

PUMP AND VALVE INSERVICE TEST

PROGRAM PLAN

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

NUCLEAR PROJECT NO. 2

Prepared by 1.1 . •• Operations Support Engineering Date Approved by Supervisor, Generation Engineering Date Approved by Deputy Project Manager, Engineering Date Approved by Manager, Engineering Division Date Reviewed by Technical Supervisor, WNP-2 Date 1: 11 ha de Approved by Plant Manager, WNP-2 Date 8 Reviewed by ger, Quality Assurance Division. Date

Reviewed by

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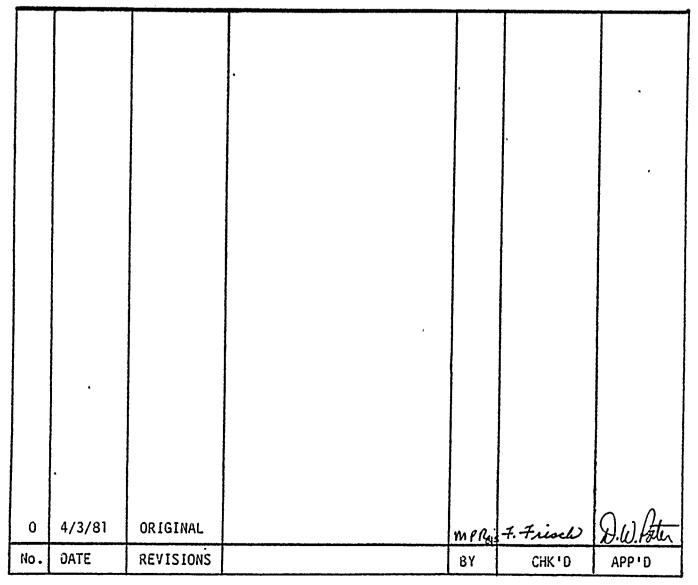
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1.0 INTRODUCTION

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 1,094 MWe.

This program plan 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 Sub-sections IWP and IWV of ASME Section XI.

The WNP-2 FSAR commits to testing Class 1, 2 and 3 pumps and valves according to the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1977 Edition with Addenda through Summer 1978. This is consistent with federal requirements for component testing as stated in Title 10, Code of Federal Regulations, part 50 (10CFR50.55a(g)). This Program was prepared in accordance with this Code Edition and Addenda.

This Program Plan is comprised of two independent subprograms - the Pump Inservice Test Program and the Valve Inservice Test Program. The development, 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 Program Development Philosophy

Highly reliable safety grade equipment is a vital consideration in the operation of a nuclear generating station. To help assure operability, the WNP-2 Pump Inservice Test Program (Section 3.5) has been developed.

The Program is designed to detect and evaluate significant hydraulic or mechanical change 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 (3) and guidelines.(4)

Consistent with the intent of Subsection IWP, the Supply System has incorporated into this program certain requirements which exceed the specifications of the Code. In particular, the Diesel Fuel Oil Transfer Pumps are included for testing due to their potentially significant impact on plant safety.

The Supply System recognizes that design differences among plants may render impractical certain Code requirements. For example, it is not 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.

A major feature of the WNP-2 Pump Inservice Test Program is that it requires quarterly rather than monthly inservice testing. This stipulation is based on the most recent ASME requirements for pump testing. (2) As detailed in Relief Request RP-1, this requirement equals the Technical Specification mandates for most safeguards pumps and exceeds Technical Specifications requirements for otners.

The water leg ("Keep full") pumps, though technically within the scope of the approved code, (1) are excluded from the Test Table since they serve no specific function in snutting down the reactor or in mitigating the consequences of an accident. This is also consistent with the requirements of the latest Code Edition. (2)

The Supply System is confident that the WNP-2 Pump Inservice Test Program complies with the intent of the approved Codes, (1) regulations(3) and guidelines(4) and contributes to ensuring the safety of the general public.

- ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWP, (1977 Edition with Addenda through Summer, 1978).
- 2. 1980 Edition of the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWP.
- 3. 10CFR 50:55 a(g).
- 4. NRC Staff Guidelines for complying with certain provisions of 10CFR 50:55 a(g) "Inservice Inspection Requirements".

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3.2 Program Implementation

Surveillance testing is performed to detect equipment malfunction or degradation and to initiate corrective action. Since the safeguard 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 grade pumps and will be implemented as part of the normal surveillance routine.

Reference data will be gathered during initial surveillance tests. In most cases, test parameters will be measured with normal plant instrumentation. This approach will simplify the test program and will promote timely completion of surveillance testing. When permanently installed instrumentation is not available, portable instrumentation will be used to record the required parameters.

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

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

- a) Statement of Test Purpose. This section will identify test objectives, reference applicable Technical Specifications and 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 (portable temperature or vibration monitors) will be noted. Instrument identification numbers, range and calibration verification of additional instrumentation will be recorded in the procedure.
- c) Test Instructions. Directions will be sufficiently detailed to assure completeness and uniformity of testing. Instructions will 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 will be considered acceptable will be established by the Supply System and included in the test procedure. In the event that the data fall outside the acceptable ranges, operator action will be governed by approved Administrative Procedures.

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.

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3.3 Program Administration

The operations staff of WNP-2 is responsible for the administration and execution of the Pump Inservice Test Program. The Program will be officially implemented upon the issuance of an Operating License and will govern pump testing for a 120 month period. Prior to that time, the Program will be reviewed and upgraded periodically to assure continued compliance with 10CFR 50:55a (g)(4). The Program may also be used as part of the pre-fuel loading surveillance testing program. Subsequent to Operating License, the program will be revised to reflect current ASME requirements consistent with 10CFR 50:55a (g)(4).

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3.4 Pump Reference List

This list gives a brief description of each pump identified in the Pump Test Program. The pumps' ASME Code Classifications are specified in the Program.

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 normal reactor operating pressures. The pump can take suction from the Condensate Storage Tank or from the Wetwell.

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 normally takes suction 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) Condenses steam generated during Hot Standby
- e) Can provide cooling spray to upper and lower drywell and the wetwell
- f) Can assist in fuel pool cooling
- g) Can provide a condensing spray to the reactor head
- h) 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.

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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 safeguard 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.

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.

DO-P-1A, 1B, 1C

These pumps transfer diesel generator fuel oil from the subterranean storage tanks to the diesel's Day Tanks. Pump 1C 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.

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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).

HNP-2 Pump Inservice Test Table

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IWP Parameter

| Pump Ident. | ASME Code Class | Inlet Pressure, Pi | Discharge Pressure, P _o | Differential Pressure, P | Flowrate, Q | Vibration, V | Bearing Temperature T _b | Pump Speed, R | Lubrication Level/ Pressure | Relief Request(s) |
|----------------|--------------------|--------------------------|--|--------------------------------|----------------|-----------------|--|---------------------|-----------------------------------|----------------------|
| HPCS-P-1 | 2 | Q | Q | Q , | Q | Q | A | NR | Q | 1,4 |
| HPCS-P-2 | 3 | N/A | Q | N/A | Q | Q | N/A | NR | Q | 1,4,5 |
| LPCS-P-1 | 2 | Q | Q | Q | Q | .Q | A | NR | Q | 1,4 |
| RHR-P-2A | 2 | Q | Q | Q | Q | Q | A | NR | Q | 1,4 |
| RHR-P-2B | 2 | Q | Q | Q | Q | Q | Â | NR | Q | 1,4 |
| RIIR-P-2C | 2 | Q | Q | Q | Q | Q | A | NR | Q | 1,4 |
| SLC-P-1A | 2 | N/A . | Q | H/A | Q | Q | A | NR | Q. | 1,2 |
| SLC-P-1B | 2 | N/A | Q | N/A | Q | Q | A | NR | Q | 1,2 |
| SH-P-1A | 3 | N/A | Q | N/A | Q | ĊQ | A | NR | Q | 1,4,5 |
| SW-P-1B | 3 | N/A | Q | N/A | Q | Q | A | NR | Q | 1,4,5 |
| RCIC-P-1 | 2 | Q | Q | Q | Q | Q | A | Q | Q | 1 |
| DO-P-1A | 3 | N/A | Q | N/A | Q | Q | N/A | NR | Q | 1,3,4 |
| DO-P-18 | 3 | N/A | Q | N/A | Q | Q | N/A | NR | Q | 1,3,4 |
| DO-P-1C | 3 | N/A | Q | N/A | Q | Q | N/A | NR | Q | 1,3,4 |

Legend

Q = A =

N/A = NR =

Quarterly (92 day interval) test Annual test Not applicable Not required IWP - 4400 does not require pump speed measurement if pump is directly coupled to a constant speed motor driver.

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3.6 Pump Test Program Relief Requests

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.

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RELIEF REQUEST RP-1

Pumps(s)

All IWP Program Pumps.

Section XI Code Requirement for which Relief is Requested

Monthly inservice testing.

Bases for Request

- The ASME Code, Section XI currently recognizes quarterly inservice testing as sufficient to assure plant safety and reliability since the hydraulic and mechanical parameters of standby pumps generally do not change significantly over a three month period. (Reference: 1980 Edition of the ASME Boiler and Pressure Vessel Code.) Any concerns regarding proper system hydraulic and electrical alignment can be resolved by alternate testing (see below).
- 2. The proposed Pump Test Program equals or exceeds the WNP-2 Technical Specifications which currently specify:
 - c) Quarterly flow tests for:

| HPCS-P-1 | RCIC-P-1 | RHR-P-2A |
|----------|----------|----------|
| HPCS-P-2 | LPCS-P-1 | RHR-P-2B |
| | | RHR-P-2C |

- b) Semi-annual flow tests for SW-P-1A and SW-P-1B.
- c) No flow testing of DO-P-1A, DO-P-1B or DO-P-1C.
- 3. Technical Specifications require monthly surveillance to verify system alignment.

Alternate Testing Proposed

- 1. Complete inservice tests will be performed quarterly in accordance with the requirements of ASME Section XI, Subsection IWP.
- 2. Monthly surveillance tests will continue to be performed to verify proper alignment of system hydraulic and electrical components.

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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).

Bases 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 test procedures specify system alignments which assure adequate NPSH for the pumps.
- 3. There is no provision for suction pressure instrumentation.
- 4. Acceptable discharge pressure <u>and</u> flowrate will suffice as proof of adequate suction pressure.

Alternate Testing Proposed

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

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RELIEF REQUEST RP-3

Pump(s)

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DO-P-1A (Diesel Fuel Oil Transfer Pumps) DO-P-1B DO-P-1C

Section XI Code Requirement for which Relief is Requested

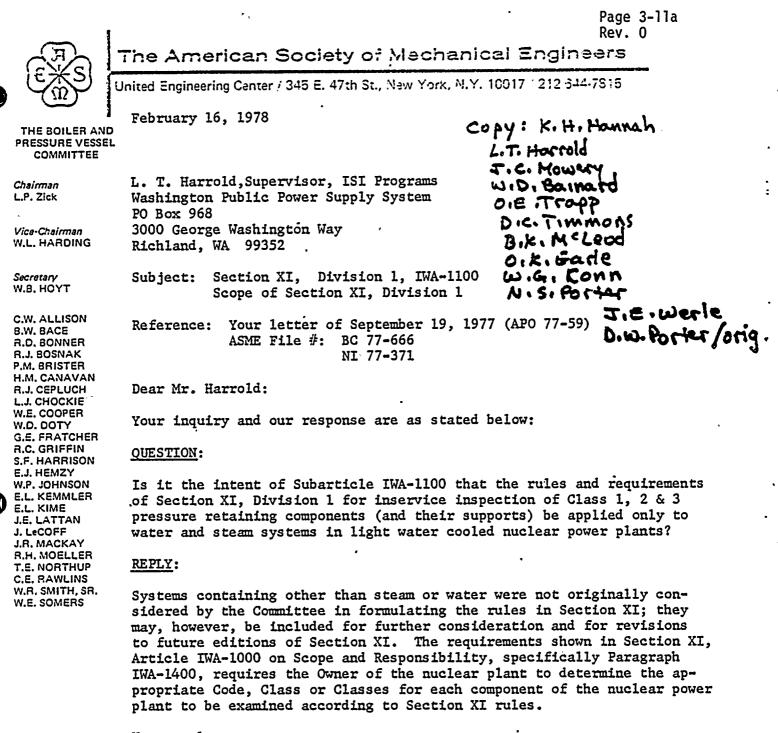
Measure pump inlet pressure, P_i , and differential pressure, $\triangle P$. (IWP-3100).

Bases for Request

- 1. Code interpretations consider these pumps to be outside this scope of the ASME Boiler and Pressure Vessel Codes. Hence all testing done on these pumps is strictly voluntary. See attached letter, page 3-11a.
- The transfer pumps are vertical turbine type pumps and, as such, are supmerged in.the fuel oil. There is no suction line which can be instrumented.
- 3. Acceptable discharge pressure and flowrate will suffice as proof of adequate suction pressure.

Alternate Testing Proposed

- 1. Storage tank levels will be recorded as part of the transfer pump tests. Storage tank level requirements will be stated in the Technical Specifications.
- 2. Pump discharge pressure and flowrate will be measured during the test.



Very truly yours,

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Kenneth I. Baron, Assistant Secretary

RELIEF REQUEST RP-4

Pump(s)

| HPCS-P-1, | RHR-P-2A, | SW-P-1A, | DO-P-1A |
|-----------|-----------|----------|---------|
| HPCS-P-2, | RHR-P-2B | SW-P-18 | DO-P-18 |
| LPCS-P-1, | RHR-P-2C, | • | DO-P-1C |

Section XI Code Requirement for which Relief is Requested

Measure bearing temperature, lubricant level and pressure, and vibration. (IWP-3100)

Bases for Request

- 1. Pumps are vertical turbine ("deep well") type pumps and are immersed in the fluid being pumped. This precludes measuring pump bearing vibration.
- 2. The pump bearings are lubricated and cooled by the pumped fluids.
- 3. Motors for DO-P-1A, 1B and 1C and HPCS-P-2 are not instrumented for temperature indication. Bearings are not accessible from the outside of the motor; consequently, portable temperature instrumentation readings would be meaningless.

Alternate Testing Proposed

- 1. Axial and radial vibration measurement will be taken at the outboard (upper) bearing of the pump's motor in accordance with IWP-4510 and IWP-1200. Radial vibration measurements will also be taken on motor housing as close as practical to the coupling.
- 2. For the RHR, SW, LPCS pumps and HPCS-P-1, motor bearing temperatures will be recorded and evaluated in accordance with IWP-1200.

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RELIEF REQUEST RP-5

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, $\triangle P$. (IWP-3100)

Base for Request

- SW-P-1A, 1B and HPCS-P-2 are vertical turbine type pumps which are immersed in their water source. They have no suction line which can be instrumented.
- (2) Technical Specifications will state minimum allowable spray pond level to assure adequate NPSH and cooling water supplies.
- (3) Difference between maximum pond level and minimum level is only six (6) inches of water or 0.2 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.

