (IWV-3522)
Basis for Relief	1. Valves have no operator with which they may be stroked. 2. Exercising the valves require the initiation of the SLC system and full flow injection into the reactor vessel. Initiation of SLC flow involves the discharge of Category D explosively activated valves.
Alternate Testing to be Performed	At least once per 18 months, one of the Standby Liquid Control System loops, including the associated explosive valve, will be initiated. A flow path to the Reactor Vessel will be verified by pumping demineralized water to the vessel. Valve closure capability for SLC-V-7 will be verified in conjunction with 10CFR50 Appendix J (Type C) testing.

Quality/Safety Impact

The proposed testing complies fully with the intent of the Code (IWV-3522). Additionally it is noted that the SLC system will be required to perform its safety function only under very infrequent circumstances (ATWS). The proposed testing provides adequate assurances of quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.4.1.1

Relief granted as requested.

RELIEF REQUEST NO. RV-3

System	Containment Instrument Air
Valve(s)	
ASME Classification	Valves affected by this relief request are identified in Table RV-3.
Function	
Code Testing Requirement	Quarterly testing (IWV-3412)
Basis for Relief	1. The CIA-V-40 series check valves are located inside the containment and are inaccessible during power operations. There is no way to remotely isolate the valves and observe the pressure decay of the accumulators. 2. There is no local or remote position indication for these check valves.
Alternate Testing to be Performed	1. During refueling outages, pressure decay tests will be performed for the Automatic Depressurization System accumulators associated with the Main Steam Safety/ Relief Valves in order to verify closure ability of CIA-V-40 series check valves and opening of CIA-V-31A and 31B. Each accumulator will be tested at least every two years. 2. Closure ability of CIA-V-21, 31A, and 31B will be verified by normal 10CFR50, Appendix J (Type C) testing.

Quality/Safety Impact

The proposed testing qualitatively verifies valve closure on the most practical regular basis. This satisfies the intent of the Code (IWV-3412). Valve opening is verified when the accumulators are pressurized in preparation for the pressure decay test.

The valves in Table RV-3 are in the pneumatic supply to the auto-depressurization System valves, a safety related system. However, the proposed alternate testing together with the redundancy of the pneumatic supplies and individual accumulators, of the ADS valves themselves and of the high pressure injections systems assures an acceptable level of quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.9.1.1., 3.9.1.2

Relief granted as requested.

TABLE RV-3

Valve	Code Class	Category	Function
CIA-V-31A CIA-V-31B	2	A-C	Instrument air supply to ADS valves (outside containment)
CIA-V-40 M, N, P, R, S, U, and V	2	A-C	Instrument air to ADS Accumulators (inside containment)
CIA-V-21	2	A-C	Instrument air supply to containment (outboard check valve).

REQUEST FOR RELIEF NO. RV-4

System, Valves, and ASME Classification	Category A, Containment Isolation Valves.
Function	Containment Isolation
Code Testing Requirement	Leak Test Requirements (IWV-3420)
Basis for Relief	The purpose of leak rate testing is, ultimately, to assure that the limits of 10CFR100 are not exceeded. Hence the overall leakage from the containment is the critical parameter in leak rate testing, not individual valve leak rates. Appendix J Leak Test requirements specifically address leakage requirements for valves functioning as containment isolation valves. Exceptions to the applicability of Appendix J Leak Test requirements are detailed in the WNP-2 Technical Specifications and FSAR.
Alternate Testing to be Performed	1. These valves will be leak tested according to 10CFR50, Appendix J as detailed in the WNP-2 Technical Specifications and FSAR in lieu of IWV-3420. Exceptions and deviations from Appendix J Type C test requirements are noted in Table RV-4. 2. WNP-2 will specify a permissible leakage limit based on valve type, size and equipment history for those valves being Type C leak tested. 3. Valves exceeding their leakage limits will be repaired or replaced. 4. The Appendix J limit of 0.60 La will be met (0.60 La is equivalent to 67,920 SCCM).

Quality/Safety Impact

These valves are all category A valves and whether active or passive perform a common safety function of containment isolation. The Appendix J and Technical Specification requirements recognize this safety function and provides leak test requirements based on this safety function. The proposed alternate testing provides adequate assurance of quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.1.2.1, 3.1.3.1

The relief request was granted provided that WNP-2 complies with the requirements of paragraphs IWV-3426 and -3427(a), Analysis of Leakage Rates and Corrective Action, as described in GL 89-04 Position 10.

TABLE RV-4[1]

Valve Number	Notes	Class	Category	Valve Number	Notes	Class	Category
CAC-FCV-1A		2	A	DW-V-156		2	A
CAC-FCV-1B		2	A	DW-V-157		2	A
CAC-FCV-2A		2	A	EDR-V-19		2	A
CAC-FCV-2B		2	A	EDR-V-20		2	A
CAC-FCV-3A		2	A	FDR-V-3		2	A
CAC-FCV-3B		2	A	FDR-V-4		2	A
CAC-FCV-4A		2	A	FPC-V-149		2	A
CAC-FCV-4B		2	A	FPC-V-153	C	2	A
CAC-V-2		2	A	FPC-V-154	C	2	A
CAC-V-4		2	A	FPC-V-156		2	A
CAC-V-6		2	A	HPCS-V-4	D	1	A
CAC-V-8		2	A	HPCS-V-5	D	1	AC
CAC-V-11		2	A	HPCS-V-12		2	A
CAC-V-13		2	A	HPCS-V-15	C	2	A
CAC-V-15		2	A	HPCS-V-23		2	A
CAC-V-17		2	A	HPCS-V-65		2	A
CAS-V-730		2	A	HPCS-V-68		2	A
CAS-VX-82e		2	A	HY-V-17A	B	2	A
CEP-V-1A		2	A	HY-V-17B	B	2	A
CEP-V-1B		2	A	HY-V-18A	B	2	A
CEP-V-2A		2	A	HY-V-18B	B	2	A
CEP-V-2B		2	A	HY-V-19A	B	2	A
CEP-V-3A		2	A	HY-V-19B	B	2	A
CEP-V-3B		2	A	HY-V-20A	B	2	A
CEP-V-4A		2	A	HY-V-20B	B	2	A
CEP-V-4B		2	A	HY-V-33A	B	2	A
CIA-V-20		2	A	HY-V-33B	B	2	A
CIA-V-21		2	AC	HY-V-34A	B	2	A
CIA-V-30A		2	A	HY-V-34B	B	2	A
CIA-V-30B		2	A	HY-V-35A	B	2	A
CIA-V-31A		2	AC	HY-V-35B	B	2	A
CIA-V-31B		2	AC	HY-V-36A	B	2	A
CSP-V-1		2	A	HY-V-36B	B	2	A
CSP-V-2		2	A	LPCS-FCV-11		2	A
CSP-V-3		2	A	LPCS-V-1	C	2	A
CSP-V-4		2	A	LPCS-V-5	D	1	A
CSP-V-5		2	A	LPCS-V-6	D	1	AC
CSP-V-6		2	A	LPCS-V-12		2	A
CSP-V-7		2	AC	LPCS-V-66		2	A
CSP-V-8		2	AC	LPCS-V-67		2	A
CSP-V-9		2	A	MS-V-16		1	A
CSP-V-10		2	AC	MS-V-19		1	A
CSP-V-93		2	A	MS-V-22A	A	1	A
CSP-V-96		2	A	MS-V-22B	A	1	A
CSP-V-97		2	A	MS-V-22C	A	1	A
CSP-V-98		2	A	MS-V-22D	A	1	A

[1] For information only -- not part of relief request.