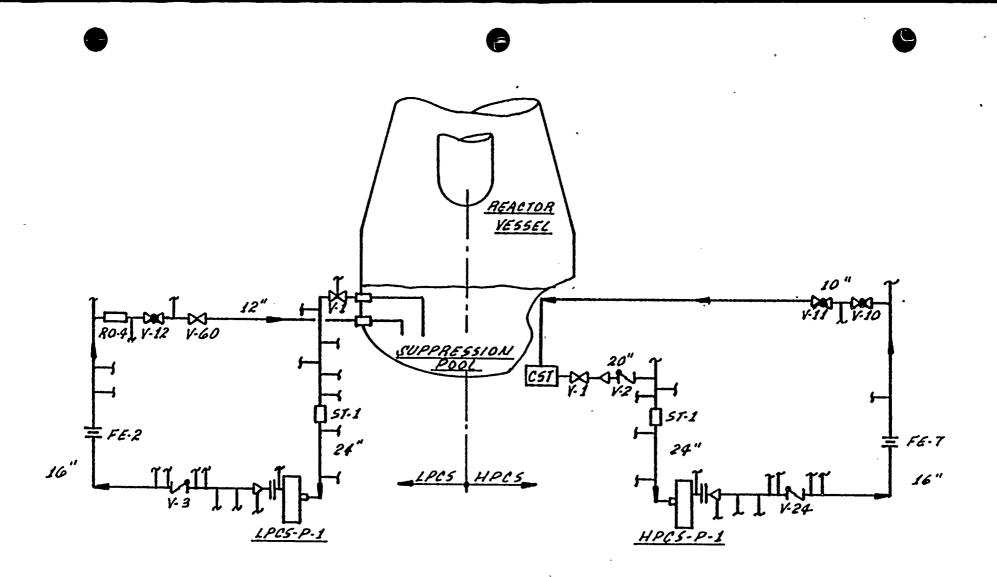
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3.7 Proposed Pump Test Flow Paths

These flow paths will be used during pump testing and may be used during the valve test program. The valve alignment shown on these drawings reflect valve position during testing. Valve position during operations may be different.

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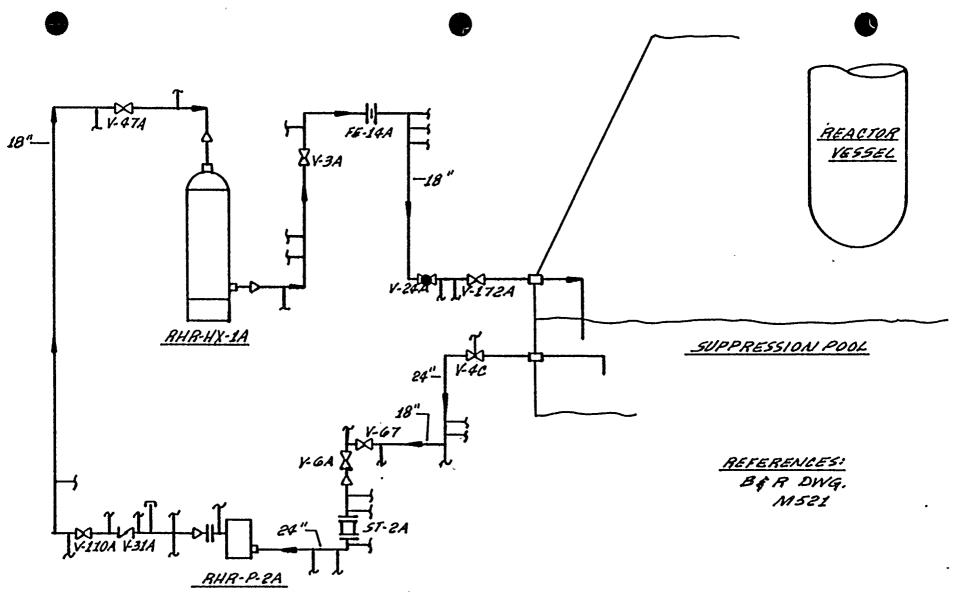
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HIGH PRESSURE CORE SPRAY LOW PRESSURE CORE SPRAY

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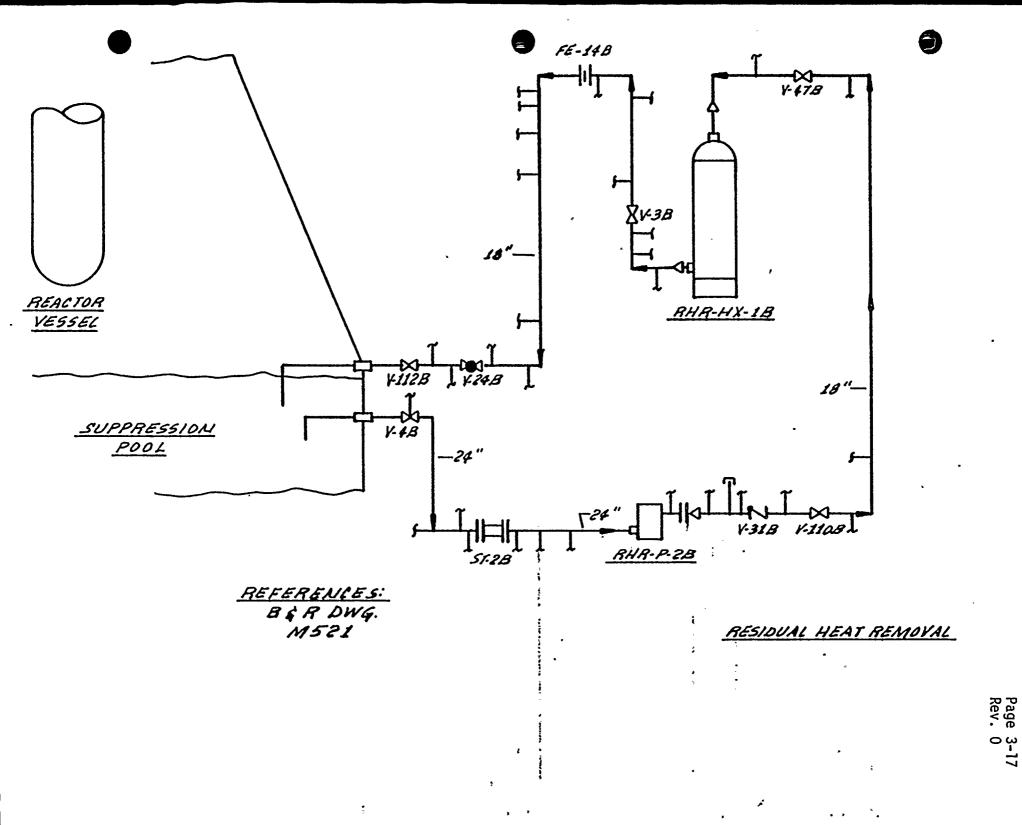
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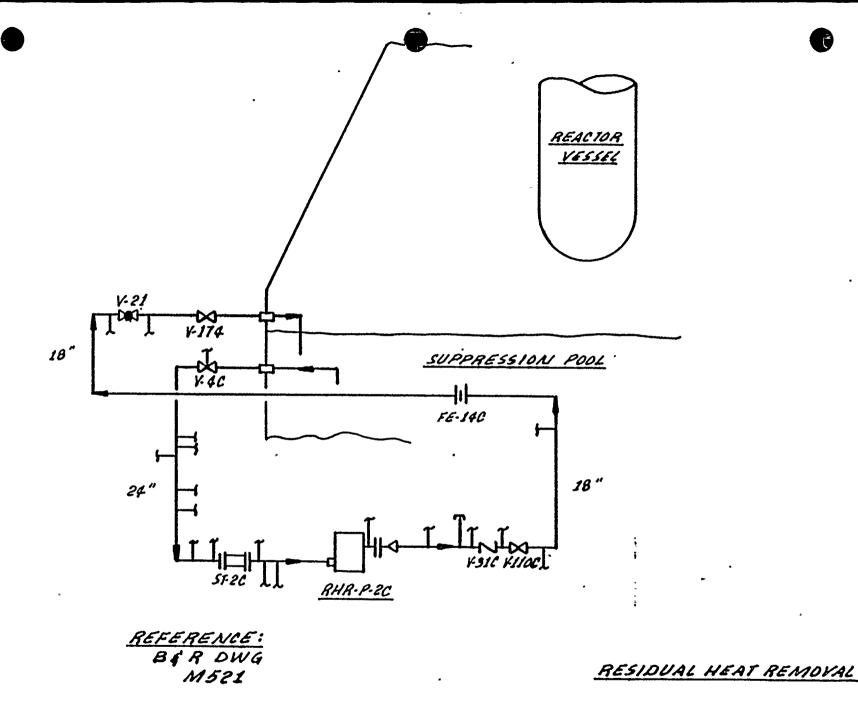
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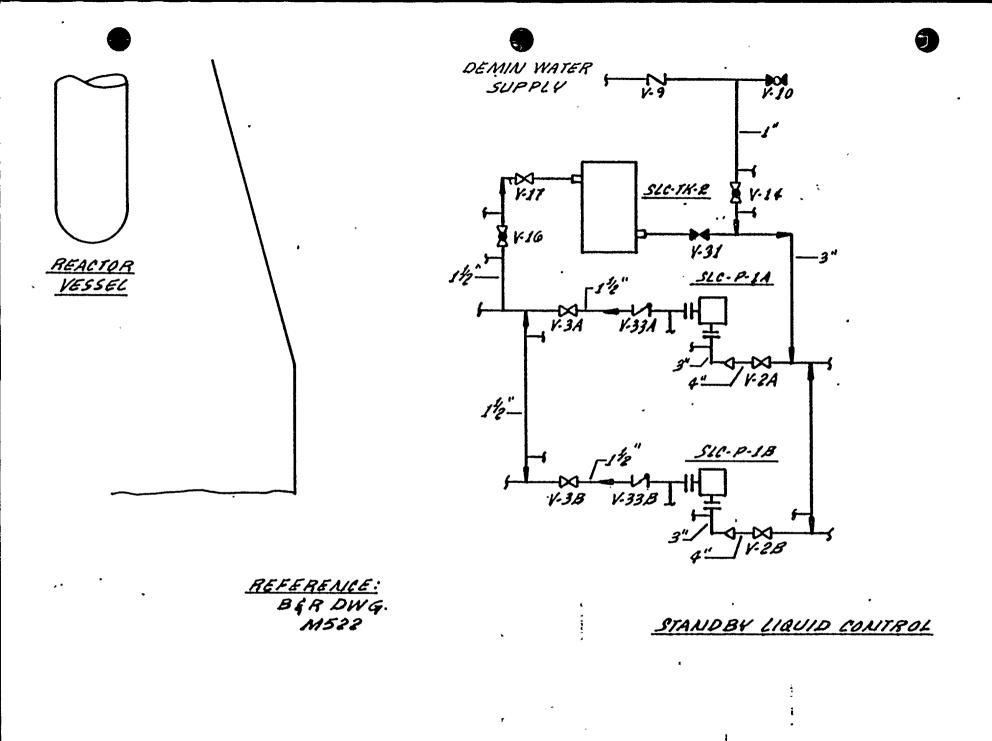
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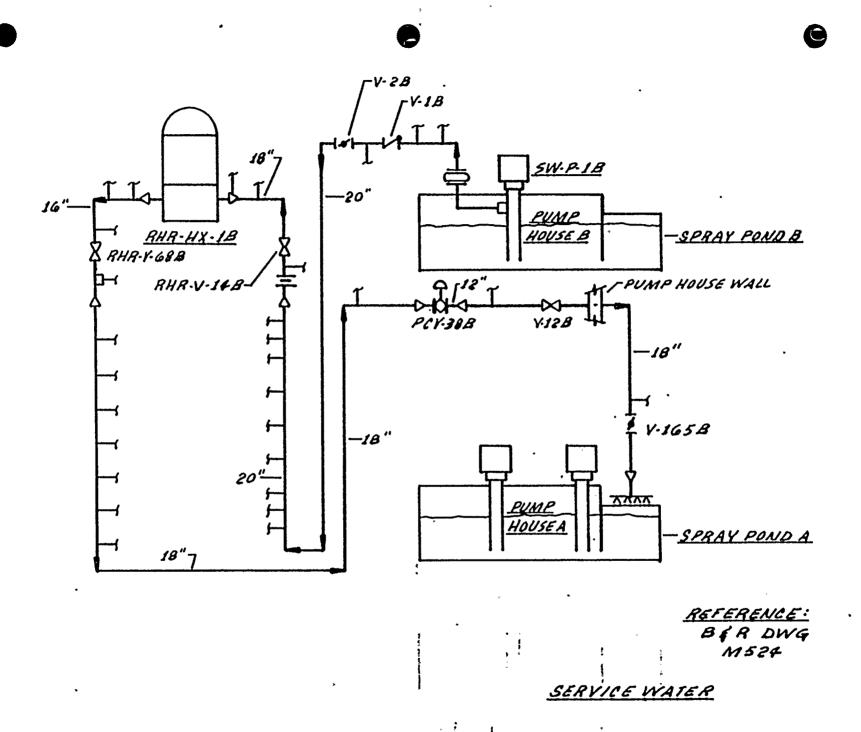
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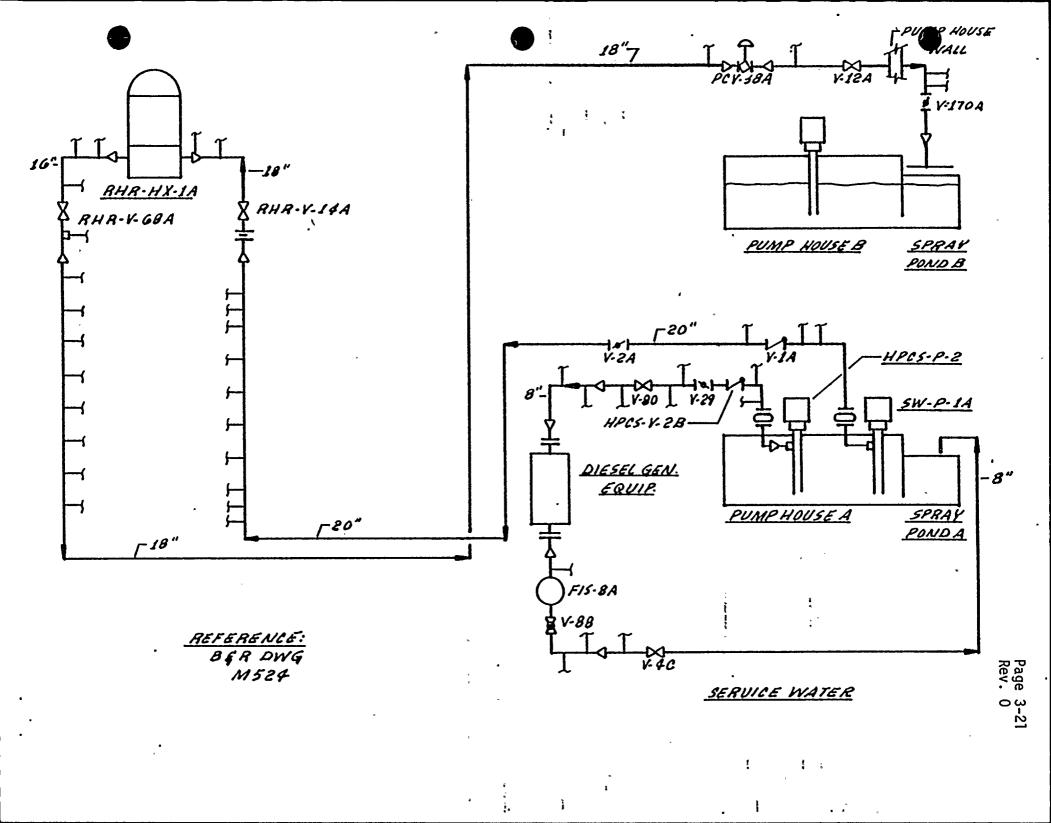
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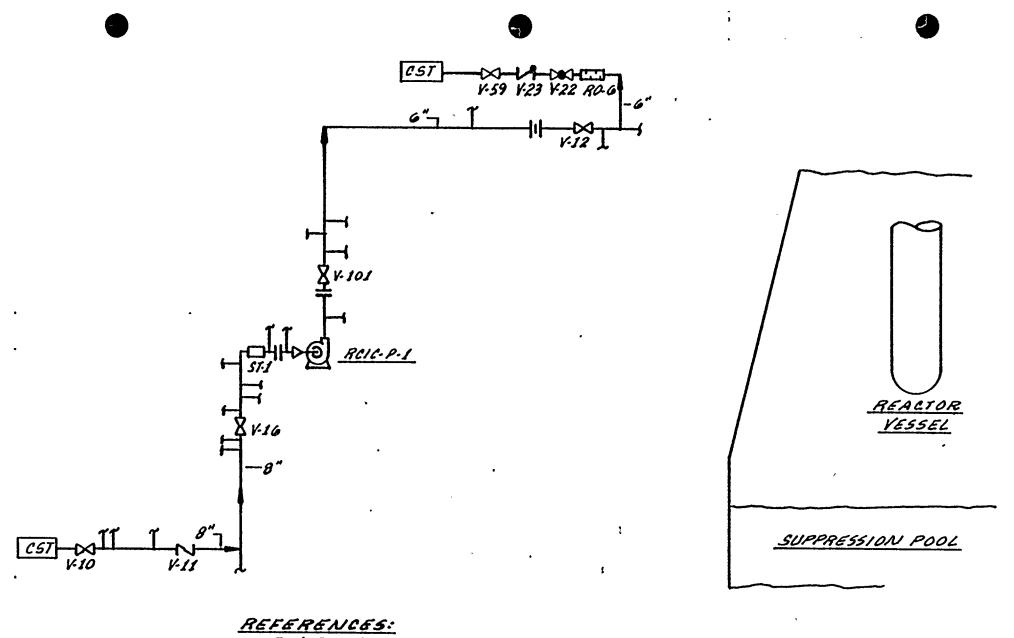
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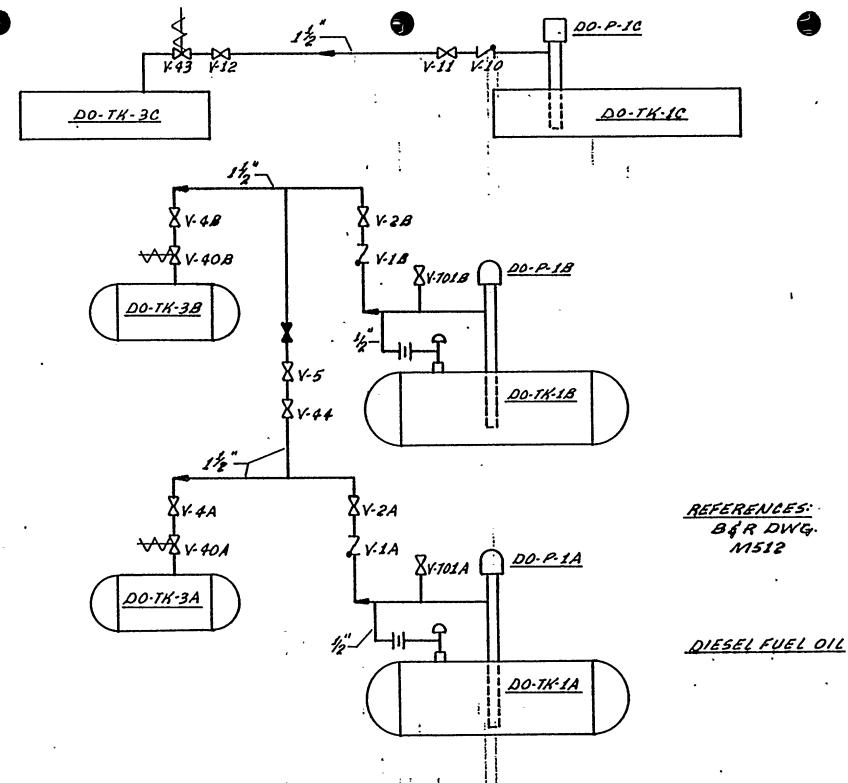