TABLE RV-4 (CONTINUED)

Valve Number	Notes	Class	Category	Valve Number	Notes	Class	Category
MS-V-28A	A	1	A	PI-EFC-X44Ac	B	1	AC
MS-V-28B	A	1	A	PI-EFC-X44Ad	B	1	AC
MS-V-28C	A	1	A	PI-EFC-X44Ae	B	1	AC
MS-V-28D	A	1	A	PI-EFC-X44Af	B	1	AC
MS-V-67A	A	1	A	PI-EFC-X44Ag	B	1	AC
MS-V-67B	A	1	A	PI-EFC-X44Ah	B	1	AC
MS-V-67C	A	1	A	PI-EFC-X44Aj	B	1	AC
MS-V-67D	A	1	A	PI-EFC-X44Ak	B	1	AC
MSLC-V-3A	A	1	A	PI-EFC-X44Al	B	1	AC
MSLC-V-3B	A	1	A	PI-EFC-X44Am	B	1	AC
MSLC-V-3C	A	1	A	PI-EFC-X44Ba	B	1	AC
MSLC-V-3D	A	1	A	PI-EFC-X44Bb	B	1	AC
PI-EFC-X18A	B	1	AC	PI-EFC-X44Bc	B	1	AC
PI-EFC-X18B	B	1	AC	PI-EFC-X44Bd	B	1	AC
PI-EFC-X18C	B	1	AC	PI-EFC-X44Be	B	1	AC
PI-EFC-X18D	B	1	AC	PI-EFC-X44Bf	B	1	AC
PI-EFC-X29b	B	2	AC	PI-EFC-X44Bg	B	1	AC
PI-EFC-X29f	B	2	AC	PI-EFC-X44Bh	B	1	AC
PI-EFC-X30a	B	2	AC	PI-EFC-X44Bj	B	1	AC
PI-EFC-X30f	B	2	AC	PI-EFC-X44Bk	B	1	AC
PI-EFC-X37e	B	1	AC	PI-EFC-X44Bl	B	1	AC
PI-EFC-X37f	B	1	AC	PI-EFC-X44Bm	B	1	AC
PI-EFC-X38a	B	1	AC	PI-EFC-X61a	B	1	AC
PI-EFC-X38b	B	1	AC	PI-EFC-X61b	B	1	AC
PI-EFC-X38c	B	1	AC	PI-EFC-X61c	B	1	AC
PI-EFC-X38d	B	1	AC	PI-EFC-X62b	B	2	AC
PI-EFC-X38e	B	1	AC	PI-EFC-X62c	B	1	AC
PI-EFC-X38f	B	1	AC	PI-EFC-X62d	B	1	AC
PI-EFC-X39a	B	1	AC	PI-EFC-X66	B	2	AC
PI-EFC-X39b	B	1	AC	PI-EFC-X67	B	2	AC
PI-EFC-X39d	B	1	AC	PI-EFC-X69a	B	1	AC
PI-EFC-X39e	B	1	AC	PI-EFC-X69b	B	1	AC
PI-EFC-X40c	B	1	AC	PI-EFC-X69e	B	1	AC
PI-EFC-X40d	B	1	AC	PI-EFC-X69f	B	1	AC
PI-EFC-X40e	B	2	AC	PI-EFC-X70a	B	1	AC
PI-EFC-X40f	B	2	AC	PI-EFC-X70b	B	1	AC
PI-EFC-X41c	B	1	AC	PI-EFC-X70c	B	1	AC
PI-EFC-X41d	B	1	AC	PI-EFC-X70d	B	1	AC
PI-EFC-X41e	B	2	AC	PI-EFC-X70e	B	1	AC
PI-EFC-X41f	B	2	AC	PI-EFC-X70f	B	1	AC
PI-EFC-X42a	B	1	AC	PI-EFC-X71a	B	1	AC
PI-EFC-X42b	B	1	AC	PI-EFC-X71b	B	1	AC
PI-EFC-X42c	B	2	AC	PI-EFC-X71c	B	1	AC
PI-EFC-X42f	B	2	AC	PI-EFC-X71d	B	1	AC
PI-EFC-X44Aa	B	1	AC	PI-EFC-X71e	B	1	AC
PI-EFC-X44Ab	B	1	AC	PI-EFC-X71f	B	1	AC

TABLE RV-4 (CONTINUED)

Valve Number	Notes	Class	Category	Valve Number	Notes	Class	Category
PI-EFC-X72a	B	1	AC	PI-VX-221		2	A
PI-EFC-X72f		2	AC	PI-VX-250		2	A
PI-EFC-X73a	B	1	AC	PI-VX-251		2	A
PI-EFC-X73e		2	AC	PI-VX-253		2	A
PI-EFC-X74a	B	1	AC	PI-VX-256		2	A
PI-EFC-X74b	B	1	AC	PI-VX-257		2	A
PI-EFC-X74e	B	1	AC	PI-VX-259		2	A
PI-EFC-X74f	B	1	AC	PI-VX-262	B	2	A
PI-EFC-X75a	B	1	AC	PI-VX-263	B	2	A
PI-EFC-X75b	B	1	AC	PI-VX-264	B	2	A
PI-EFC-X75c	B	1	AC	PI-VX-265	B	2	A
PI-EFC-X75d	B	1	AC	PI-VX-266	B	2	A
PI-EFC-X75e	B	1	AC	PI-VX-268	B	2	A
PI-EFC-X75f	B	1	AC	PI-VX-269	B	2	A
PI-EFC-X78a	B	2	AC	PSR-V-X73-1		2	A
PI-EFC-X78b	B	1	AC	PSR-V-X73-2		2	A
PI-EFC-X78c	B	1	AC	PSR-V-X77A1		1	A
PI-EFC-X78f	B	1	AC	PSR-V-X77A2		1	A
PI-EFC-X79a	B	1	AC	PSR-V-X77A3		1	A
PI-EFC-X79b	B	1	AC	PSR-V-X77A4		1	A
PI-EFC-X82b	B	2	AC	PSR-V-X80-1		2	A
PI-EFC-X84a	B	2	AC	PSR-V-X80-2		2	A
PI-EFC-X86A	B	2	AC	PSR-V-X82-1		2	A
PI-EFC-X86B	B	2	AC	PSR-V-X82-2		2	A
PI-EFC-X87A	B	2	AC	PSR-V-X82-7		2	A
PI-EFC-X87B	B	2	AC	PSR-V-X82-8		2	A
PI-EFC-X106	B	1	AC	PSR-V-X83-1		2	A
PI-EFC-X107	B	1	AC	PSR-V-X83-2		2	A
PI-EFC-X108	B	1	AC	PSR-V-X84-1		2	A
PI-EFC-X109	B	1	AC	PSR-V-X84-2		2	A
PI-EFC-X110	B	1	AC	PSR-V-X88-1		2	A
PI-EFC-X111	B	1	AC	PSR-V-X88-2		2	A
PI-EFC-X112	B	1	AC	RCC-V-5		2	A
PI-EFC-X113	B	1	AC	RCC-V-21		2	A
PI-EFC-X114	B	1	AC	RCC-V-40		2	A
PI-EFC-X115	B	1	AC	RCC-V-104		2	A
PI-EFC-X119	B	2	AC	RCIC-V-8		1	A
PI-V-X42d		2	A	RCIC-V-13	D	1	A
PI-V-X54Bf		2	A	RCIC-V-19		2	A
PI-V-X61f		2	A	RCIC-V-28		2	AC
PI-V-X62f		2	A	RCIC-V-31	C	2	A
PI-V-X69c		2	A	RCIC-V-40		2	AC
PI-VX-216		2	A	RCIC-V-63		1	A
PI-VX-218		2	A	RCIC-V-64		1	A
PI-VX-219		2	A	RCIC-V-66	D	1	AC
PI-VX-220		2	A	RCIC-V-68		2	A

TABLE RV-4 (CONTINUED)