BFR DWG M519

<u>REACTOR CORE</u> <u>ISOLATION COOLING</u>

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3.8 Reporting of Results

Records of Pump Inservice Test results will be in accordance with the intent of Article IWP-6000 the Code. A file will be established for each pump and will include:

- 1) Pump identification by equipment piece number, manufacturer, and serial number.
- 2) Reference data as required by IWP-3100.
- 3) Inservice test plans. This may be by reference to the surveillance test procedure by which the pump is tested.
- 4) Summaries of corrective action.

The Pump Inservice Test Program, associated surveillance test procedures and results will be kept at the WNP-2 plant site. They will be available for audit by Authorized Nuclear Inspector and NRC Region V Inspectors. For informational purposes, a sample pump test data sheet is provided.

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SAMPLE PUMP TEST DATA SHEET

| Pump ID | | | | Date | · <u></u> |
|-----------------------------------|----------|-----------|------------------|-----------------|-------------------------|
| Parameters | ······ | · | Action* Range | Alert* Range | Measured Init. Value |
| Pump Suction Press | (91 |) | | | psi |
| Pump Discharge Press | (91 |) | | | psi |
| System Flow | (FI |) | | | gpm |
| Discharge Pressure - | | | psig | psig | psig |
| Suction Pressure - | | | psig | psig | . psig |
| Calculated RHR Pump $\triangle P$ | | | psid | psid | psid |
| Pump Bearing Vibration | | A | mil | mil | mil |
| | | В | mil | mil | mil . |
| (Include sketcn of vibra | tion | C | mil | mil | mil |
| measurement location) | | D | mil | mil | mil |
| | | ε | mil | mil | , mil |
| | • | F | mil | mil | mil |
| | | · · · · · | | | • |
| Pump Upper Bearing Temper | ature ** | | of | OF | 0F |
| Pump Lower Bearing Temper | ature ** | | ٥F | ٥F | ٥F |

* If deviations fall within the ALERT RANGE, the test frequency is increased to once eacn 15 days. If deviations fall within the ACTION RANGE, the pump shall be declared inoperable and the deviation investigated and/or corrected.

** Pump bearing temperatures are required annually. Take readings 10 minutes apart until three readings do not vary by more than 3%, then record on data sneet. The ALERT/ACTION bearing temperatures are based on a pump suction temperature of approximately 75°F. IF ALERT or ACTION temperatures are exceeded, record suction temperatures in Comment Section.

COMMENTS:

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4.0 WNP-2 Valve Inservice Test Program

4.1 Program Development Philosophy

Wasnington Public Power Supply System Nuclear Project Unit 2 (WNP-2) is a Boiling Water Reactor being constructed in compliance with the ASME Boiler and Pressure Vessel Code. The Code requires periodic testing of certain safety related valves in order to verify their operability and physical integrity. The WNP-2 Valve Inservice Test Program satisfies these requirements and conforms to FSAR Code Commitments⁽¹⁾ for 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 shut-down 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.

To generate the WNP-2 Program, all ASME Class 1, 2 and 3 valves were analyzed to determine their required type and frequency of testing. The valves to be tested under Section XI, Subsection IWV commitments are listed, by system, in the Valve Test Tables (Section 4.4). The Tables schedule only valve exercise tests. Leak rate testing mandated by Section XI will be incorporated into a single, united Leak Rate Testing Program.

The WNP-2 FSAR commits to meeting the requirements of both 10 CFR 50, Appendix J, and of Section XI. Each of these documents addresses particular but slightly different concerns with respect to valve leakage. Each contains guidance for valve leak rate testing.

Appendix J is primarily concerned with leakage out of containment subsequent to a Loss-of-Coolant Accident (LOCA). It requires leak rate testing of containment isolation valves at the maximum differential pressure ($\triangle P$) expected during an accident. Section XI requires

⁽¹⁾ ASME Boiler and Pressure Vessel Code, 1977 Edition with Addenda through Summer, 1978.

⁽²⁾ Title 10, Code of Federal Regulations, Part 50, Appendix J. "Primary Reactor Containment Leakage Testing for Water - Cooled Power Reactors."

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leak rate testing of all values for which seat leakage "is limited to a specific maximum amount" and that testing be performed at the values' operating $\triangle P$ unless a lower $\triangle P$ can be shown to give conservative results. Operating $\triangle P$ may be many times the maximum post-LOCA $\triangle P$. Finally, plant Tecnnical Specifications also address leak rate testing and impose specific testing requirements (e.g. excess flow check value operability demonstration; test $\triangle P$ for drywell-wetwell downcomer vacuum breakers).

The testing requirements imposed by the various sources are not identical nor are they mutually exclusive. It is anticipated that Appenuix J testing will satisfy Section XI leak rate testing in many instances. However, some valves may require both Appendix J and Section XI testing. Section 4.6 identifies valves which are subject to leak rate testing under the scope of Section XI, Sub-section IWV. Relief valves are not required to be leak rate tested (1WV-3512) subsequent to bench testing and are not included in Section 4.0. Nor are normally closed, manually operated containment isolation valves included. For implementation purposes, the test frequencies mandated in Appendix J, Section XI and the Tech Specs are the same. Leak rate testing will, in general, be performed during outages although some penetrations may be amenable to leak testing during power operations.

Similar testing frequencies and overlapping requirements necessitates a unified leak rate testing program which will maximize compliance with the various commitments, provide consistancy in test methodology and reduce duplication of effort. The Supply System is actively developing a unified program which will be submitted for review at a later date. Procedures to implement this program are being prepared.-

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. Most of the requests ask only for the postponement of testing, not cancellation.

The Supply System is confident that the WNP-2 Valve Inservice Test Program complies with the intent of all applicable codes, regulations, (3) and guidelines(4) and that it will make a positive contribution to the safe operation of the plant.

- (3) 10CFR 50:55 a(g)(2)
- (4) NRC Staff guidelines for excluding exercising (cycling) tests of certain valves during Plant operations.

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4.2 Program Implementation

The Valve Test Program will be executed as part of the normal plant surveillance routine. Two types of tests will be conducted as part of the Valve Test Program:

- 1) Valve Operability Tests
- 2) Valve Leak Rate Tests

The Operability Tests will verify 1) the valve responds to control commands, 2) the valve stroke time is within specific limits and, 3) remote position indication accurately reflects the observed valve position. Base line data for stroke times will be obtained from initial Valve Operability Tests. Where applicable, acceptance criteria for initial stroke times will be within the limits specified in Table o.2-16 of the WNP-2 FSAR. Otherwise, the Supply System will specify acceptable times. When these times are established, they will be inserted in the Valve Test Tables under the Stroke Time column. Remote valve position indication will be verified every two years (see Section 4.5 - General Relief Request). Manually operated valves with remote position indication have been included in this program.

Fail safe valves will be tested by observing the valve operation upon loss of actuating power. In most cases this can be accomplished using normal control circuits.

4.3 Program Administration

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

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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 reflect the positions taken in support of the relief requests. To aid the reader in the interpretation of the Tables, brief explanations of the Table headings and abbreviations are provided.

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- (1) <u>Valve Number</u> 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) <u>Class</u> 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) Coordinates The specific coordinates of each value are supplied to facilitate location of the values on the flow diagram provided.
- (4) Valve Category
 Categories are defined by ASME Section XI, subsection IWV. Each valve has specific testing requirements which are determined by the category to which it belongs.
- (5) <u>Size</u> Nominal pipe diameter to which the valve connects is given in inches.
- (6) <u>Valve Type</u> The following aboreviations are used to describe valve type:

| BF | = | Butterfly valve | GT | = | Gate Valve |
|-----|---|-----------------|-----|---|---------------------|
| СК | Ξ | Check valve | | | Rupture disc. |
| DIA | = | Diaphragm valve | | | Relief Valve |
| GB | = | Globe valve | S/R | = | Safety/Relief Valve |
| | | | | | Solenoid Valve |

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The following abbreviations are used to (7) Actuator Type describe actuator types. Valves may be actuated in more than one way. A0 = Air operated 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 Position Valves may be either normally open (0) or normally closed (C). Inrottle values are not included in the scope of this program since they are either passive or regulating type valves. Both types of valves are exempt from IWV testing (IWV-2100). (9) Test During This column defines the operating modes as defined by the Technical Specifications, during which the valve may be safely tested. See below for the definition of "all," "CSD" and "Refuel." Legend Meaning A11 Testing is approved during all operating

modes and will be conducted on a quarterly

basis, as permitted by plant status.

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Cold shutdown. Guidance for Inservice valve testing at cold shutdown is: Valve testing should commence not later than 48 hours after cold shutdown is achieved and continue until complete or until plant is ready to return to power. Completion of all valve testing is not a prerequisite to return to power. Any testing not completed at one cold shutdown should be performed during the subsequent cold shutdowns to meet the Code specified testing frequency. Refuel Test will be conducted during refueling outages but at least every two years. Certain work which is nominally scheduled for

a refueling outage may be performed at other times when plant conditions permit. The two year minimum frequency will be maintained.

IWV-3620 Test frequency will be according to vendor specifications.

(10) <u>Test</u> Testing requirements identified for the valve are identified here.

> S/E Stroke exercise; valve timing not relevant.