Valve Number	Notes	Class	Category
RCIC-V-69		2	A
RCIC-V-76		1	A
RCIC-V-184		2	A
RCIC-V-740		2	A
RCIC-V-742	D	1	A
RFW-V-10A		1	AC
RFW-V-10B		1	AC
RFW-V-32A		1	AC
RFW-V-32B		1	AC
RFW-V-65A		1	A
RFW-V-65B		1	A
RHR-FCV-64A		2	A
RHR-FCV-64B		2	A
RHR-FCV-64C		2	A
RHR-RV-30	E	2	AC
RHR-RV-36	E	2	AC
RHR-V-4A	C	2	A
RHR-V-4B	C	2	A
RHR-V-4C	C	2	A
RHR-V-8	D	1	A
RHR-V-9	D	1	A
RHR-V-11A		2	A
RHR-V-11B		2	A
RHR-V-16A		2	A
RHR-V-16B		2	A
RHR-V-17A		2	A
RHR-V-17B		2	A
RHR-V-21		2	A
RHR-V-23	D	1	A
RHR-V-24A		2	A
RHR-V-24B		2	A
RHR-V-27A		2	A
RHR-V-27B		2	A
RHR-V-41A	D	1	AC
RHR-V-41B	D	1	AC
RHR-V-41C	D	1	AC
RHR-V-42A	D	1	A
RHR-V-42B	D	1	A
RHR-V-42C	D	1	A
RHR-V-50A	D	1	AC
RHR-V-50B	D	1	AC
RHR-V-53A	D	1	A
RHR-V-53B	D	1	A
RHR-V-73A		2	A
RHR-V-73B		2	A
RHR-V-120		2	A
RHR-V-121		2	A
RHR-V-123A	D	1	A
RHR-V-123B	D	1	A
RHR-V-124A		2	A
RHR-V-124B		2	A
RHR-V-125A		2	A
RHR-V-125B		2	A
RHR-V-134A		2	A
RHR-V-134B		2	A
RHR-V-209	D	1	AC
RRC-V-13A		2	AC
RRC-V-13B		2	AC
RRC-V-16A		2	A
RRC-V-16B		2	A
RRC-V-19		1	A
RRC-V-20		1	A
RWCU-V-1		1	A
RWCU-V-4		1	A
RWCU-V-40		1	A
SA-V-109		2	A
SLC-V-4A		1	AD
SLC-V-4B		1	AD
SLC-V-7		1	AC
TIP-V-1		2	A
TIP-V-2		2	A
TIP-V-3		2	A
TIP-V-4		2	A
TIP-V-5		2	A
TIP-V-6		2	AC
TIP-V-7	B	2	AD
TIP-V-8	B	2	AD
TIP-V-9	B	2	AD
TIP-V-10	B	2	AD
TIP-V-11	B	2	AD
TIP-V-15		2	A

NOTES TO TABLE RV-4

The following notes identify exceptions to Appendix J (Type C) Leak Test requirements detailed in the WNP-2 FSAR and Technical Specification where the associated basis is documented.

A. Main steam isolation valves and associated leakage control system valves are type C tested at least once per 18 months. Maximum allowable leakage rate for these valves is specified in Technical Specification 3.6.1.2.c and the leakage from these valves is not included in the cumulative type B and C leakage rate.

B. These valves are not subject to a type C leak rate test or included in a type A test (FSAR Table 6.2-16, notes 27, 28 and 29). These valves include:

1) excess flow check valves located in instrumentation lines used to follow the course of an accident,

2) post LOCA hydrogen monitor isolation valves,

3) transversing incore probe explosively actuated shear valves, and

4) isolation valves in the hydraulic control lines of the reactor recirculation line isolation valves.

C. These valves are pressurized with fluid from a seal system and are hydraulically leak tested at 38.2 psig. Maximum allowable leakage rate for these valves is specified in Technical Specification 3.6.1.2.d. The leakage from these valves is not included in the cumulative type B and C leakage rate (Appendix J section III.C.3 and Technical Specification 4.6.1.2.g).

D. These valves are not subject to type C leak rate test and are tested per Technical Specification 4.4.3.2.2. These valves are reactor coolant pressure boundary pressure isolation valves and are hydraulically leak tested at 950 (+ or - 10) psig at least once every 18 months in lieu of type C test. Maximum allowable leakage rate for these valves is specified in Technical Specification 3.4.3.2.e which is much more restrictive than that allowed by the Code. Testing of these valves meets all the requirements of IWV-3420 except that corrective action is based on Technical Specification requirements and not per IWV-3427(b).

E. Not subject to type C leak rate test, but tested as part of type A test.

REQUEST FOR RELIEF NO. RV-5

Incorporated in Relief Request RV-4 as of Revision 3b.

RELIEF REQUEST NO. RV-6

System	Primary Containment Cooling and Purge
Valves	CVB-V-1A, B, C, D, E, F, G, H, J, K, L, M, N, P, Q, R, S, T
ASME Classification	Code Class: 2 Category: A-C
Function	To break vacuum on the drywell to suppression chamber downcomers and to limit steam leakage from the downcomer to the wetwell gas space.
Code Testing Requirement	IWV-3420, Valve Leak Rate Test
Basis for Relief	These check valves cannot be tested individually, therefore, assigning a limiting leakage rate for each valve is not practical. The purpose of this leak rate test is to assure that the leakage from the drywell to the suppression pool chamber does not exceed Technical Specification limits. The WNP-2 Technical Specification specifies conservative corrective actions commensurate with the importance of the safety function being performed by these valves.
Alternate Testing to be Performed	These valves will be leak tested according to WNP-2 Technical Specifications, at least once per 18 months by conducting a drywell-to-suppression chamber bypass leak test. These valves are verified closed by redundent position indicators, tested in the open direction using a torque wrench, and each valve seat is visually inspected. Corrective actions will be as specified in the Technical Specification.

Quality/Safety Impact

The leakage criteria and corrective actions specified in the WNP-2 Technical Specification is the most practical approach to assessing the adequacy of these valves in performing their specified safety function. Following the WNP-2 Technical Specification provides adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.10.1.1
Relief granted as requested.

RELIEF REQUEST NO. RV-7

System	Containment Instrument Air
Valves	CIA-V-40M, N, P, R, S, U, V
ASME Classification	Code Class: 2 Category: A-C
Function	These valves isolate the accumulators for the Auto Depressurization System (ADS) valves in the event that the supply line is broken or the pressure source is depressurized.
Code Testing Requirement	1. IWV-3424, Seat Leakage Measurement.
Basis for Relief	1. These check valves can only be tested by the method specified in IWV-3424(b) with much more difficulty than using the pressure decay method described below. The test methods for measuring seat leakage past a valve as specified in the Code imposes an undue burden on the Owner without commensurate compensating benefits.
Alternate Testing	1. These check valves will be leak tested during a pressure decay test on the accumulators. This test method will provide accurate measurements of leakage rates and is accepted by OM-10 (ASME/ANSI OMa-1988, Part 10).

Quality/Safety Impact

The pressure decay method of measuring leakage rates is recognized as an accurate method of measuring leakage rates. The proposed alternate testing provides adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.9.1.3

Relief granted as requested.

RELIEF REQUEST NO. RV-8

System	Residual Heat Removal
Valves	RHR-V-209
ASME Classification	Code Class: 1 Category: A-C
Function	Containment isolation and Reactor Coolant System Pressure Boundary and pressure relief for piping between valves RHR-V-8 and 9.
Code Testing Requirement	1. IWV-3521, that each category C valve be exercised at least once every 3 months.
Basis for Relief	1. This check valve is located inside the containment and does not have valve position indication or an operator of any type. It cannot be tested without interrupting RHR shutdown cooling flow. During power operations, access is prohibited. During cold shutdown conditions, RHR cannot be out of service more than 2 hours per an 8 hour interval (per WNP-2 Technical Specification). Additionally, containment will not be de-inerted during all cold shutdowns.
Alternate Testing to be Performed	1. This check valve will be exercised at refueling outages. Furthermore, this check valve is verified to shut by being leak tested at least once every 18 months per Technical Specification 4.4.3.2.2.

Quality/Safety Impact

This valve is normally closed and is verified to be adequately seated by leak tests at least once every 18 months. This valve performs the passive safety functions of containment isolation and reactor coolant system pressure isolation. Its active function of relieving pressure between valves RHR-V-8 and RHR-V-9 is a very unlikely situation and could only occur during time periods where both RHR-V-8 and 9 are shut and containment temperature is significantly above normal (i.e., LOCA condition). The proposed alternate testing avoids extraordinary testing efforts with inherent potential for violations of the WNP-2 Technical Specification.

This will provide adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.3.1.1

Relief granted as requested.

RELIEF REQUEST NO. RV-9

System: RCIC, HPCS, LPCS, and RHR

Valves	Class	Category	Function
RCIC-V-65, 66	1	A-C	RCIC discharge to the reactor vessel head
LPCS-V-6	1	A-C	LPCS discharge to the reactor vessel
HPCS-V-5	1	A-C	HPCS discharge to the reactor vessel
RHR-V-41A,B,C	1	A-C	RHR Loop A, B, C discharge to the reactor vessel
RHR-V-50A, B	1	A-C	RHR Loop A, B discharge to the recirculating pump discharge

Code Testing Requirement

1. IWV-3521, that check valves be exercised at least once every 3 months, except as provided by IWV-3522.

Basis for Relief

1. The Velan operation and maintenance manual for the testable check valves used in the RCIC, LPCS, HPCS, and RHR systems specifies that the valves are not to be operated with greater than 5 psi differential pressure across the disc. To achieve this condition during shutdown with any substantial vessel level will require that the manual isolation valve downstream be operated and pressure equalized across the disc prior to valve stroking. It is not possible to perform this task with the containment inerted.

Alternate Testing to be Performed

1. These check valves will be exercised with the reactor at cold shutdown and the containment deinerted.

   Cold shutdown testing shall commence immediately (within 48 hours) following establishment of cold shutdown de-inerted conditions. Testing shall continue only as long as the plant is scheduled to be in cold shutdown with the containment de-intered. Cold shutdown testing will be conducted in a manner which will not impede plant startup. Cold shutdown valves are tested in groups by several different procedures. The decision whether to start cold shutdown testing on any particular procedure will depend on the estimated length of the cold shutdown de-inerted period, system outages/conditions, time interval from the last cold shutdown testing, or other particular conditions. All cold shutdown valves will

be tested during each refueling outage. Testing is not required if the time period since the previous test is less than three months. For extended outages, cold shutdown testing does not need to start within 48 hours as long as all valves are tested before startup.

This alternate testing meets the intent of OM-10 which will be required in the future.

Quality/Safety Impact

These valves are normally closed and while in the closed position function as 1) containment isolation valves and 2) high-low pressure interface valves between the reactor coolant and portions of the Emergency Core Cooling System. These valves must open to facilitate operation of part of the Emergency Core Cooling System. The valves will normally only be operated in the event of an emergency during normal power operations. Lengthening the interval between tests as recommended will not preclude the timely evaluation of valve operability and thus provides adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.1.4.1

Relief granted as requested.

RELIEF REQUEST NO. RV-10

DELETED PRIOR TO SER REVIEW

RELIEF REQUEST NO. RV-11

System	Process Instrumentation
Valves	PI-EFC-X72f, X73e and TIP-V-6
ASME Classification	Code Class: 1 Category: AC 2 (TIP-V-6)
Function	Containment Isolation.
Code Testing Requirement	IWV-3521. Check valves shall be exercised at least once every 3 months.
Basis for Relief	These containment isolation valves are located inside the containment and can only be observed/tested during cold shutdown conditions when the containment is de-inerted.
Alternate Testing to be Performed	These valves will be tested at cold shutdown conditions with the containment de-inerted. Cold shutdown testing shall commence immediately (within 48 hours) following establishment of cold shutdown de-inerted conditions. Testing shall continue only as long as the plant is scheduled to be in cold shutdown with the containment de-intered. Cold shutdown testing will be conducted in a manner which will not impede plant startup. Cold shutdown valves are tested in groups by several different procedures. The decision whether to start cold shutdown testing on any particular procedure will depend on the estimated length of the cold shutdown de-inerted period, system outages/conditions, time interval from the last cold shutdown testing, or other particular conditions. All cold shutdown valves will be tested during each refueling outage. Testing is not required if the time period since the previous test is less than three months. For extended outages, cold shutdown testing does not need to start within 48 hours as long as all valves are tested before startup. This alternate testing meets the intent of OM-10 which will be required in the future.

Quality/Safety Impact

Lengthening the time interval between tests as recommended will not preclude the timely evaluation of valve operability and thus provides adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.11.1.1.

Relief granted as required.

RELIEF REQUEST NO. RV-12

DELETED

Design change deleted valves DO-V-40A, 40B.

RELIEF REQUEST NO. RV-13

System	Main Steam
Valves	MS-RV-3D, 4A, 4B, 4C, 4D, 5B, 5C
ASME Classification	Code Class: 1 Category: BC
Function	These valves form the Auto-Depressurization System and, as such, function to relieve reactor vessel pressure to the extent that the low pressure coolant injection system could be brought on line and perform its safety function.
Code Testing Requirement	1. IWV-3411, Test Frequency 2. IWV-3413, Stroke Time of Power Operated Valves
Basis for Relief	1. Valve exercise on a quarterly basis during power operations could cause power transients resulting in a reactor shutdown. Valve testing at cold shutdown conditions is not desirable because of the increased potential for damaging the valve seat. It is not desirable to test more frequently than refueling outages to reduce the number of challenges to the valves. 2. These valves are not equipped with position indicators based directly on the valve obturator or valve actuator position. Thermocouples are installed in the exhaust piping to provide indication as to whether or not the valve is properly seated. Acoustic monitors are also installed on the exhaust piping to provide indirect valve position indication. This indication lags actual valve position and is not accurate at reduced pressures.
Alternate Testing to be Performed	The valves will be exercised at least once every 18 months in accordance with WNP-2 Technical Specification. The valves will be verified fully open and closed based on available instrumentation and appropriate system response.

Quality/Safety Impact

The proposed alternate testing adequately evaluates the operational readiness of these valves commensurate with their safety function. This will help reduce the number of challenges and failures of safety relief valves and still provide timely information regarding operability and degradation. This will provide adequate assurance of material quality and public-safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.6.1.1

Relief granted as requested.

RELIEF REQUEST NO. RV-14

System	Control Rod Drive
Valves	CRD-V-10 and 180, CRD-V-11 and 181
ASME Classification	Code Class: 2 Category: B
Function	These valves are the vent and drain valves on the scram discharge volumes.
Code Testing Requirement	IWV-3413. Measure the stroke-time of power operated valves.
Basis for Relief	CRD-V-10 and 180, as well as CRD-V-11 and 181 are located in series, share the same position indication, and the same actuating source (air). Valve indication indicates shut when either valve closes. Valve indication indicates open only when both valves are open. These valves are always operated in pairs and cannot be operated individually without modifying the valve control system.
Alternate Testing to be Performed	The combined stroke-time of both valves will be measured in lieu of individual valve stroke-times. Valve closure will be verified by local observation.

Quality/Safety Impact

Valve operability is adequately evaluated by the proposed alternate testing. This provides adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.7.1.1

Relief granted as requested.

RELIEF REQUEST NO. RV-15

System	Various
Valves	All excess flow check valves in the program
ASME Classification	
Function	Containment Isolation
Code Testing Requirement	1. IWV-3521, Test Frequency
Basis for Relief	1. These are instrumentation line excess flow check valves that are tested per WNP-2 Technical Specification at least once every 18 months. Quarterly testing or cold shutdown testing requires more frequent tests which would be a hardship on WNP-2 with little compensating benefits.
Alternate Testing to be Performed	1. These valves shall be exercised at least once every 18 months per WNP-2 Technical Specifications. It will be verified that the valve checks flow at greater than 10 psid differential pressure in hydraulic service and 15 psid differential pressure in pneumatic service.

Quality/Safety Impact

Testing the excess flow check valves as specified by WNP-2 Technical Specifications will provide timely identification of valve failure and/or degradation. This provides adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.1.5.1

Relief granted as required.