CSD

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S/T Stroke time; valve must meet stroke timing requirements specified in the FSAR or elsewhere. Bench Test Relief valves will be tested in accordance with IWV-3500 requirements. IWV-3620 Rupture disc will be tested in accordance with Section XI, Subsection IWV, paragraph 3620. Pos Ind Position Indication verification only Reference stroke time will be listed where (11) Stroke Time () appears. Values will be determined during initial surveillance testing and will comply with limiting values of full stroke time specified in the FSAR, Technical Specifications or other commitment documents (12) Notes Generally self explanatory, e.g., NO = Normally open FO = Fails openNC = Normally closed FC = Fails closed (13) Requests for Relief Cross references documentation which requests waiver of certain code requirements. A valve may have more than one associated relief request.

| | | C MID SERVICE A | *** | | Umg. | NO | <u></u> | | | Pa | ge | or <u> </u> |
|-----------------|-------|-----------------|------------------------------|----------------|---------------|------------------|---------------------|----------------|------|----------------|-------|---------------------------|
| Valve Humber | Class | Coordinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | llorma] Position | fest During | Test | Stroke Time | Notes | Requests For Relief |
| CAS-V-453 | 2 | K8 | x | 1 | SV | SOL | С | ALL | S/E | N/A | - | 1 |

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|------------------|--------|---------------|-------------------------------------|----------------|---------------|-------------------|--------------------|----------------|------|----------------|--------------|---------------------------|
| | | | | . | | | • | | | | | - |
| Valve Humber | Class | Coordinates | Valve <u>Category</u> A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| 00 -V-1 A | 3 | 03 | x x | 1 1/2 | CK | SA | C | ALL | S/E | N/A | | |
| DO-V-18 | J | 03 | x x | 1 1/2 | CK | SA | C | ALL | S/E | N/A | | <u></u> |
| 00-V-10 | 3 | 115 | x x | 1 1/2 | CK | SA | C | ALL | S/E | N/A | | |
| DO-V-40A | 3 | E3 | X | 1 1/2 | SV | SOL | C | ALL | S/E | N/A | | |
| D0-V-40B | 3 | E3 | x | 1 1/2 | SV | SOL | C | ALL | S/E | N/A | | |
| DO-V-43 | 3 | HG | X | 1 1/2 | SV | SOL | C | ALL | S/E | N/A | | |

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| Valve Number | Class | Coordinates | Val Cate | ve gory CD | Size Inches | Valve Type | Actuator | Normal Position | Test | Teet | Stroke | N- 4 | Requests For |
|-----------------|-------|-------------|-------------|------------------|----------------|---------------|------------|--------------------|---------------|--------------------|--------------------|-----------------------|-----------------|
| RC1C-V-1 | 2 | Ell | <u>x</u> | <u> </u> | 3 | GL | Туре M0 | 0 | During ALL | <u>Test</u> S/E | <u>Time</u> N/A | Notes Rapid Acting | Relief |
| RCIC-V-8 | | F6 | X | | 4 | GT | MO | 0 | ALL* | S/T | () | ······· | |
| RC1C-V-10 | 2 | B14 | X | | 8 | GT | MO | 0 | ALL | s/t | (NA) | | |
| RCIC-V-11 | 2 | 813 | X | x | 8 | СК | SA | C | ALL | S/E | N/A | | |
| RCIC-V-13 |) | H7 | x | | 6 <u>.</u> | GT | MO | C. | ALL | S/T | () | | |
| 8010-4-19 | 2 | E7 | x | | 2 | GB | MO | C | ALL | s/t | () | | |
| RC I C-V- 19B | 2 | Jú | x | | 1/2 | GT | AO | 0 | ALL | S/T | () | | |
| RCIC-V-21 | 2 | E8 | x | x | 2 | СК | SA | C | ALL | S/E | N/A | | |
| RC1C-V-22 | 2 | J8 | X | | 6 | GB | MO | C | ALL | s/1 | () | | |
| RCIC-V-28 | 2 | U8 | x | x | 1 1/2 | СК | SA | С | ALL | ۶/۱ | N/A | | |
| RC1C-V-3U | 2 | C7 | x | x | 8 | CK | SA | C | ALL | S/E | H/A | | |
| RCIC-V-31 | 2 | C7 | x | | 8 | GT | MO | C | ALL | S/T | () | ····· | <u></u> |
| RCIC-V-40 | 2 | U8 | X | x | 10 | CK | SA | C | ALL | S/T | N/A | | 'n |
| CIC-V-45 | 2 | FII | x | | 4 | GB | MO | C | ALL | s/r | () | | |
| ₹CIC-V-46 | 2 | FII | X | | 2 | GB | MO | C | ALL | s/t | () | | |
| RCIC-V-59 | 2 | J.A | x | | 6 | GT | МО | С | ALL | s/T | () | | |

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* Valves marked with an ASTERISK (*) close automatically if Reactor Vessel Pressure is less than 50 psig. Therefore, if Cold Shutdown conditions extend beyond a 3 month period, LHV testing frequency may not be met. However, valves will be tested prior to resuming power operations (IHV-3416)

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| System Name | REACIU | R CORE ISOLATIO | N COOLING (RCIC) | | Dwg. H | о. <u> М</u> | 519 Rev. 1 | 21 | | Paç | je <u>2</u> | of <u>2</u> |
|-----------------|--------|-----------------|------------------------------|----------------|------------------|------------------|--------------------|----------------|---------------|----------------|-------------|---------------------------|
| Valve Number | Class | Coordinates | Valve Category A B C D | Size Inches | Va Ive Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| RC1C-V-63 | 1 | 113 | x | 10 | GT | мо | 0 | ALL* | S/T | () | | |
| RC1C-V-64 | 1 | Gô | x | 10 | GT | 110 | C | ALL* | S/T | () | | |
| RC1C-V-65 | 1 | H6 | x x | 6 | СК | A0/SA | С | ALL | S/E | N/A | | |
| RCIC-V-บับ | 1 | J4 | x x | 6 | СК | A0/SA | C | CSD | S/E | N/A | | 2 |
| RC1C-V-68 | 2 | E7 | X | 10 | GT | MO | 0 | ALL | s/t | () | | <u></u> |
| RCIC-V-69 | 2 | D7 | x | 1-1/2 | GT . | мо | 0 | ALL | s/t | () | | |
| RCIC-V-76 | 1 | 113 | X | 1 | GB | MO | C | ALL* | S/T | () | | |
| RCIC-V-110 | 2 | E7 | x | 2 | GT | MO | 0 | ALL* | S/T | () | | |
| RCIC-V-113 | 2 | E6 | x | 2 | GT | MO | 0 | ALL* | s/t | () | | |
| RC IC-KD- 1 | 2 | 011 | X | 10 | RUPTURE DISC | SA | C | IWV-3620 | IMA-325 | 0 N/A | | |
| RCIC-RD-2 | 2 | C12 | X | າຍ | RUP TURE DISC | SA | C | IWV-3620 | [WV-362 | 0 N/A | | |
| RCIC-RV-17 | 2 | C13 | X | 1 x 1 | RV | SA | C | REFUEL | BENCH TEST | N/A | | |
| RC1C-RV-18 | 2 | 09 | x | 3/4 x 1 | RV | SA | C | REFUEL | BENCH | N/A | | |

* See note on RCIC System page 1 of 2.

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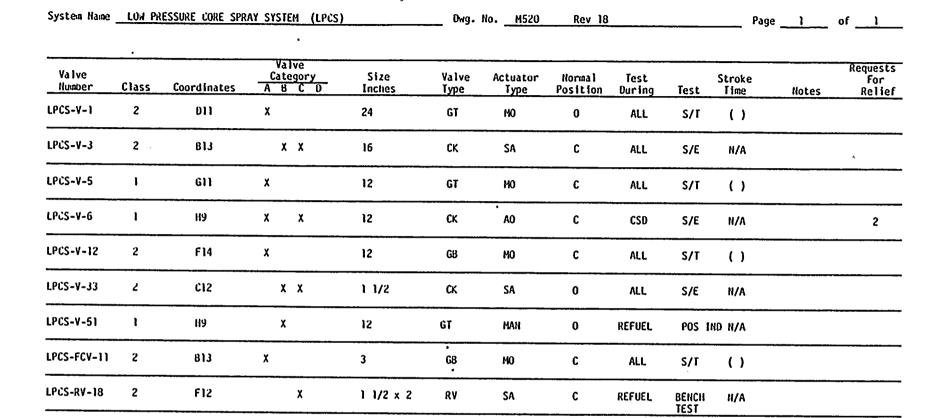
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| Valve Number | Class | Coordinates | Ŭ | Valve atego B (| e ory C_D | Size Inches | Valve Type | Actuator Type | Hormal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|--------------------|---|-----------------------|-----------------|----------------|---------------|------------------|--------------------|----------------|---------------|----------------|-------|---------------------------|
| HPCS-V-1 | 2 | Cu | | x | | 14 | GT | MO | 0 | ALL | S/T | () | | |
| HPCS-V-2 | 2 | C6 | | х) | X | 20 | CK | SA | C | ALL | S/E | N/A | | |
| HPCS-V-4 | 1 | G7 | X | | | 12 | GT | MO | C | ALL | S/T | () | | |
| NPCS-V-5 | 1 | H8 | X |) | x | 12 | CK | AO | C | CSD | S/E | N/A | | 2 |
| HPCS-V-7 | 2 | CS | | х) | x | 1 1/2 | CK | SA | 0 | ALL | S/E | N/A | | <u> </u> |
| HPCS-V-10 | 2 | EJ | | x | | • 10 | 68 | MO | C | ALL | s/1 | () | | |
| HPCS-V-11 | 2 | E3 | | x | | 10 | 68 | MO | C | ALL | s/t | () | | |
| HPCS-V-12 | 2 | 85 | X | | | 4 | GT | MO | с | ALL | S/T | () | | |
| HPCS-V-15 | 2 | D7 | X | | | 18 | GT | MO | C | ALL | S/T | () | | <u></u> |
| HPCS-V-16 | Z | E6 | | x | x | 24 | СК | SA | C | ALL | S/E | N/A | | <u> </u> |
| HPCS-V-23 | 2 | E4 | x | | | 12 | GB | MO | C | ALL | S/T | () | | |
| HPCS-V-24 | 2 | 85 | | X | x | 16 | СК | SA | C | ALL | S/E | N/A | | |
| HPCS-V-28 | 3 | M524 Rev. 19 J5 | | X | x | 8 | Ċĸ | SA | C | ALL | S/E | N/A | | |
| HPCS-V-51 | 1 | 118 | | X | | 12 | GL | Man | 0 | REFUEL | POS INU | H/A | | |
| HPCS-RV-14 | 2 | Có | | | x | 1X1 | RV | SA | C | REFUEL | BENCH TEST | H/A | | |
| NPCS-RV-35 | 2 | C4 | | | x | 1 x 2 | RV | SA | С | REFUEL | BENCH TEST | N/A | | |

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| Valve Number | Class | Coordinates | Valve <u>Category</u> A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | llotes | Requests For Relief |
|-----------------|-------|-------------|-------------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|--------|---------------------------|
| RIIR-V-3A | 2 | 313 | x | 18 | GT | МО | 0 | ALL | S/T | () | | |
| RIR-V-3B | 2 | J4 | x | 18 | GT | MO | 0 | ALL | S/T | () | | |
| RIIR-V-4A | 2 | Ell | x | 24 | GT | MO | 0 | ALL | S/T | () | | |
| RHR-V-4B | 2 | DG | X | 24 | GT | GM | 0 | ALL | S/T | () | | |
| RHR-V-4C | 2 | ווט | X | 24 | GT | MO | 0 | ALL | S/T | () | | |
| RIIR-V-6A | 2 | C12 | x | 18 | GT | MO | C | ALL | S/T | () | | |
| RIIR-V-6B | 2 | C6 | x | 18 | GT | MO | C | ALL | s/t | () | | |
| RHR-V-8 | 1 | FII | x | 20 | GT | MO | C | CSD | \$/T | () | | 11 |
| RHR-V-9 | 1 | F10 | X . | 20 | GT | MO | C | CSD | S/T | () | | 11 |
| RHR-V-11A | 2 | F12 | X | 4 | ĠŢ | MO | C | ALL | S/T | () | | |
| RHR-V-118 | 2 | E7 | X | 4 | GT | HO | C | ALL | S/T | () | | |
| RIIR-V-10A | 2 | H11 | X | 16 | GT | MU | C | ALL | S/T | () | | |
| RHR-V-16B | 2 | F6 | X | 16 | GT | MO | C | ALL | s/r | () | | |
| RHR-V-17A | 2 | HIO | X | ló | Gſ | "MO | C | ALL | .S/T | () | | |
| RHR-V-178 | 2 | F6 | X | 16 | GT | MO | C | ALL | s/r | () | | |

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| System Hame | RESIDU | IAL HEAT REMOVAL | SYSTEM | (RHR) | | Dwg. | No. <u>M521</u> | Rev. | 25 | ···· | Pag | e <u>2</u> | of <u>6</u> |
|-----------------|--------|------------------|--------|--------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|---------------------------------------|---------------------------|
| Valve Number | Class | Coordinates | Cate | lve egory CD | Size Inches | Valve Type | Actuator Fype | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| RIIR-V-21 | 2 | Ell | x | | 18 | GB . | мо . | C | ALL | S/T | () | | |
| RHR-V-23 | 1 | 117 | x | | 6 | 68 | MO | C | CSD | s/t | () | | n |
| RHR-V-24A | 2 | E12 | x | | 18 | 68 | MO | C | ALL | s/t | () | | |
| RIIR-V-24B | 2 | E6 | x | | 18 | GB | MO | C | ALL | S/T | () | | |
| RHR-V-27A | 2 | Ell | x | | ΰ | GT | MO | C | ALL | \$/T | () | <u> </u> | |
| RHR-V-27B | 2 | £7 | x | | 6 | GŤ | MO | C | ALL | S/T | () | | |
| RHR-V-31A | 2 | B13 | x | x | 18 | CK | SA . | C | ALL | S/E | N/A | | |
| RHR-V-J1B | 2 | 84 | X | x | 18 | СК | SA | C | ALL | S/E | N/A | | |
| RHR-V-31C | 2 | 87 | x | x | 18 | CK | SA | C | ALL | S/E | N/A | · · · · · · · · · · · · · · · · · · · | |
| RIR-V-40 | 2 | G4 | x | | 4 | GВ | MO | С | ALL. | S/T | () | | |
| RHR-V-41A | 1 | G10 | x | x | 14 | СК | AO | С | CSD | S/E | N/A | | 2 |
| Rik-V-41B | 1 | G8 | x | X | 14 | CK | AO | C | CSD | S/E | N/A | | 2 |
| RHR-V-41C | 1 | GlU | x | x | 14 | СК | AO | C` | CSD | S/E | N/A | - | 2 |
| RIR-V-42A | 1 | G11 | X | | 14 | GT | MÜ | с | ALL | s/r | () | | |
| | | | | | | | | | | | | | |