TABLE RV-15[1]

Valve Number	Class	Category	Valve Number	Class	Category
PI-EFC-X18A	1	AC	PI-EFC-X44Bb	1	AC
PI-EFC-X18B	1	AC	PI-EFC-X44Bc	1	AC
PI-EFC-X18C	1	AC	PI-EFC-X44Bd	1	AC
PI-EFC-X18D	1	AC	PI-EFC-X44Be	1	AC
PI-EFC-X29b	1	AC	PI-EFC-X44Bf	1	AC
PI-EFC-X29f	2	AC	PI-EFC-X44Bg	1	AC
PI-EFC-X30a	2	AC	PI-EFC-X44Bh	1	AC
PI-EFC-X30f	2	AC	PI-EFC-X44Bj	1	AC
PI-EFC-X37e	1	AC	PI-EFC-X44Bk	1	AC
PI-EFC-X37f	1	AC	PI-EFC-X44Bl	1	AC
PI-EFC-X38a	1	AC	PI-EFC-X44Bm	1	AC
PI-EFC-X38b	1	AC	PI-EFC-X61a	1	AC
PI-EFC-X38c	1	AC	PI-EFC-X61b	1	AC
PI-EFC-X38d	1	AC	PI-EFC-X61c	1	AC
PI-EFC-X38e	1	AC	PI-EFC-X62b	2	AC
PI-EFC-X38f	1	AC	PI-EFC-X62c	1	AC
PI-EFC-X39a	1	AC	PI-EFC-X62d	1	AC
PI-EFC-X39b	1	AC	PI-EFC-X66	2	AC
PI-EFC-X39d	1	AC	PI-EFC-X67	2	AC
PI-EFC-X39e	1	AC	PI-EFC-X69a	1	AC
PI-EFC-X40c	1	AC	PI-EFC-X69b	1	AC
PI-EFC-X40d	1	AC	PI-EFC-X69e	1	AC
PI-EFC-X40e	2	AC	PI-EFC-X69f	1	AC
PI-EFC-X40f	2	AC	PI-EFC-X70a	1	AC
PI-EFC-X41c	1	AC	PI-EFC-X70b	1	AC
PI-EFC-X41d	1	AC	PI-EFC-X70c	1	AC
PI-EFC-X41e	2	AC	PI-EFC-X70d	1	AC
PI-EFC-X41f	2	AC	PI-EFC-X70e	1	AC
PI-EFC-X42a	1	AC	PI-EFC-X70f	1	AC
PI-EFC-X42b	1	AC	PI-EFC-X71a	1	AC
PI-EFC-X42c	2	AC	PI-EFC-X71b	1	AC
PI-EFC-X42f	2	AC	PI-EFC-X71c	1	AC
PI-EFC-X44Aa	1	AC	PI-EFC-X71d	1	AC
PI-EFC-X44Ab	1	AC	PI-EFC-X71e	1	AC
PI-EFC-X44Ac	1	AC	PI-EFC-X71f	1	AC
PI-EFC-X44Ad	1	AC	PI-EFC-X72a	1	AC
PI-EFC-X44Ae	1	AC	PI-EFC-X73a	1	AC
PI-EFC-X44Af	1	AC	PI-EFC-X74a	1	AC
PI-EFC-X44Ag	1	AC	PI-EFC-X74b	1	AC
PI-EFC-X44Ah	1	AC	PI-EFC-X74e	1	AC
PI-EFC-X44Aj	1	AC	PI-EFC-X74f	1	AC
PI-EFC-X44Ak	1	AC	PI-EFC-X75a	1	AC
PI-EFC-X44Al	1	AC	PI-EFC-X75b	1	AC
PI-EFC-X44Am	1	AC	PI-EFC-X75c	1	AC
PI-EFC-X44Ba	1	AC	PI-EFC-X75d	1	AC

[1] For information only -- not part of relief request.

TABLE RV-15 (CONTINUED)

Valve Number	Class	Category
PI-EFC-X75e	1	AC
PI-EFC-X75f	1	AC
PI-EFC-X78a	2	AC
PI-EFC-X78b	1	AC
PI-EFC-X78c	1	AC
PI-EFC-X78f	1	AC
PI-EFC-X79a	1	AC
PI-EFC-X79b	1	AC
PI-EFC-X82b	2	AC
PI-EFC-X84a	2	AC
PI-EFC-X86A	2	AC
PI-EFC-X86B	2	AC
PI-EFC-X87A	2	AC
PI-EFC-X87B	2	AC
PI-EFC-X106	1	AC
PI-EFC-X107	1	AC
PI-EFC-X108	1	AC
PI-EFC-X109	1	AC
PI-EFC-X110	1	AC
PI-EFC-X111	1	AC
PI-EFC-X112	1	AC
PI-EFC-X113	1	AC
PI-EFC-X114	1	AC
PI-EFC-X115	1	AC
PI-EFC-X119	2	AC

RELIEF REQUEST NO. RV-16

DELETED

SER/TER Reference: 3.2.1.1

Relief request denied for RCIC-V-111 and 112.

RELIEF REQUEST NO. RV-17

System	HPCS, LPCS, and RHR
Valves	HPCS-V-7, LPCS-V-33, and RHR-V-84A, 84B, 84C
ASME Classification	Code Class: 2 Category: C
Function	Open: To permit the water leg pump to fill the system with water and maintain it pressurized. Close: To prevent overpressurization of the waterleg pump and associated piping.
Code Testing Requirement	IWV-3521, Test Frequency
Basis for Relief	These valves cannot be verified to be closed without either installing a test connection or dismantling the valve and inspecting the internals (which requires grinding out the seal weld). The associated stop-check valve is located in series with the check valve and performs the same function as the check valve. Closure of the stop-check is verified quarterly. The overpressure protection function is provided by the two valves and in addition a low pressure relief valve is installed should both the the check and stop-check valves fail or leak excessively.
Alternate Testing to be Performed	These check valves will be tested in the open position quarterly per IWV-3522. The stop-check and check valve will be tested in combination and verified closed (one or both) during the quarterly surveillance test. In addition, the stop-check valve will be shut manually to ensure no binding exists. If excessive leakage is noted, both valves shall be repaired or replaced.

Quality/Safety Impact

The proposed alternate testing verifies valve operability in the open position, but not the closed. However, the stop-check valve located in series with the check valve is verified to open and close quarterly. The required testing would be a hardship on WNP-2 with little compensating benefits. The alternate testing will provide adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 1991

SER/TER Reference: 3.1.6.1

Relief requested granted, provided if excessive leakage is noted, both valves shall be repaired or replaced.

RELIEF REQUEST NO. RV-18

System	Main Steam
Valves	MS-V-37A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, U, V MS-V-38A, B, C, D, E, F, G, H, J, K, L, M, N, P, R, S, U, V
ASME Classification	Code Class: 2 Category: BC
Function	Open: To break vacuum in the downcomers of the main steam relief valves. Close: To direct steam to the quenchers in the wetwell.
Code Testing Requirement	IWV-3521, Test Frequency
Basis for Relief	Testing requires personnel access to the containment. This requires that the reactor be shutdown and the containment be de-inerted.
Alternate Testing to be Performed	These valves will be exercised when the reactor is shutdown and the containment de-inerted. The valves will be manually operated and visually verified to open and reseat. Cold shutdown testing shall commence immediately (within 48 hours) following establishment of cold shutdown de-inerted conditions. Testing shall continue only as long as the plant is scheduled to be in cold shutdown with the containment de-intered. Cold shutdown testing will be conducted in a manner which will not impede plant startup. Cold shutdown valves are tested in groups by several different procedures. The decision whether to start cold shutdown testing on any particular procedure will depend on the estimated length of the cold shutdown de-inerted period, system outages/conditions, time interval from the last cold shutdown testing, or other particular conditions. All cold shutdown valves will be tested during each refueling outage. Testing is not required if the time period since the previous test is less than three months. For extended outages, cold shutdown testing does not need to start within 48 hours as long as all valves are tested before startup. This alternate testing meets the intent of OM-10 which will be required in the future.

Quality/Safety Impact

The proposed alternate testing will provide accurate and timely information regarding valve operability and will provide adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.6.2.1

Relief granted as requested.

RELIEF REQUEST NO. RV-19

DELETED

SER/TER Reference: 3.8.1.1

Relief request denied for HY valves.

RELIEF REQUEST NO. RV-20

System	Various
Valves	
ASME Classification	All power operated valves except rapid action valves covered by Relief Request RV-1.
Function	System control valves and Containment isolation valves.
Code Testing Requirement	IWV-3417(a) which requires comparison of measured stroke time with "the previous test".
Basis for Relief	WNP-2 Administrataive Procedures require specific acceptance criteria to be included in Technical Specificaton surveillance procedures, of which valve stroke timing procedures are a part. Since recorded times may vary slightly as a result of plant conditions or test personnel, the requirement to compare the results with the previous value implies that acceptance criteria may have to be changed each time the surveillance is performed. This is administratively unweildly and unnecessary.
Alternate Testing	WNP-2 valve stroke acceptance criteria are founded on empirically obtained baseline values unless constrained by the FSAR, Technical Specifications or other commitments. The acceptance range for valves with stroke times no greater than 10 seconds is the baseline time ± 50%; for valves with stroke times greater than 10 seconds, the baseline time ± 25%. This approach allows stability of acceptance criteria and ensures that the valves remain within a reasonable range around an established baseline. WNP-2 Administrative procedures require engineering evaluation if stroke times fall outside the established acceptance ranges.

Quality/Safety Impact

The proposed method of establishing acceptance criterion is consistant with the intent of the code in that stroke times are evaluated against an established baseline value. The proposed acceptance criteria method adequately ensures quality of testing and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.1.1.2

Relief granted as requested.

TABLE RV-20[1]

Valve Number	Class	Category	Valve Number	Class	Category
CAC-FCV-1A	2	A	FDR-V-3	2	A
CAC-FCV-1B	2	A	FDR-V-4	2	A
CAC-FCV-2A	2	A	FPC-V-149	2	A
CAC-FCV-2B	2	A	FPC-V-153	2	A
CAC-FCV-3A	2	A	FPC-V-154	2	A
CAC-FCV-3B	2	A	FPC-V-156	2	A
CAC-FCV-4A	2	A	FPC-V-172	-	B
CAC-FCV-4B	2	A	FPC-V-173	-	B
CAC-FCV-5A	2	B	FPC-V-175	-	B
CAC-FCV-5B	2	B	FPC-V-181A	-	B
CAC-V-1A	2	B	FPC-V-181B	-	B
CAC-V-1B	2	B	FPC-V-184	-	B
CAC-V-2	2	A	HPCS-V-1	2	B
CAC-V-2A	2	B	HPCS-V-4	1	A
CAC-V-2B	2	B	HPCS-V-10	2	B
CAC-V-4	2	A	HPCS-V-11	2	A
CAC-V-6	2	A	HPCS-V-12	2	A
CAC-V-8	2	A	HPCS-V-15	2	A
CAC-V-11	2	A	HPCS-V-23	2	A
CAC-V-13	2	A	HY-V-17A	2	A
CAC-V-15	2	A	HY-V-17B	2	A
CAC-V-17	2	A	HY-V-18A	2	A
CEP-V-1A	2	A	HY-V-18B	2	A
CEP-V-1B	2	A	HY-V-19A	2	A
CEP-V-2A	2	A	HY-V-19B	2	A
CEP-V-2B	2	A	HY-V-20A	2	A
CEP-V-3A	2	A	HY-V-20B	2	A
CEP-V-3B	2	A	HY-V-33A	2	A
CEP-V-4A	2	A	HY-V-33B	2	A
CEP-V-4B	2	A	HY-V-34A	2	A
CIA-V-20	2	A	HY-V-34B	2	A
CIA-V-30A	2	A	HY-V-35A	2	A
CIA-V-30B	2	A	HY-V-35B	2	A
CIA-V-39A	3	B	HY-V-36A	2	A
CIA-V-39B	3	B	HY-V-36B	2	A
CRD-V-10	2	B	LPCS-FCV-11	2	A
CRD-V-11	2	B	LPCS-V-1	1	A
CRD-V-180	2	B	LPCS-V-5	1	A
CRD-V-181	2	B	LPCS-V-12	2	A
CSP-V-1	2	A	MS-V-16	1	A
CSP-V-2	2	A	MS-V-19	1	A
CSP-V-3	2	A	MS-V-22A	1	A
CSP-V-4	2	A	MS-V-22B	1	A
CSP-V-5	2	A	MS-V-22C	1	A
CSP-V-6	2	A	MS-V-22D	1	A
CSP-V-9	2	A	MS-V-28A	1	A
EDR-V-19	2	A	MS-V-28B	1	A
EDR-V-20	2	A			

[1] For information only -- not part of relief request.

TABLE RV-20 (CONTINUED)

Valve Number	Class	Category	Valve Number	Class	Category
MS-V-28C	1	A	RHR-FCV-64A	2	A
MS-V-28D	1	A	RHR-FCV-64B	2	A
MS-V-67A	1	A	RHR-FCV-64C	2	A
MS-V-67B	1	A	RHR-V-3A	2	B
MS-V-67C	1	A	RHR-V-3B	2	B
MS-V-67D	1	A	RHR-V-4A	2	A
MS-V-146	2	B	RHR-V-4B	2	A
MSLC-V-1A	2	B	RHR-V-4C	2	A
MSLC-V-1B	2	B	RHR-V-6A	2	B
MSLC-V-1C	2	B	RHR-V-6B	2	B
MSLC-V-1D	2	B	RHR-V-8	1	A
MSLC-V-2A	1	B	RHR-V-9	1	A
MSLC-V-2B	1	B	RHR-V-16A	2	A
MSLC-V-2C	1	B	RHR-V-16B	2	A
MSLC-V-2D	1	B	RHR-V-17A	2	A
MSLC-V-3A	1	A	RHR-V-17B	2	A
MSLC-V-3B	1	A	RHR-V-21	2	A
MSLC-V-3C	1	A	RHR-V-23	1	A
MSLC-V-3D	1	A	RHR-V-24A	2	A
MSLC-V-4	2	B	RHR-V-24B	2	A
MSLC-V-5	2	B	RHR-V-27A	2	A
MSLC-V-9	2	B	RHR-V-27B	2	A
MSLC-V-10	2	B	RHR-V-40	2	B
RCC-V-5	2	A	RHR-V-42A	1	A
RCC-V-21	2	A	RHR-V-42B	1	A
RCC-V-40	2	A	RHR-V-42C	1	A
RCC-V-104	2	A	RHR-V-47A	2	B
RCC-V-129	3	B	RHR-V-47B	2	B
RCC-V-130	3	B	RHR-V-48A	2	B
RCC-V-131	3	B	RHR-B-48B	2	B
RCIC-V-1	2	B	RHR-V-49	2	B
RCIC-V-8	1	A	RHR-V-53A	1	A
RCIC-V-10	2	B	RHR-V-53B	1	A
RCIC-V-13	1	A	RHR-V-68A	3	B
RCIC-V-19	2	A	RHR-V-68B	3	B
RCIC-V-22	2	B	RHR-V-73A	2	A
RCIC-V-31	2	A	RHR-V-73B	2	A
RCIC-V-45	2	B	RHR-V-115	2	B
RCIC-V-46	2	B	RHR-V-116	2	B
RCIC-V-59	2	B	RHR-V-123A	1	A
RCIC-V-63	1	A	RHR-V-123B	1	A
RCIC-V-68	2	A	RHR-V-134A	2	A
RCIC-V-69	2	A	RHR-V-134B	2	A
RCIC-V-76	1	A	RRC-V-16A	2	A
RCIC-V-110	2	B	RRC-V-16B	2	A
RCIC-V-113	2	B	RWCU-V-1	1	A
RFW-V-65A	1	A	RWCU-V-4	1	A
RFW-V-65B	1	A	RWCU-V-40	1	A

TABLE RV-20 (CONTINUED)

Valve Number	Class	Category
SLC-V-1A	2	B
SLC-V-1B	2	B
SW-V-2A	3	B
SW-V-2B	3	B
SW-V-4A	3	B
SW-V-4B	3	B
SW-V-4C	3	B
SW-V-12A	3	B
SW-V-12B	3	B
SW-V-24A	3	B
SW-V-24B	3	B
SW-V-24C	3	B
SW-V-29	3	B
SW-V-44	3	B
SW-V-54	3	B
SW-V-75A	3	B
SW-V-75B	3	B
SW-V-187A	3	B
SW-V-187B	3	B
SW-V-188A	3	B
SW-V-188B	3	B

RELIEF REQUEST NO. RV-21

DELETED

Design changes deleted valves SW-V-214, 215, 216, and 217.