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| System Name | RESIDU | IAL HEAT REMOVAL | SYSTE | M (RIIR) |) | Dwg. | No. <u>H521</u> | Rev | . 25 | | Pag | e <u>3</u> | of <u>6</u> |
|-----------------|--------|------------------|-------|-------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|------------|---------------------------|
| Valve Rumber | Class | Coordinates | A | alve tegory B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| \IIR-V-428 | 1 | G7 | x | | 14 | GT | MO | C | ALL | s/T | () | | |
| NR-V-42C | 1 | GII | X | | 14 | GT | MO | C | ALL | S/T | () | | |
| RHR -V-46A | 2 | D12 | X | x | 6 | CK | SA | C | ALL | S/E | N/A | | |
| RIIR-V-468 | 2 | E6 | X | x | 6 | СК | SA | C | ALL | S/E | N/A | <u></u> | |
| RHR-V-46C | 2 | DII | X | x | 6 | СК | SA | С | ALL | S/E | N/A | | |
| RIIR-V-47A | 2 | J14 | | x | 18 | GT | MO | 0 | ALL | S/T | () | | |
| RIIR-V-47B | 2 | J3 | | x | 18 | GT | MO | 0 | ALL | S/T | () | | |
| RHR-V-48A | 2 | J13 | | X | 18 | 68 | MO | 0 | ALL | S/T | () | | |
| RHR-V-488 | 2 | J5 | | x | 18 | GB | MO | 0 | ALL | S/T | () | | |
| RHR-V-49 | 2 | G4 | | x | 4 | GT | , MO | C | ALL | S/T | () | | |
| RHR-V-50A | 1 | G10 | x | X | 12 | CK | AO | C | ALL | S/E | N/A | | 2 |
| RIR-V-50B | 1 | 68 | x | X | 12 | СК | AO | C | ALL | S/E | N/A | | 2 |
| RIIR-V-53A | 1 | 611 | x | | 12 | GB | MO | C | CSD | S/T | () | | n |
| RIIR-V-538 | ١ | 67 | x | | 12 | GB | M0; | C | CSD | S/T | () | | 11 |

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| Valve Number | Class | Coordinates | | lve egory CD | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|---------------------|---|--------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|-------|---------------------------|
| RHR-V-GOA | 2 | #12 | x | | 3/4 | SV | SOL | C | ALL | S/E | H/A | | ۱ |
| RHR-V-608 | 2 | J5 | x | | 3/4 | SV | SOL | C | ALL | S/E | N/A | | 1 |
| RIIR-V-68A | 3 | 4524 REV. 19 H12 | | . x | 16 | GT | MO | 0 | ALL | S/T | () | | |
| RHR-V-688 | 3 | M524 REV 19 H11 | x | : | 16 | GT | MO | 0 | ALL | S/T | () | | |
| RIIR-V-75A | 2 | H12 | x | : | 3/4 | SV | • SOL | C | ALL | S/E | N/A | | |
| RHR-V-758 | 2 | J5 | x | | 3/4 | SV | SOL | C | ALL | S/E | H/A | | |
| RIIR-V-84A | 2 | 813 | X | x | 1 1/2 | CK | SA | C | ALL | S/E | H/A | | |
| RIIR-V-84B | 2 | 87 | x | x | 1 1/2 | СК | SĄ | C | ALL | S/E | N/A | | |
| RHR-V-84C | 2 | 84 |) | x x | 1 1/2 | СК | SA : | C | ALL | S/E | N/A | | |
| RHR-V-89 | 2 | JG | , | x | 14 | СК | AO | C | ALL | S/E | N/A | | |
| RHR-V-101A | 2 | F14 | x | x | 2 | CK | SA | С | ALL | S/E | N/A | | |
| RHR-V-1018 | 2 | F4 | x | x | 2 | CK. | SA | C | ALL | S/E | N/A | | |
| RIR-V-103A | 2 | F14 | x | x | 2 | СК | SA | C | ALL | S/E | N/A | | . |
| RHR-V-1038 | 2 | F4 | x | x | 2 | CK | SA | C | ALL | S/E | N/A | | |

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| Class | Coordinates | Valve Category A_B_C_D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-------|---|--|---|---|--|--|---|--|---|---|--|
| 1 | G 9 | x | 14 | GT | MAN | 0 | REFUEL | POS IND | N/A | | |
| 1 | G8 | X | 14 | GT | MAN | 0 | REFUEL | POS IND | N/A | | |
| 1 | 69 | X | 14 | GT | MAN | 0 | REFUEL | POS IND | N/A | | |
| 1 | 69 | X | 12 | GT | MAN | 0 | REFUEL | POS IND | N/A | <u></u> | <u> </u> |
| 1 | 68 | X | 12 | GT | MAN | 0 | REFUEL | POS IND | N/A | | |
| 1 | 69 | X | 20 | GT | MAN | 0 | REFUEL | POS IND | N/A | | |
| 2 | ენ | X | 14 | GT | MO | C | ALL | S/T | () | <u></u> | |
| 2 | J6 | X | 14 | GT | MO | С | ALL | S/T | () | | |
| 1 | G10 | x | 1 | GT | MO | C | ALL | S/T | () | COORDINATE TES | T |
| 1 | 66 | X | 1 | GT | MO | C | ALL | S/T | () | W/RHR-V-50A, B | |
| 2 | D14 | x | · 1-1/2 | GT | MO | C | ALL | S/T | () | | |
| 2 | D14 | X | 1-1/2 | GT | MO | C | ALL | S/T | () | | |
| 2 | D4 | x | 1-1/2 | GT | МО | C | AĽL | S/T | () | <u>а</u> | |
| 2 | D4 | X | 1-1/2 | GT | МО | C | ALL | S/T | () | | |
| 2 | G15 | X | 2 | GT | мо | C | ALL | S/T | () | | |
| 2 | F2 | X | 2 | GT | НО | C | ALL | S/T | () | | ······ |
| | 1 1 1 1 1 1 1 2 2 1 1 2 2 2 2 2 2 2 2 2 2 | 1 69 1 68 1 69 1 69 1 69 1 69 1 69 1 69 2 J6 2 J6 1 610 1 66 2 D14 2 D4 2 04 2 615 | 1 $G9$ X 1 $G8$ X 1 $G9$ X 2 $J6$ X 2 $J6$ X 1 $G10$ X 1 $G66$ X 2 $D14$ X 2 $D14$ X 2 $D4$ X 2 04 X 2 04 X 2 04 X | 1 $G9$ X 14 1 $G9$ X 14 1 $G9$ X 14 1 $G9$ X 12 1 $G9$ X 12 1 $G9$ X 12 1 $G9$ X 20 2 J6 X 14 2 J5 X 14 1 $G10$ X 14 1 $G10$ X 1 1 $G66$ X 1 2 $D14$ X 1-1/2 2 $D14$ X 1-1/2 2 $D4$ X 1-1/2 2 04 X 1-1/2 2 04 X 2 | 1 G9 X 14 GT 1 G8 X 14 GT 1 G9 X 12 GT 1 G9 X 12 GT 1 G9 X 20 GT 2 J5 X 14 GT 2 J5 X 14 GT 1 G10 X 1 GT 1 G6 X 1 GT 2 D14 X 1-1/2 GT 2 D4 X 1-1/2 GT 2 D4 X 1-1/2 GT 2 G15 X 2 GT | 1 G9 X 14 GT MAN 1 G8 X 14 GT MAN 1 G9 X 14 GT MAN 1 G9 X 14 GT MAN 1 G9 X 12 GT MAN 1 G9 X 12 GT MAN 1 G9 X 20 GT MAN 1 G9 X 20 GT MAN 2 J6 X 14 GT MO 2 J6 X 14 GT MO 2 J6 X 14 GT MO 1 G10 X 1 GT MO 2 D14 X 1-1/2 GT MO 2 D4 X 1-1/2 GT MO 2 G4 X 1-1/2 GT MO 2 G15 X 2 GT MO <td>1 G9 X 14 GT MAN O 1 G8 X 14 GT MAN O 1 G9 X 14 GT MAN O 1 G9 X 14 GT MAN O 1 G9 X 12 GT MAN O 1 G9 X 12 GT MAN O 1 G9 X 12 GT MAN O 1 G9 X 20 GT MAN O 2 J5 X 14 GT MO C 2 J5 X 14 GT MO C 1 G10 X 1 GT MO C 2 D14 X 1-1/2 GT MO C 2 D4 X 1-1/2 GT MO C 2 D4 X 1-1/2 GT MO C 2</td> <td>1 G9 X 14 GT HAM 0 REFUEL 1 G8 X 14 GT MAN 0 REFUEL 1 G9 X 14 GT MAN 0 REFUEL 1 G9 X 12 GT MAN 0 REFUEL 1 G9 X 20 GT MAN 0 REFUEL 2 J5 X 14 GT MO C ALL 2 J5 X 14 GT MO C ALL 1 G10 X 1 GT MO C ALL 2 D14 X 1-1/2 GT MO C ALL 2 D4 X</td> <td>1 69 X 14 GT HAH 0 REFUEL POS IND 1 68 X 14 GT HAN 0 REFUEL POS IND 1 69 X 14 GT HAN 0 REFUEL POS IND 1 69 X 14 GT HAN 0 REFUEL POS IND 1 69 X 12 GT HAN 0 REFUEL POS IND 1 69 X 12 GT HAN 0 REFUEL POS IND 1 68 X 12 GT HAN 0 REFUEL POS IND 1 69 X 20 GT HAN 0 REFUEL POS IND 2 J6 X 14 GT HAN 0 REFUEL POS IND 2 J6 X 14 GT HAN 0 REFUEL POS IND 2 J6 X 14 GT HO C ALL</td> <td>1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 68 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 12 GT MAN 0 REFUEL POS IND N/A 1 68 X 12 GT MAN 0 REFUEL POS IND N/A 1 69 X 12 GT MAN 0 REFUEL POS IND N/A 2 J6 X 12 GT MAN 0 REFUEL POS IND N/A 2 J6 X 14 GT MO C ALL S/T () 2 J6 X 14 GT MO C ALL S/T <td< td=""><td>1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 68 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 12 GT MAN 0 REFUEL POS IND N/A 1 68 X 12 GT MAN 0 REFUEL POS IND N/A 1 68 X 12 GT MAN 0 REFUEL POS IND N/A 1 69 X 20 GT MAN 0 REFUEL POS IND N/A 2 J6 X 14 GT MO C ALL S/T (.) 2 J6 X 14 GT MO C ALL S/T (.) COORDINATE TES 1 G10 <</td></td<></td> | 1 G9 X 14 GT MAN O 1 G8 X 14 GT MAN O 1 G9 X 14 GT MAN O 1 G9 X 14 GT MAN O 1 G9 X 12 GT MAN O 1 G9 X 12 GT MAN O 1 G9 X 12 GT MAN O 1 G9 X 20 GT MAN O 2 J5 X 14 GT MO C 2 J5 X 14 GT MO C 1 G10 X 1 GT MO C 2 D14 X 1-1/2 GT MO C 2 D4 X 1-1/2 GT MO C 2 D4 X 1-1/2 GT MO C 2 | 1 G9 X 14 GT HAM 0 REFUEL 1 G8 X 14 GT MAN 0 REFUEL 1 G9 X 14 GT MAN 0 REFUEL 1 G9 X 12 GT MAN 0 REFUEL 1 G9 X 20 GT MAN 0 REFUEL 2 J5 X 14 GT MO C ALL 2 J5 X 14 GT MO C ALL 1 G10 X 1 GT MO C ALL 2 D14 X 1-1/2 GT MO C ALL 2 D4 X | 1 69 X 14 GT HAH 0 REFUEL POS IND 1 68 X 14 GT HAN 0 REFUEL POS IND 1 69 X 14 GT HAN 0 REFUEL POS IND 1 69 X 14 GT HAN 0 REFUEL POS IND 1 69 X 12 GT HAN 0 REFUEL POS IND 1 69 X 12 GT HAN 0 REFUEL POS IND 1 68 X 12 GT HAN 0 REFUEL POS IND 1 69 X 20 GT HAN 0 REFUEL POS IND 2 J6 X 14 GT HAN 0 REFUEL POS IND 2 J6 X 14 GT HAN 0 REFUEL POS IND 2 J6 X 14 GT HO C ALL | 1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 68 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 12 GT MAN 0 REFUEL POS IND N/A 1 68 X 12 GT MAN 0 REFUEL POS IND N/A 1 69 X 12 GT MAN 0 REFUEL POS IND N/A 2 J6 X 12 GT MAN 0 REFUEL POS IND N/A 2 J6 X 14 GT MO C ALL S/T () 2 J6 X 14 GT MO C ALL S/T <td< td=""><td>1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 68 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 12 GT MAN 0 REFUEL POS IND N/A 1 68 X 12 GT MAN 0 REFUEL POS IND N/A 1 68 X 12 GT MAN 0 REFUEL POS IND N/A 1 69 X 20 GT MAN 0 REFUEL POS IND N/A 2 J6 X 14 GT MO C ALL S/T (.) 2 J6 X 14 GT MO C ALL S/T (.) COORDINATE TES 1 G10 <</td></td<> | 1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 68 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 14 GT MAN 0 REFUEL POS IND N/A 1 69 X 12 GT MAN 0 REFUEL POS IND N/A 1 68 X 12 GT MAN 0 REFUEL POS IND N/A 1 68 X 12 GT MAN 0 REFUEL POS IND N/A 1 69 X 20 GT MAN 0 REFUEL POS IND N/A 2 J6 X 14 GT MO C ALL S/T (.) 2 J6 X 14 GT MO C ALL S/T (.) COORDINATE TES 1 G10 < |

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| System name | | AL HEAT REMOVAL | SYSTEM (RHR | <u></u> | | No. <u>+ M521</u> | <u>Rev. 25</u> | | | ray | e <u>6</u> | of <u>6</u> |
|-----------------|-------|-----------------|-------------------------------------|----------------|---------------|-------------------|--------------------|----------------|---------------|----------------|---|---------------------------|
| Valve Number | Class | Coordinates | Valve <u>Category</u> A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Timé | Notes | Requests For Relief |
| RHR-V-182 | 2 | J6 | X | | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| RHR-FCV-64A | 2 | C12 | x | 3 | GB | мо | 0 | ALL | S/T | () | | |
| RIR-FCV-64B | 2 | C5 | X | 3 | GB | MO | 0 | ALL | S/T | () | | |
| RIR-FCV-64C | 2 | C8 | X | 3 | GB | HO | 0 | ALL | S/T | () | | |
| RHR-RV-1A | 2 | J14 | X | 3/4 x 1 1/2 | RV | SA | C | REFUEL | BENCH TEST | N/A | | |
| RHR-RV-1B | 2 | J3 | x | 3/4 x 1 1/2 | RV | SA | C | REFUEL | BENCH TEST | N/A | | <u></u> |
| RHR-RV-5 | 2 | C11 | X | 1 x 2 | RV | SA | ° C | REFUEL | BENCH | N/A | | |
| RHR-RV-25A | 2 | F12 | X | 1 x 2 | RV | SA | C | REFUEL | BENCH TEST | N/A | | •••••• |
| RHR-RV-25B | 2 | F6 | X | 1 x 2 | RV | SA | C | REFUEL | BENCH TEST | N/A | | |
| RHR-RV-25C | 2 | E11 | x | 1 x 2 | RV | SA | C۰ | REFUEL | BENCH TEST | N/A | | |
| RHR-RV-30 | 2 | A7 | x | 1 x 2 | RV | SA | C | REFUEL | BENCH TEST | N/A | | <u> </u> |
| RHR-RV-36 | 2 | G13 | x | 6 x 8 | RV | SA | C | REFUEL | BENCH Test | N/A | | |
| RHR-RV-88A | 2 | E11 | x | 3/4 x 1 | RV | SA | C | REFUEL | BENCH TEST | N/A | | |
| RHR-RV-88B | 2 | E6 | X | 3/4 × 1 | RV | SA | C | REFUEL | BENCH TEST | N/A | <u> </u> | |
| RHR-RV-88C | 2 | C11 | X | 3/4 x 1 | RV | SA | C | REFUEL | BENCH TEST | N/A | | |
| RHR-RV-98 | 1 | F9 | x | 3/4 × 1 | RV | SA | C | REFUEL | BENCH TEST | N/A | , <u>, , , , , , , , , , , , , , , , , , </u> | |

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| Valve Number | Class | Coordinates | Cal | alve tegory 3 C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|-------------|-----|-------------------------|----------------|---------------|------------------|--------------------|----------------|---------------|----------------|---------|---------------------------|
| SLC-V-1A | 2 | E4 | 2 | K | 4 | G B | MO | C | ALL | S/T | () | | ····· |
| SLC-V-1B | 2 | D4 | 2 | x | 4 | GB | МО | C | ALL | ` s/t | () | ······ | • |
| SLC-V-4A | 1 | F8 | | X | 1-1/2 | SHEAR PLUG | SQUIBB | С | REFUEL | 1WV 3610 | N/A | ••••••• | |
| SLC-V-4B | 1 | V8 | | X | 1-1/2 | SHEAR PLUG | SQUIBB | С | REFUEL | IWV 3610 | N/A | | |
| SLC-V-6 | 1 | FII | x | X | 1-1/2 | CK | SA | C | REFUEL | S/E | N/A . | | 4 |
| SLC-V-7 | 1 | Fl3 | x | x | 1-1/2 | СК | SA | C | REFUEL | S/E | N/A | | 4 |
| SLC-V-8 | 3 | F12 | , | (| 1-1/2 | Gſ | MAN | 0 | REFUEL | POS IND | N/A | | |
| SLC-V-33A | 2 | F7 | ; | (X | 1-1/2 | СК | SA | C | ALL | S/E | N/A | *** | |
| SLC-V-338 | 2 | 07 |) | x x | 1-1/2 | СК | SA | C | ALL | S/E | N/A | | |
| SLC-RV-29A | 2 | Eõ | 3 | X | 1 x 2 | R¥ | SA , | C | REFUEL | BENCH TEST | N/A | | <u> </u> |
| SLC-RV-298 | 2 | 06 | | x | 1 x 2 | RV | SA | C | REFUEL | BENCH TEST | N/A | | |

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Dwg. No. _ M522

Rev. 9

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System Name <u>STANDBY LIQUID CONTROL</u>

(SLC)

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| System Name <u>REACTOR WATER CLEANUP</u> (RWCU) | | | | Dwg. No. <u>11523</u> Rev. 32 | | | | | | | e <u> </u> | of <u>l</u> |
|---|-------|-------------|-------------------------------------|-------------------------------|---------------|------------------|--------------------|----------------|------|------------|------------|---------------------------|
| Valve Numuer | Class | Coordinates | Valve <u>Category</u> A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke | Notes | Requests For Relief |
| RHCU-V-1 | 1 | F15 | X | 6 | GT | MO | 0 | ALL | s/T | () | | |
| RWCU-V-4 | 1 | E15 | X | 6 | GT | MO | 0 | ALL | S/T | () | | |
| RHCU-V-40 | } | ુ માગ | x | 6 | GT | MO | 0 | ALL | s/t | () | | |

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| System Name | STANUB | Y SERVICE WATER | (SW) | | Dwg. | No. <u>M524</u> | Rev. 2 | 2 | | Page | <u> </u> | of <u>2</u> |
|----------------|--------|-----------------|------------------------------|----------------|---------------|------------------|--------------------|----------------|------|-----------------|----------|---------------------------|
| Valve Numer | Class | Coordinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Tline | Notes | Requests For Relief |
| SH-V-IA | 3 | JS | x x | 20 | СК | SA | C | ALL | S/E | N/A | | |
| SW-V-1B | 3 | G5 | x x | 20 | СК | SA | C | ALL | S/E | N/A | ·, · | |
| SH-V-2A | 3 | JS | x | 20 | BF | MU | C | ALL | S/T | () | | |
| SW-V-28 | 3 | G5 | X | 20 | " BF | M0 | C | ALL | S/T | () | | |
| SW-V-4A | 3 | F8 | x | 8 | GT | ŅО | 0 | ALL | S/T | _() | | |
| SW-V-4B | 3 | C8 | X | 8 | GT | MO | 0 | ALL | S/T | () | | |
| SW-V-4C | 3 | 118 | x | 8 | GT | MO | 0 | ALL | s/t | () | | |
| SH-V-12A | 3 | J3 | X , | 18 | GT | MO | C | ALL | S/T | () | | |
| Sw-V-128 | 3 | F3 | x | 18 | GT | MO | C | ALL | s/1 | () | | |
| SW-V-24A | 3 | D12 | x | 2 | GT | MO | 0 | ALL | s/t | () | <u></u> | |
| SW-V-24B | 3 | DIO | x | 2 | GT | MO | 0 | ALL | S/T | () | | ¥ |
| SW-V-24C | 3 | U13 | X | 2 | Ġſ | МО | 0 | ALL | s/t | () | | |
| SW-V-29 | 3 | J6 | x | 8 | BF | MO | C | ALL | S/T | () | | · · · · · · |
| SH-V-34 | 3 | נוט | x | 1 1/2 | G8 | SV | 0 | ALL | S/T | () | | |
| Sw-V-44 | -3 | Dy | x | 2 | GT | Ю | 0 | ALL | S/T | () | | |
| | 3 | | X | 2 | GT | мо | C | ALL | S/T | (). | | |

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|-----------------|-------------------|-----------------|------------------------------|----------------|---------------|---------------------|--------------------|-----------------|----------|----------------|-------------|---------------------------|
| System Ha | ime <u>514mbb</u> | Y SERVICE WATER | <u>(SW)</u> | | Uwg. | 110. <u>M</u> źźą k | ev. 20/M607 | <u>Rev. 5</u> | | Pa | ge <u> </u> | of <u>2</u> |
| Valve Number | Class | Coordinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | llotes | Requests For Relief |
| 5W-V-69A | 3 | 13 | x | 18 | GT | мо | 0 | ALL | S/T | () | | |
| SM-V-698 | 3 | F3 | x | 18 | GT | MO | 0 | ALL | S/T | () | | |
| SW-V-7UA | 3 | J3 | x | 18 | GT | НО | 0 | ALL | S/T | () | | |
| SH-V-708 | 3 | F3 | X | 18 | GT | MO | 0 | ALL | S/T | () | | |
| SW-V-90 | 3 | U7 | X | 2 | GT | мо | C | ALL | S/T | () | | |
| SM-A-85 | 3 | D8 | X X | 2 | CK | SA | C | ALL | S/E | N/A | | |
| SH-V-201 | Dwg M607, S 3 | 5h 2 C14 | X | 1/2 | SV | SOL | C | ALL | S/E | N/A | | 1 |
| SW-V-202 | Dwg MoU7, S 3 | 5n 2 C14 | X | 1/2 | СК | SA | C | ALL | S/E | N/A | | |
| SH-V-203 | Drig 1607, 3 | 5n 2 C14 | x | 1/2 | СK | SA | 0 | ALL | S/E | N/A | | |
| SH-V-204 | Uwg 11607, S 3 | 5n 2 C14 | x | 1/2 | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| SW-V-20G | Dwg HGU7, S 3 | 5n 2 B15 | x | 1/2 | SV | SOL | c | ALL | S/E | N/A | | 1 |
| SW-V-207 | Dwg HoU7, S 3 | 5h 2 B15 | x | 1/2 | СК | SA | С | ALL | S/E | N/A | | |
| S4-V-203 | Ung M607, 3 | Sn 2 815 | X . | 1/2 | CK | SA | 0 | ALL | S/E | N/A | | |
| SM-V-209 | Uwg M607, 3 | Sh 2 B15 | X | 1/2 | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| SW-V-210 | Divg H6U7, 3 | Sh 2 All | x | 1/2 | . SV | SUL | 0 | ALL | S/E | N/A | <u></u> | 1 |
| Sid-V-211 | Uwg 1607, 3 | 811 | x | 1/2 | SV | SOL | C | ALL | S/E | N/A | <u></u> | 1 |
| SH-V-212 | Dwg 14607, 3 | Sn 2 A14 | x | 1/2 | ŚV | SUL | Û | ALL | S/E | N/A | <u> </u> | 1 |
| SW-V-213 | Dwy HOU7, S | Sh 2 B13 | X | 1/2 | SV , | SOL | C | AI.I. | S/E , | N/A | | . 1 |

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| System Hame | ystem Hame <u>REACTOR CLOSED COOLING</u> (RCC) | | | | Uwg. No. <u>M525</u> Rev. 21 | | | | | | e <u>1</u> | of <u>1</u> . |
|-----------------|--|-------------|----------------------------------|----|------------------------------|------------------|--------------------|----------------|------|----------------|------------|---------------------------|
| Valve Humber | Class | Coordinates | Valve <u>Categor</u> A B C | | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| RCC-V-5 | 2 | D 10 | x | 10 | GT | мо | 0 | CSD | s/t | () | | 8 |
| RCC-V-21 | 2 | D10 | x | 10 | GT | MO | 0 | CSD | S/T | () | μ | 8 |
| RCC-V-26 | 2 | ווס | x x | 10 | CK · | SA | 0 | CSD | S/E | N/A | | . 8 |
| RCC-V-40 | 2 | D10 | x | 10 | GT | MO | 0. | CSD | S/T | () | | 8 |

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| System Name | System Name <u>FUEL POOL COULING SYSTEM (FPC)</u> | | | | Uwg. | No. <u>M52ú</u> | <u>Rev. 2</u> | Page | e | of <u>1</u> | | |
|------------------|---|-------------|-------------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|---------|---------------------------|
| .Valve Number | Class | Coordinates | Valve <u>Category</u> A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| FPC-V-153 | 2 | B11 | x | 6 | GT | 110 | C | ALL | s/t | () | | |
| FPC-V-154 | 2 | 611 | X | 6 | GT | MU | С | ALL | S/T | () | | |
| FPC-V-156 | 2 | CII | x | 6 | GT | MO | C | ALL | S/T | () | <u></u> | |

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System Name _____CONTROL_ROD_DRIVE (CRD, NCU)

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Dwg. No. <u>M528</u> <u>Rev. 21</u>

Page <u>1</u> of <u>1</u>,

| Valve Number | Class | Coordinates | Valve <u>Category</u> <u>A B C D</u> | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|-------------|--|---------------------------------------|---------------|------------------|--------------------|----------------|-------|----------------|---------------------------------------|---------------------------|
| CRD-V-9 | 2 | DII | x | 3/4 | SV | SOL | 0 | CSD | S/E | N/A | | } |
| CRD-V-10 | 2 | KG | x | 1 | GB | A0' | 0 | ALL | S/T | () | | |
| CRD-V-11 | 2 | F6 | x | 2 | GB | AO | 0 | CSD | S/T | () | | - |
| CRU-V-110A | 2 | D13 | x | 1-1/2 | SV | SOL | N/A | CSD | S/E | N/A | Normally ener to pressurize | gized 9 |
| CRD-V-1108 | 2 | D13 | x | 1-1/2 | SV | SOL | N/A | CSD | S/E | N/A | Scram Valve diaphragms | 9 |
| CRD-V-111 | 2 | D13 | x | 1-1/2 | СК | SA | C | CSD | S/E | N/A | · · · · · · · · · · · · · · · · · · · | |
| CRD-RV-12 | 2 | Hő | X | 3/4 x 1 | RV | SA | c | REFUEL | BENCH | H/A | | |
| HCU-V-114 | 2 | C2 | x x | | CK | SA | C | ALL | S/E | N/A | | 9 |
| HCU-V-115 | 2 | C5 | x x | | СК | SA | C | ALL | S/E | N/A | | y |
| HCU-V-117 | 2 | 03 | X | | SV | SV | .0 | ALL | S/E | N/A | • - | 9 |
| HCU-V-118 | 2 | D3 | x | | sv | SV | 0 | ALL | S/E | N/A | ; | 9 |
| HCU-V-120 | 2 | C4 | x | | SV | SV | C | ALL | S/E | N/A | TYPICAL OF 185 CONTROL | 9 |
| HCU-V-121 | 2 | C4 | X | | SV | SV | C · | ALL | S/E | N/A | ROD DRIVE UNITS | y |
| HCU-V-122 | 2 | С4 | X | | SV | SV | C | ALL | S/E | N/A | | y |
| 1100-4-123 | 2 | C4 | x | | SV | SV | C | ALL | S/E | N/A | | 9 |
| IICU-V-126 | 2 | C4 | x | 1 | Gſ | AŬ | C | ALL | S/E | II/A | | y |
| HCU-V-127 | 2 | C3 | x | 1 | GT | ٨O | C | ALL | S/E | H/A | | y |
| IKU-V-137 | 2 | C4 | x x | | СК | SA | C | ALL | S/E | N/A | | y |
| IICU-V-138 | *2 | C4 | X X | · · · · · · · · · · · · · · · · · · · | CK | SA | C | ALL | S/E | N/A | , • | 9 |

Page 4-27 Rev. 0 System Name _____MAIN_STEAM_SYSTEM ____(MS)___

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Rev. 25A Page

Page <u>1</u> of <u>3</u>,

| Valve Number | Class | Coordinates | Valve <u>Category</u> A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-------------------|-------|-------------|-------------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|---------------|---------------------------|
| MS-V-1 | 1 | J10 | x | 2 | б́В | MO | C | ALL | s/t | () | | |
| HS-V-2 | 1 | J10 | X | 2 | GB | MO | ċ | ALL | S/T | - () | | |
| MS-V-5 | 1 | J10 | X | 2 | GB | MO | 0 | ALL | s/t | () | | |
| MS-V-16 | 1 | B13 | x | 3 | GT | МО | C | ALL | S/T | () | | |
| MS-V-19 | 1 | B14 | x | 3 | GT | MO | C | ALL | S/T | () | | |
| MS-V-22A | 1 | F12 | x | 26 | GB | AO | 0 | ALL | S/T | () | | |
| MS-V-228 | 1 | E12 | X | 26 | GB | AO | 0 | ALL | S/T | () | ······ | |
| MS-V-22C | 1 | F5 | X | 26 | GB | AO | 0 | ALL | S/T | () | | |
| MS-V-22D | 1 | E5 | x | 26 | GB | AO | 0 | ALL | S/T | () | | |
| HS-V-28A | 1 | F13 | x | 26 | GB | AO | 0 | ALL | s/t | () | | |
| MS-V-28B | 1 | E13 | x | 26. | GB | AO | 0 | ALL | S/T | () | | |
| MS-V-28C | 1 | F4 | x | 26 | GB | AO | 0 | ALL | S/T | () | | |
| MS-V-28D | 1 | E4 | x | . 26 | GB | AO | 0 | ALL | S/T | () | | |
| MS-V-37 SERIES | 2 | C6-C11 | x · x | 10 | СК | SA | C | CSD | S/E | N/A | TYPICAL OF 18 | 5 |
| MS-V-38 SERIES | 2 | C6-C11 | x x | 10 | CK _ | SA | C | CSD | S/E | N/A | TYPICAL OF 18 | 5 |
| HS-V-67A | 1 | F13 | x | 1-1/2 | GT | мо | C | ALL | S/T | () | · · · · · · | |
| MS-V-678 | 1 | F13 | x | 1-1/2 | GT | мо | C | ALL | S/T | () | | |
| MS-V-67C | 1 | F4 | x | 1-1/2 | GT | MO | C | ALL | S/T | () | | |