RELIEF REQUEST NO. RV-22

System	Emergency Chilled Water
Valves	SW-TCV-11A, 11B, 15A, 15B
ASME Classification	Code Class 3, Category B
Function	These are the temperature control valves for cooling water flow to the chiller heat exchangers.
Code Testing Requirement	IWV-3413, measure the stroke time of power operated valves.
Basis for Relief	These are hydraulically operated globe valves used for control of chillwater temperature. They do not have a manual control switch or any remote position indicators.
Alternate Testing to be Performed	Valve exercising per IWV-3412 will provide adequate assurance of valve operability. Verification of valve position is based on observing the appropriate system response or locally observing stem position.

Quality/Safety Impact

Valve operability is adequately demonstrated by the tests associated with IWV-3410 with the exception of IWV-3413 noted above. This testing provides adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.1.3.1.1

Interim relief granted until May 13, 1992 or next refueling outage (R7) whichever is longer.

During this interim period, WNP-2 should evaluate alternatives and identify a method for adequately assessing the operational readiness of these valves.

RELIEF REQUEST NO. RV-23

System	Post Accident Sampling		
Valves	PSR-V-X73-1	PSR-V-X80-1	PSR-V-X83-1
	*PSR-V-X77A1	PSR-V-X82-1	PSR-V-X84-1
	*PSR-V-X77A3	PSR-V-X82-7	PSR-V-X88-1
ASME Classification	Code Class: 2	Category: A	
	*Code Class: 1		
Function	Closed Position - Containment Isolation		
Code Testing Requirement	IWV-3413, Power Operated Valves (stroke times)		
Basis for Relief	These nine PSR solenoid valves are the inboard Containment Isolation Valve for nine different penetrations and are operated from a single keylock control switch. It is impractical to measure the individual valve stroke times. To do so would require repetitive cycling of the control switch causing unnecessary wear on the valves and control switch with little compensating benefit.		
Alternate Testing to be Performed	The stroke time of the slowest valve will be measured by terminating the stroke time measurement when the last of the nine indicating lights becomes illuminated. If the stroke time of the slowest valve is in the acceptance range, then the stroke times of all valves will be considered acceptable.		

Quality/Safety Impact

The proposed alternate testing will verify that the valves respond in a timely manner and provide information for monitoring signs of material degradation. This provides adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.1.4.1.1

Relief granted as requested.

RELIEF REQUEST NO. RV-24

System	Containment Instrument Air
Valves	CIA-SPV-1A through 15A CIA-SPV-1B through 19B
ASME Classification	Code Class: 3 Category: B
Function	Emergency Nitrogen Bottle Isolation Valve
Code Testing Requirement	IWV-3413, Power Operated Valves (stroke times)
Basis for Relief	These valves have neither a manual control switch nor suitable valve position indicators. The proposed alternate testing will confirm valve operability and detect any defective valves.
Alternate Testing to be Performed	The valves will be tested per IWV-3410 with the exception of IWV-3413. Verification that the valve opens and closes is based on observation of appropriate system responses.

Quality/Safety Impact

Valve operability is adequately evaluated by the tests associated with IWV-3410 with the exception of IWV-3413 noted above. This testing provides adequate assurance of material quality and public safety.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.9.2.1

Interim relief granted until May 13, 1992 or the next refueling outage (R7) whichever is longer.

During this interim period, WNP-2 should evaluate alternatives and identify a method for adequately assessing the operational readiness of these valves.

RELIEF REQUEST NO. RV-25

System	All
Valves	All valves tested at cold shutdown.
ASME Classification	Various
Function	Various - See Note 1 to valve test tables.
Code Testing Requirement	IWV-3412 Exercise valves during cold shutdowns, IWV-3522 if valve is not full stroke exercised each 3 months during plant operation.
Basis for Relief	It is a hardship to test all cold shutdown valves at each cold shutdown. Additionally, requiring all cold shutdown testing each outage would mean a significant delay in plant startup for cold shutdowns of short duration. The industry has recognizd that cold shutdown testing, as specified in 1980W80 of Section XI, is excessive. The 1989 edition of Section XI references ASME/ANSI OM, Part 10 for valve testing. Part 10 does not require all cold shutdown valves to be tested each cold shutdown. The NRC has also recognized that testing all cold shutdown valves at each cold shutdown is a significant burden. Many SERs contain an appendix which states (similar to OM-10) that cold shutdown testing needs to continue only until the plant is ready to start up.
Alternate Testing to be Performed	Cold shutdown testing shall commence immediately (within 48 hours) following establishment of cold shutdown conditions. Testing shall continue only as long as the plant is scheduled to be in cold shutdown. Cold shutdown testing will be conducted in a manner which will not impede plant startup. Cold shutdown valves are tested in groups by several different procedures. The decision whether to start cold shutdown testing on any particular procedure will depend on the estimated length of the cold

Relief Request No. RV-25 (Continued)

shutdown period; system outages/conditions; time interval from the last cold shutdown testing; or other particular conditions. All cold shutdown valves will be tested during each refueling outage. Testing is not required if the time period since the previous test is less than three months. For extended outages, cold shutdown testing does not need to start within 48 hours as long as all valves are tested before startup.

The alternate testing is in accordance with OM-10 which will be required in the future.

Quality/Safety Impact

The effect of granting this relief will have no adverse impact on plant safety. The alternate testing as described herein is currently being followed at WNP-2. The Industry and NRC have, by the actions previously described, considered this method of cold shutdown testing appropriate.

NRC Acceptance/SER Dated May 7, 1991

SER/TER Reference: 3.1.7:1

Relief granted only for valves that can be tested during any cold shutdown.

RELIEF REQUEST NO. RV-26

System	Standby Liquid Control (SLC)
Valves	SLC-V-33A, 33B
ASME Classification	Code Class 2 Category: C
Function	SLC-P-1A and 1B discharge check valves
Code Testing Requirement	1. Quarterly exercising (IWV-3521) 2. Cold shutdown exercising (IWV-3522)
Basis for Relief	There are no test connections to allow back flow testing of these check valves. The only way to determine if the check valves are closed would be to remove the relief valve on the pump associated with the check valve to be back flow tested and either running the other SLC pump or pressurizing the discharge piping with the head of the SLC test tank. Removing the relief valves is a time consuming job and it can only be performed with the SLC system inoperable. Back flow testing of these valves should be performed when the relief valves are removed for testing during refueling outages. The postulated failure mode is that a relief valve on an idle pump sticks open and the check valve does not isolate the running pump thus causing failure of both trains because of a common discharge line. The relief valves on each pump are tested when the pump is run for its quarterly test. Therefore, assurance that the system will perform as designed is verified quarterly.
Alternate Testing to be Performed	During each refueling outage verify closure of these valves by back flow testing.

Quality/Safety Impact

The SLC System will be required to perform its safety function only under very infrequent circumstances (ATWS). The proposed testing provides adequate assurances of quality and public safety.

NRC Acceptance

Pending

RELIEF REQUEST NO. RV-27

System: RCIC, HPCS, LPCS and RHR

Valves	Class	Category	Function
RCIC-V-65, 66	1	A-C	RCIC discharge to the reactor vessel head
LPCS-V-6	1	A-C	LPCS discharge to the reactor vessel
HPCS-V-5	1	A-C	HPCS Discharge to the reactor vessel
RHR-V-41A,B,C	1	A-C	RHR Loop A, B, C discharge to the reactor vessel
RHR-V-50A, B	1	A-C	RHR Loop A, B discharge to the recirculating pump discharge

Code Testing Requirement

1. Quarterly exercising (IWV-3521)
2. Cold shutdown exercising (IWV-3522)

Basis for Relief

1. These valves (except RCIC-V-65) function as Reactor Coolant System Pressure Isolation valves. This requires the check valve disc to properly seat and achieve a relatively leak-tight seal. Technical Specification requires seat leakage testing of these valves each refueling outage (not to exceed 18 months). Seat leakage must be less than 1 gpm at a differential pressure of 950 psig. Seat leakage as a method of showing valve closure testing is labor and dose intensive and as such impractical to perform during each cold shutdown and should be tested during refueling outages only.