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| Valve Number | Class | Coordinates | Valve <u>Category</u> A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|-------------|-------------------------------------|----------------|---------------|------------------|--------------------|----------------|------------------------|----------------|-----------|---------------------------|
| MS-V-67D | 1 | D4 | x | 1-1/2 | GT | мо | C | ALL | S/T | () | | - |
| MS-RV-1A | 1 | F10 | x | 6 | S/R | AO/SA | C | REFUEL | BENCII TEST | N/A | | |
| MS-RV-1B | 1 | E11 | x | 6 | S/R | A0/SA | C | REFUEL | BENCH TEST | N/A | | |
| MS-RV-1C | 1 | Fő | x | 6 | S/R | A0/SA | С | REFUEL | BENCH TEST | N/A | | |
| MS-RV-1D | 1 | E7 | X | 6 | S/R | AO/SA | ¢, | REFUEL | BENCH TEST | N/A | | |
| MS-RV-2A | 1 | F 10 | X | 6 | s/Ŕ | A0/SA | C | REFUEL | BENCH TEST | N/A | | |
| MS-RV-2B | 1 | E10 | X | 6 | S/R | AO/SA | C | REFUEL | BENCH TEST | N/A | | |
| MS-RV-2C | 1 | F7 | X | 6 | S/R | A0/SA | C | REFUEL | BENCH TEST | N/A | | |
| MS-RV-20 | 1 | £7 | X | 6 | S/R | A0/SA | C | REFUEL | BENCII TEST | N/A | | |
| MS-RV-3A | 1 | F9 | X | 6 | S/R | A0/SA | C | REFUEL | BENCH TEST | N/A | | |
| MS-RV-38 | 1 | Ey | X | 6 | S/R | AO/SA | C | REFUEL | BENCH TEST | II/A | | |
| MS-RV-3C | 1 | F7 | x | 6 | S/R | A0/SA | C | REFUEL | BENCII TEST | N/A | | |
| MS-RV-3D | 1 | E8 | x | 6 | S/R | A0/SA | C | REFUEL | S/E* BENCII TEST | N/A | | |
| MS-RV-4A | 1 | F9 | X | 6 | S/R | A0/SA | C | REFUEL | S7E* BENCH TEST | N/A | ADS VALVE | |
| MS-RV-48 | 1 | E9 | X | 6 | S/R | AO/SA | C | REFUEL | S7E* BENCH TEST | N/A | ADS VALVE | |
| HS-RV-4C | 1 | F8 | x | 6 | S/R | AO/SA | C | REFUEL | S7E* BENCH TEST | N/A | ADS VALVE | |

 Fech Specs require stroking ADS Valves at least every 18 months with Reactor steam dome pressure greater than or equal to 100 psig.

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| System Name <u>MAIN STEAM SYSTEM (MS)</u> | Dwg. No Rev. 25A | Page <u>3</u> of <u>3</u> |
|---|------------------|---------------------------|
| Valva | | |

| Valve Number | Class | Coordinates | Category A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|-------------|---------------------|----------------|---------------|------------------|--------------------|----------------|-----------------------|----------------|-----------|---------------------------|
| MS-RV-4D | 1 | E8 | × | 6 | S/R | A0/SA | C | REFUEL | S/E* BENCH TEST | N/A | ADS VALVE | |
| MS-RV-5B | 1 | E9 | x | 6 | S/R | AO/SA | C | REFUEL | S/E* BENCH TEST | N/A | ADS VALVE | |
| MS-RV-5C | 1 | F8 | x | 6 | S/R | AO/SA | C | REFUEL | S/E* BENCH TEST | N/A | ADS VALVE | |

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* See note on previous page.

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| System Name | REACTO | OR FEEDWATER SYS | Dwg. | No. <u>M529</u> | Rev. 2 | Pag | of <u>1</u> | | | | | | |
|-----------------|--------|------------------|-------|-------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|----------|---------------------------|
| Valve Number | Class | Coordinates | . Cat | alve Legory 3 C D | Size Inches | Valve Type | Actuator Type | Hormal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| RFW-V-IUA | 1 | G12 | X | x | 24 | СК | SA | 0 | CSD | S/E | H/A | | 6 |
| RFW-V-108 | 1 | GS | x | x | 24 | СК | SA | 0 | CSD | S/E | N/A | <u> </u> | 6 |
| RFW-V-32A | 1 | G13 | X | x | 24 | CK | AO | 0 | CSD | S/E | N/A | | 6 |
| RFH-V-328 | 1 | G5 | x | x - | 24 | СК | AO | 0 | CSD | S/E | N/A | | 6 |
| RFH-V-65A | 1 | G13 | 2 | { | 24 | GT | MO | 0 | CSD | s/T | () | | 6 |
| RFW-V-65B | 1 | G4 | x | { | 24 | GT | MO | 0 | CSD | S/T | () | | 6 |

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| System Name | REACTO | R RECIRCULATION | N COOLIN | G (RRC, | HY) | Dwg | . No. <u>M53</u> | 0 <u>Rev.</u> | 23A | | | Page <u>1</u> | of <u>2</u> |
|-----------------|--------|-----------------|----------|---------------------|----------------|---------------|------------------|---------------------|----------------|-------|----------------|---------------|---------------------------|
| Valve Number | Class | Coordinates | - Cat | lve egory C D | Size Inches | Valve Type | Actuator Type | Normal, Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| RRC-V-13A | . 2 | C12 | x | x | 3/4 | СК | SA | 0 | REFUEL | S/E | N/A | | 7 |
| RRC-V-13B | 2 | 812 | x | x | 3/4 | CK | SA | 0 | REFUEL | S/E | N/A | | 7 |
| RRC-Y- 16A | 2 | C14 | X | | 3/4 | GL | MO | 0 | REFUEL | S/T | () | • | 7 |
| RRC-V-168 | 2 | B14 | x | | 3/4 | GT | MO | 0 | REFUEL | S/T | () | | 7 |
| RRC-V-19 | 1 | FII | x | ·= | 3/4 | SV | SOL | 0 | ALL | S/E | N/A | | ۱ |
| RRC-V-20 | • 1 | F12 | X | | 3/4 | SV | SOL | 0 | ALL | . S/T | () | | 1 |

| System Name | PREACTO | R RECIRCULATION | COOLING (RRC, HY | <u>')</u> | Dwg. | NoM | <u>530 r</u> | ev. 23A | | • | Page 2 | of <u>2</u> |
|-----------------|---------|-----------------|------------------------------|----------------|----------------|------------------|--------------------|----------------|------|------------------|----------|---------------------------|
| Valve Number | Class | Coordinates | Valve Category A B C D | Size Inches | 'Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| HY-V-18A | 2 | E13 | X | 3/4 | SV | SOL | 0 | CSD | S/E | N/A | | 1, 10 |
| HY-V- 18B | 2 | E13 | X | 3/4 | SV | SOL | 0 | CSD | S/E | N/A | <u> </u> | 1, 10 |
| HY-V-19A | 2 | E4 | X | 1/4 | SV | SOL | 0 | CSD | S/E | N/A | | 1, 10 |
| 11Y-V-198 | 2 | E4 | x | 1/4 | SV | SOL | 0 | CSD | S/E | N/A [.] | | • 1, 10 |
| HY-V-20A | 2 | E4 | X | 1/4 | SV | SOL | 0 | CSD | S/E | N/A | | 1, 10 |
| HY-V-208 | 2 | E4 | X | 1/4 | . SV | SOL | 0 | CSD | S/E | N/A | | 1, 10 |

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Page 4-33 Rev. O

| System Name | e <u>FLOOR</u> | DRAIN RADIOACTI | VE (FDR) | | Dwg. | No. <u>M539</u> | Rev. 3 | 2A | | Pag | e <u>1</u> | of <u>1</u> |
|-----------------|----------------|-----------------|-------------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|------------|---------------------------|
| | | | | • | • | | | | | | | |
| Yalve Number | Class | Coordinates | Valve <u>Category</u> A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| FUR-V-3 | 2 | D6 | X | 3 | Gſ | AO | 0 | ALL | S/T | () | | |
| FDR-V-4 | 2 | 06 | x | 3 | GT | AO | 0 | ALL | S/T | () | | |

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| System Name | EQUIPM | ENT DRAIN RADIO. | ACTIVE (EDR) | | Dwg. | No. <u>M537</u> | Rev. 2 | 1 | <u></u> , | Pag | je <u> </u> | of <u>l</u> |
|-----------------|--------|------------------|------------------------------|----------------|----------------|------------------|--------------------|----------------|-----------|----------------|-------------|---------------------------|
| Valve Number | Class | Coordinates | Valve Category A B C D | Size Inches | Va Ive Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| EDR-V-19 | 2 | Da | x | 3 | GT | AO | 0 | ALL | S/T | () | | r. |
| EDR-V-20 | 2 | DY | x | 3 | GT | AO | 0 | ALL | S/T | () | | ····· |

Page 4-35 Rev. O

| Valve Number | Class | Coordinates | Va Cato A B | lve eqory C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For <u>Relief</u> |
|-----------------|-------|-------------|-------------------|---------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|-------|----------------------------------|
| CSP-V-5 | 2 | Co | x | | 24 | 8F | AO | C | ALL | S/T | () | NC/FO | |
| CSP-V-6 | 2 | B14 | x | | 24 | BF | ٨٥ | C | ALL | S/T | () | NC/FO | |
| CSP-V-7 | 2 | B6 | x | x | 24 | СК | A0/SA | С | ALL | S/E | N/A | | |
| CSR-4-8 | 2 | 815 | x | X | 24 | CK | AO/SA | C | ALL | S/E | N/A | | |
| CSP-V-9 | 2 | 86 | X | | 24 | BF | AO | C | ALL | S/T | () | NC/FO | |
| CSP-V-10 | 2 | B6 | x | X | 24 | CK | A0/SA | C | ALL | S/E | N/A | | |
| CEP-V-18 | 2 | J13 | x | | 2 | GT | AO | 0 | ALL | S/T | () | NO/FC | |
| CEP-V-2B | 2 | J13 | x | | 2 | GT . | AO | 0 | ALL | s/t | () | NO/FC | |
| CEP-V-3B | 2 | C14 | × | I | 2 | GŢ | AU | 0 | ALL | s/r | () | NO/FC | |
| CEP-V-4B | .2 | C14 | x | | 2 | GT | AO | 0 | ALL | S/T | () | NO/FC | |
| CVB-V-IA | 2 | 812 | x | X | 24 | СК | A0/SA | C | ALL | S/E | N/A | | |
| CV8-V-18 | 2 | 812 | x | X · | 24 | СК | A0/SA | С | ALL | S/E | N/A | | <u></u> |
| CVB-V-1C | 2 | B12 | x | X | 24 | СК | A0/SA | С | ALL | S/E | N/A | | |
| CV8-V-1D | 2 | 812 | x | X | 24 | CK | AO/SA | С | ALL | S/E | N/A | | |
| CV8-V-1E | • 2 | 811 | x | X | 24 | СК | A0/SA | C | ALL | S/E | N/A | | |
| CVB-V-IF | 2 | 811 | X | x | 24 | ск Ск | AO/SA | c | ALL | S/E | N/A | | |

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| Valve Number | Class | Coordinates | Va Cat A B | lve egory C D | Size Inches | Vatve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|-------------|------------------|---------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|-------|---------------------------|
| CVB-V-1G | 2 | 611 | x | x | 24 | СК | AO/SA | C | ALL | S/E | N/A | | <u></u> |
| CVB-V-111 | 2 | B11 | x | x | 24 | СК | A0/SA | C | ALL | S/E | N/A | | |
| CV8-V-1J | 2 | By | x | x | 24 | СК | AO/SA | C | ALL | S/E | N/A | | |
| CV8-V-1K | 2 | 89 | x | x | 24 | СК | A0/SA | C | ALL | S/E | N/A | | <u>.</u> |
| CVB-V-IL | 2 | 88 | x | x | 24 | CK | A0/SA | С | ALL | S/E | N/A | | |
| CVB-V-1M | 2 | B8 | x | x | 24 | СК | A0/SA | C | ALL | S/E | N/A | | |
| CVB-V-1N | 2 | 88 | x | x | 24 | СК | AO/SA | C | ALL | S/E | - N/A | | |
| CVB-V-1P | 2 | 88 | x | x | 24 | CK | A0/SA | C | ALL | .S/E | N/A | | |
| CVB-V-1Q | 2 | 87 | x | x | 24 | CK | A0/SA | C | ALL | S/E | | | |
| CVB-V-IR | 2 | 87 | x | x | 24 | CK | A0/SA | C | ALL | S/E | N/A | | |
| CVB-V-1S | 2 | B7 | x | x | 24 | CK | A0/SA | С | ALL | S/E | N/A | | |
| CV8-V-1T | 2 | 87 | x | x | 24 | СК | AU | C | ALL | S/E | N/A | | |
| PI-VX-250 | 2 | F13 | x | | 1 | SV | SOL | 0 | ALL | S/E | N/A | | ` 1 |
| PI-VX-251 | 2 | F13 | x | | 1 | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| PI-VX-253 | 2 | F13 | X | | 1 | SV | SOL | 0 | ALL | S/E | N/A | | 1 |

Dwg. No. M543

Rev. 21

System Name PRIMARY CONTAINMENT COOLING & PURGE (CVB)