2. In two instances a valve was found to be not fully closed due to binding in the position indication linkage. These valves were designed with an open/closed position indication system, but have proven unreliable and are scheduled for removal of position indication system to increase the reliability of these valves--SOER 86-03 issue. (Position indication mechanisms have been removed from RHR-V-41A and B.) The position indication mechanism in the closed position does not indicate closure of disc, but closed indication merely reflects that the disc is not full open.

3. Other than the above two instances, these check valves have exhibited excellent leak-tight integrity during the last eight years since commercial operation.

Relief Request No. RV-27 (Continued)

4. Due to lack of reliable position indications, the other positive means of verifying these valves fully open is by passing the required accident condition flow through these valves. This is an acceptable full-stroke per position 1 of Attachment 1 of Generic Letter 89-04.

5. With flow rates on the order of 7500 gpm (ECCS), vessel level rises at a rate of 38 inches per minute. Operating ranges for RPV level provides a narrow band in which to work, making any such injection an challenge to plant technical specification limits and can result in flooding of main steam lines. Full flow testing of these valves should be performed only during refueling outages, when such testing can occur during refueling cavity flood-up.

6. Because of the differences in water chemistry, frequent injections of Suppression Pool water into the RPV is undesirable and will lead to additional crud accumulations in the crevices of piping nozzles, etc., and thus result in higher dose rates in the containment.

7. Six of the nine valves have been inspected internally and have exhibited no signs of wear which could affect the ability of the valves to stroke full open or closed. These check valves do not exhibit any signs of back-seat tapping or hinge pin wear, nor have they shown any indication that internal fastener retention methods are inadequate.

8. During normal plant operation, these valves are normally closed and do not open.

Alternate Testing to be Performed

During each refueling outage (not to exceed 18 months)

1. Closure ability of these valves (except RCIC-V-65 which does not have a closed safety function) shall be demonstrated by leakage test as required by Technical Specifications.

2. Opening ability of these valves shall be demonstrated by passing the maximum required accident condition flow through these valves.

Relief Request No. RV-27 (Continued)

Implementing Schedule

All these valves were verified full open and closed during R-6 Refueling outage (1991) and shall be tested again during R-7 Refueling outage (1992). This relief request supersedes the testing requirements specified in Relief Request RV-9.

Quality/Safety Impact

These valves are normally closed and while in the closed position function as 1) containment isolation valves and 2) high-low pressure interface valves between the reactor coolant and portions of the Emergency Core Cooling System. These valves must open to facilitate operation of part of the Emergency Core Cooling System. The valves will normally only be operated in the event of an emergency during normal power operations. Lengthening the interval between tests as recommended will not preclude the timely evaluation of valve operability and thus provides adequate assurance of material quality and public safety.

NRC Acceptance

Pending

4.6 Record of Valve Inservice Tests

Records and reports pertaining to Valve Inservice Testing will be maintained according to Article IWV-6000 of the Code.

SAMPLE DATA SHEET

VALVE STROKE DATA SHEET

Stopwatch Ident No _____ Calibration Due Date _____

VALVE ID	OPENING TIME IN SECONDS					CLOSING TIME IN SECONDS				
	REFER VALUE	ALERT LO (+1)	MEASURE VALUE	ALERT HI (+1)	ACTION HI (+1)	REFER VALUE	ALERT LO (+1)	MEASURE VALUE	ALERT HI (+1)	ACTION HI (+1)
LPCS-V-1	122.14	91.60		152.67	183.21	120.50	90.37		150.62	180.75
LPCS-FCV-11	17.09	12.82		21.36	25.64	16.62	12.46		20.78	24.93
LPCS-V-12	11.74	NA		NA	NA	9.36	4.68		14.04	(+2) 18.72
LPCS-V-3	NA	NA		NA	NOT OPEN	NA	NA		NA	NA
LPCS-V-33	NA	NA		NA	NOT OPEN	NA	NA		NA	NOT CLOSED
LPCS-V-34	NA	NA		NA	NOT OPEN	NA	NA		NA	NOT CLOSED

(+1) For measured values beyond the Alert Value or Action Value refer to Precaution and Limitations 4.6 or 4.7, respectively.

(+2) A limiting stroke time is specified in the references.

TWO YEAR VPI VERIFICATION DATA SHEET

VALVE NUMBER	VALVE CONDITION INSPECTED	VERIFIED OPEN					LOCATION OF VPI	VERIFIED CLOSED					VALVE OPERATION		% FULL OPEN (+2)
		LOCAL INDICATION			REMOTE INDICATION			REMOTE INDICATION		LOCAL INDICATION					
		INITIALS	AS FOUND	FULL OPEN	SAT	UNSAT		SAT	UNSAT	INITIALS	(+1) AS FOUND	FULL CLOSE			
	STEP 1	STEP 2	STEP 3	STEP 5	STEP 4	STEP 4		STEP 4	STEP 4	STEP 2	STEP 3	STEP 5	STEP 6	STEP 8	STEP 7
LPCS-V-1							H13/P601								
LPCS-FCV-11							H13/P601								
LPCS-V-12 (+3)							H13/P601								

(+1) If the valve in its As Found condition is not fully closed, submit an MWR (for changing limit switch settings and obtaining stroke time measurements). For throttle valves, verify that the valve cannot be further closed from its control switch.

(+2) If the valve is less than 90% Full Open as calculated below, write a PER and mark POC Immediate Disposition Yes. Calculate % Full Open in accordance with obtained values and the following examples:

% FULL OPEN = [(As Found Open) - (Full Closed)]/[(Full Open) - (Full Closed)] x 100

Level Position Indicator 5% at Full Closed 95% at Full Open 90% As Found Open % FULL OPEN = (90-5)/(95-5) x 100 = 94.4%	Stem Displacement 0" at Full Closed 6.0" at Full Open 5.5" As Found Open % FULL OPEN = (5.5-0)/(6.0-0) x 100 = 91.7%
Number of Stem Revolutions 0 at Full Closed 12.5 at Full Open 11.5 As Found Open % FULL OPEN = (11.5-0)/(12.5-0) x 100 = 92.0%	Degree of Stem Rotation 45° at Full Closed 275° at Full Open 235° As Found Open % FULL OPEN = (235-45)/(275-45)x 100 = 82.6%

(+3) LPCS-V-12 is considered Full Open if it passes at least 6350 GPM when it is fully opened electrically. LPCS-V-12 should indicate approximately 20 % locally when fully open electrically. LPCS-V-12 is throttled at 20% to prevent excessive vibration during stroke timing. It is not necessary to manually open LPCS-V-12 to 100 % when checking two year VPI for verified open portion of this attachment.

SAMPLE DATA SHEET

Attachment 9.5

5.0 Quality Assurance Program

The WNP-2 Pump and Valve Inservice Test Program activities will be conducted in accordance with Topical Report WPPSS-QA-004, the Supply System's Operational Quality Assurance Program description.

6.0 Piping and Instrument Diagrams

The Piping and Instrument Diagrams used to generate this Program are listed below. All subsequent changes to system design shall be evaluated for impact on the PVT Program Plan and new revisions to this Program shall be issued accordingly.

Title	Ref. No.
Control & Service Air	M510
Diesel Oil & Misc. Systems	M512
Demineralized Water	M517
Reactor Core Iso. Cooling	M519
High/Low Pressure Core Spray	M520
Residual Heat Removal	M521
Standby Liq. Control	M522
Reactor Water Cleanup	M523
Standby Service Water	M524
Reactor Closed Cooling	M525
Fuel Pool Cooling	M526
Control Rod Drive	M528
Main Steam and Reactor Feedwater	M529
Reactor Recirc. Cooling	M530
Equip. Drain Radioactive	M537
Floor Drain Radioactive	M539
Containment Cooling & Purge	M543
Containment Atmos. Control	M554
Containment Instru. Air	M556
Main Steam Leakage Cont.	M557
Neutron Monitoring	M604

Title	Ref. No.
Emergency Chilled Water	M775
Pri. Containment Nitrogen Inerting	M783
Post Accident Sampling	M896