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| System Name | PR IMAR | Y CONTAINMENT C | OOLING & PURGE | (CVB, PI) | Dwg. | No. <u>M543</u> | Rev. 21 | ··· | | Ра | ge <u>3</u> | of <u>3</u> |
|-----------------|---------|-----------------|------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|--|---------------------------|
| Valve Humber | Class | Coordinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| PI-VX-256 | 2 | F7 | x | 1 | SV | SOL | 0 | ALL | S/E | N/A | | ۱ |
| P1-VX-257 | 2 | F7 | x | } | SV | SOL | 0 | ALL | S/E | N/A | ······································ | . 1 |
| PI-VX-259 | 2 | F7 | x | 1 | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| UN-NUMBERED | 2 | F12 | x x |) | CK | SA | C | ALL | S/E | N/A | HAVE POSITI | ON |
| UN-NUMBERED | 2 | f7 | x x | 1 | CK | SA | C | ALL | S/E | H/A | INDICATION | |
| PI-VX-262 | 2 | E13 | x | 1 | SV | SUL | 0 | ALL | S/E | N/A | | 1 |
| PI-VX-263 | 2 | E13 | X | 1 | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| P1-VX-264 | 2 | E13 | x | <u></u> 1 | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| PI-VX-265 | 2 | E14 | X | 1 | SV | SOL | 0 | ALL | S/E | N/A | ¥ | 1 |
| PI-VX-266 | 2 | E7 | X |] | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| P[-¥X-267 | 2 | E7 | X |) | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| P1-VX-268 | 2 | Ε7 | x | 1 | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| PI-VX-269 | 2 | E6 | X |) | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
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| System Hame | CONTAL | IMENT ATMOSPHER | E CONTROL (CAC |) | Dwg. | No. <u>M554</u> | Rev. 1 | 4 | | Pag | e <u> </u> | of <u>2</u> |
|-------------------|----------|-----------------|-------------------|--------|-------|-----------------|----------|--------|------------|--------|------------|-----------------|
| ACCIDENT Valve | MITIGATI | <u> </u> | Valve Category | Size | Valve | Actuator | Norma I | Test | | Stroke | | Requests For |
| Number | Class | Coordinates | A B C D | Inches | Туре | Туре | Position | During | Test | Time | Notes | Relief |
| CAC-V-1A | 2 | F15 | X | 2 | AID | HO | C | ALL | s/t | () | | |
| CAC-V-18 | 2 | Fl | x | 2 | DIA | HO | C | ALL | s/t | () | | |
| CAC-V-2 | 2 | G10 | x | 4 | GT | MO | C | ALL | s/t | () | | • |
| CAC-V-2A | 2 | F12 | X | 4 | DIA | HO | С | ALL | S/T | () | | |
| CAC-V-2B | 2 | F5 | x | 4 | DIA | HO | С | ALL | S/T | () | | |
| CAC-V-4 | 2 | EIU | X | 4 | GT | MO | C | ALL | s/t | () | | |
| CAC-V-6 | 2 | H10 | x | 4 | GT | MO | C | ALL | S/T | () | | • |
| CAC-V-8 | 2 | D10 | x | 4 · | GT | MO | C | ALL | s/r | () | | |
| CAC-V-11 | 2 | G6 | x · | 4 | GT | MO | C | ALL | S/T | () | | |
| CAC-V-13 | 2 | E6 | x | 4 | GT | MO | C | ALL | S/T | () | | |
| CAC-V-15 | 2 | 116 | x | 4 | GT | мо | C | ALL | s/t | () | | |
| CAC-V-17 | 2 | D6 | X | 2-1/2 | GI | MЮ | C | ALL | S/T | () | | |
| CAC-V-318A | 2 | 012 | x | 1 | GT | MAN | С | REFUEL | PUS IND | N/A | | |
| CAC-V-3188 | 2 | 012 | x | 1 | GT | MAN | C | REFUEL | POS IND | N/A | ٩ | |
| CAC-FCV-1A | 2 | H10 | X | 4 | 68 | HO | C | ALL | S/T | () | | |

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| Valve Number | Class | Coordinates | Valve <u>Category</u> A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|-------------|-------------------------------------|----------------|---------------|------------------|--------------------|----------------|---------------|----------------|---------|---------------------------|
| CAC-FCV-1B | 2 | 116 | x | 4 | 68 | HO | C | ALL | S/T | () | | - |
| CAC-FCV-2A | 2 | GIO | x | 4 | GB | 110 | C | ALL | s/t | () | | |
| CAC-FCV-2B | 2 | 66 | X | 2-1/2 | GB | 110 | C | ALL | S/T | () | <u></u> | |
| CAC-FCV-3A | 2 | D10 | x | 2-1/2 | GB | HO | C | ALL | S/ľ | () | | |
| CAC-FCV-38 | 2 | DG | x | 2-1/2 | GB | HO | C | ALL | S/T | () | | |
| CAC-FCV-4A | 2 | FIU | x | 2-1/2 | 68 | 110 | C | ALL | .S/T | () | | |
| CAC-FCV-48 | 2 | E6 | X | 2-1/2 | 68 | HO | C | ALL | S/T | () | | |
| CAC-FCV-5A | 3 | F14 | X |) | GB | 110 | C | ALL | S/T | () | | • |
| CAC-FCV-5B | 3 | F2 | x |) | 68 | 110 | C | ALL | S/T | () | | |
| CAC-FCV-6A | 2 | G12 | X | 2 | 68 | 110 | C | ALL | S/T | () | | |
| CAC-FCV-6B | 2 | G4 | X | 2 | 68 | HO | C | ALL | S/T | () | | |
| CAC-RV-63A | 3 | ` E12 | X | 2 x 2 | R¥ | SA | C | REFUEL | BENCH TEST | N/A | | |
| CAC-RV-638 | 3 | E4 | x | 2 x 2 | RV | SA | C | REFUEL | BENCH TEST | N/A | | <u> </u> |
| CAC-RV-65A | 3 | 013 | X | 1 1/2 x 3 | RV | SA | C | REFUEL | BENCH TEST | N/A | | |
| CAC-RV-658 | 3 | 04 | x | 1 1/2 x 3 | RV | ŚΛ | C | REFUEL | BENCH TEST | N/A | | |

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| System Name CONTAINMENT INSTRUMENT AIR (CIA) | Dwg. No <u>M55</u> | 56 Rev. 13A | Page 1 | of |
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|--|--------------------|-------------|--------|----|

| Valve <u>Hu</u> mber | Class | Coordinates | Ca | alve Itegory B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | llotes | Requests For Relief |
|-------------------------|-------|-------------|----|--------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|---|---------------------------|
| CIA-V-20 | 2 | JG | x | | 1/2 | GB | MO | 0 | ALL | S/1 | () | | |
| CIA-V-2] | 2 | J6 | | x x | 1/2 | CK | SA | . 0 | REFUEL | `S/E | N/A | - <u></u> | 3, |
| CIA-V-24 SERIES | 2 | H4-K4 | X | x | 1/2 | СК | SA | С | REFUEL | S/E | N/A | TYP. OF 4 | 3 |
| CIA-V-30A | 2 | 116 | x | | 1/2 | 68 | MO | 0 | ALL | S/T | () | | |
| CIA-V-JUB | 2 | FG | X | | 1/2 | GB | Ю | 0 | ALL | S/T | () | ·· <u>······</u> ···························· | |
| CIA-V-31A | 2 | H6 | | x x | 1/2 | СК | SA | 0 | REFUEL | S/E | N/A | | 3 |
| CIA-V-31B | 2 | F6 | | x x | 1/2 | CK | SA | 0 | REFUEL | S/E | N/A | | 3 |
| CIA-V-36 SERIES | 2 | 84-H4 | x | X | 1/2 | СК | SA | C | REFUEL | S/E | N/A | TYP. OF 18 | 3 |
| CIA-V-39A | 3 | H7 | | x | 1/2 | SV | SOL | 0 | ALL | S/E | N/A | | 1 |
| CIA-V-39B | 3 | H7 | | x | 1/2 | sv | SOL | 0 | ALL | S/E | N/A | | 1 |
| CIA-V-40 SERIES | 2 | 115-85 | x | X | 1/2 | CK | SA | 0 | REFUEL | S/E | N/A | TYP. OF 7 | 3 |
| CIA-V-41A | 3 | 117 | | x x | 1/2 | CK | SA | 0 | REFUEL | S/E | N/A | | 3 |
| CIA-V-41B | 3 | H7 | | x x | 1/2 | CK | SA | 0 | REFUEL | S/E | N/A | | • 3 |

| System Name | MAIN S | TEAM LEAKAGE CO | NTROL (MSLC) | | Dwg. | No. <u>M557</u> | <u>Rev. 7</u> | <u>A</u> | | Pag | je <u> </u> | of <u>1</u> |
|-----------------|--------|-----------------|------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|-------------|---------------------------|
| Valve Number | Class | Coordinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| MSLC-V-1A | 2 | B7 | x | 1-1/2 | GT | MO | C | ALL | s/t | () | | |
| MSLC-V-IB | 2 | 85 | X | 1-1/2 | GT | мо | C | ALL | s/t | () | | , |
| MSLC-V-1C | 2 | D7 | x | 1-1/2 | GT . | MO | C | ALL | s/t | () | | |
| MSLC-V-1D | 2 | D5 | x | 1-1/2 | GT | 140 | C | ALL | S/T | () | | |
| MSLC-V-2A | 1 | C8 | X | 1-1/2 | GF | MO | C | ALL | S/T | () | | 2 |
| MSLC-V-2B | 1 | C8 | X | 1-1/2 | GT | MO | C | ALL | S/T | () | | |
| MSLC-V-2C | 1 | E8 | X | 1-1/2 | GT | MO | С | ALL | S/T | () | | ¥ |
| MSLC-V-2D | 1 | E 8 | x | 1-1/2 | Gt | мо | C | ALL | S/T | () | | ····· |
| MSLC-V-3A | 1 | Су | x | 1-1/2 | GT | МО | C | ALL | s/t | () | | |
| MSLC-V-3B | 1 | C8 | X | 1-1/2 | GT | MO | C | ALL | s/t | () | | |
| MSLC-V-3C | 1 | E8 | x | 1-1/2 | GT | MO | C | ALL | S/T | () | | |
| MSLC-V-3D | 1 | E8 | x | 1-1/2 | GT | мо | C | ALL | S/T | () | | |
| MSLC-V-4 | 2 | J5 | x | 1-1/2 | GT | MO | C | ALL | s/t | () | | |
| MŞLC-V-5 | 2 | J5 | x | 1-1/2 | GT | МО | C | ALL | s/t | () | | |
| MSLC-V-Y | 2 | 115 | x | 1-1/2 | Gľ | MO | C | ALL | S/T | () | | |
| MSLC-V-10 | 2 | 115 | X | · 1-1/2 | GT | MO | C | ALL | s/t | () | | |

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4.5 <u>Requests for Relief from Certain Code Requirements</u>

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.

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GENERAL RELIEF REQUEST

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| System | Various . |
|--------------------------------------|--|
| Valve(s) | Accessible IWV active valves with position indication. |
| ASME Classification | Code Class: Various Category: Various |
| Function | Various · |
| Code Testing Requirement | IWV-3300 implies that valves which are accessible during plant operation should have their remote position indication verified more frequently than inaccessible valves. |
| Basis for Relief | The Summer 1979 Addenda to ASME Section XI, Subsection IWV (1977 Edition) succinctly requires <u>all</u> valves with remote position indication to have such indication verified biannually. Accessibility is not relevant in the ammended code. |
| Alternate Testing to be Performed | Valves with remote position indicators shall be observed at least once every two years to verify that valve operation is accurately indicated. |

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REQUEST FOR RELIEF NO. RV-1

| System | Various . |
|------------------------|--|
| Valves(s) | |
| ASME Classification | Solenoid valves affected by this relief request are identified in TABLE A. |
| Function | · |

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| Code lesting | | 1. | Timing of valve stroke (IWV-3413) |
|--------------|----|----|---|
| Requirement. | •• | 2. | Position indication verification (IWV-3300) |

| Bases for | 1. | Solenoid valves are very rapid acting, with stroke |
|-----------|----|---|
| Relief | | times much less than one second. It is meaningless to |
| | | measure their stroke times "to the nearest second". |
| | 2 | Solonoid valves do not have now positive monities |

 Solenoid valves do not have any positive position indication.

Alternate Testing 1. Valves will be full stroke tested. Satisfactory operation of equipment downstream of the solenoid valve will constitute satisfactory valve operation.

RV-1

TABLE A

| Valve | Code Class | Category | Function |
|------------|------------|----------|---|
| HY-V-17A | 2 | A | Hydraulic supply for Reactor |
| HY-V-17B | 2 | А | Recirculation Flow Control Valves |
| HY-V-18A | 2 | А | |
| HY-V-18B | 2 | А | |
| HY-V-19A | 2 | А | |
| HY-V-198 | 2 | А | |
| HY-V-20A | 2 | А | |
| HY-V-208 | 2 | A | • |
| RRC-V-19 | 1 | A | Reactor recirculation sampling Iso valve. |
| RRC-V-20 | ۱ | A | Reactor recirculation sampling Iso valve. |
| CIA-V-39A | 2 | В | Cross ties between air and nitrogen |
| CIA-V-39B | 2 | В | headers. |
| D0-V-40A | 3 | 8 | Diesel fuel oil day tank 3A inlet valve |
| DO-V-40B | 3 | 8 | Diesel fuel oil day tank 3B inlet valve |
| DO-V-43 | 3 | В | Diesel fuel oil day tank 3C inlet valve |
| CRD-V-9 | 2 | В | Back-up Scram Valve (Exhaust) |
| CRD-V-110A | 2 | В | Back-up Scram Valve (Air Supply) |
| CRD-V-1108 | 2 | В | Back-up Scram Valve (Air Supply) |

RV-1

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TABLE A (Cont'd)

| Valve | Code Class | Category | Function |
|-----------|------------|----------|---|
| PI-VX-251 | 2 | B | Radiation monitor RAD-RE-12B inlet valve |
| PI-VX-250 | 2 | В | Radiation monitor RAD-RE-12B outlet valve |
| PI-VX-253 | 2 | В | Radiation monitor RAD-RE-12B outlet valve |
| PI-VX-256 | 2 | ₿ | Radiation monitor RAD-RE-12A inlet valve |
| PI-VX-257 | 2 | В | Radiation monitor RAD-RE-12A inlet valve |
| PI-VX-259 | 2 | В | Radiation monitor RAD-RE-12A outlet valve |
| PI-VX-262 | 2 | A | H_2 , 0_2 monitor inlet and outlet |
| PI-VX-263 | 2 | A. | valves (S-SR-13) |
| PI-VX-264 | 2 | А | |
| PI-VX-265 | 2 | А | |
| PI-VX-266 | 2 | А | H ₂ , O ₂ monitor inlet and outlet |
| PI-VX-267 | 2 | А | valves (S-SR-14) |
| PI-VX-268 | 2 | А | , |
| PI-VX-269 | 2 | А | |
| CAS-V-453 | 2 | Α. | Air supply to drywell - wetwell down- |
| | | | comer vacuum breakers. |
| RHR-V-60A | 2 | В | Loop A sample (inboard) |
| RHR-V-60B | 2 | 8 | Loop B sample (inboard) |
| RHR-V-75A | 2 | В | Loop A sample (outboard) |
| RHR-V-75B | 2 | В | Loop B sample (outboard) |
| RHR-V-182 | 2 | В | Drain Vv between Valves isolating Service Water from RHR |

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RV-1

TABLE A (Cont'd)

| Valve | Code Class | Category | Function |
|----------|------------|----------|--|
| SW-V-201 | 3 | В | Cooling Water to H_2 , O_2 analyzers |
| SW-V-204 | 3 | В | S-SR-13, 14. |
| SW-V-206 | 3 | В | |
| SW-V-209 | 3 | В | |
| SW-V-210 | 3 | В | • |
| SW-V-211 | 3 | В | |
| SW-V-212 | 3 | В | |
| SW-V-213 | 3 | В | |

REQUEST FOR RELIEF NO. RV-2

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| System | Various Emergency Core Cooling Systems |
|--------------------------------------|--|
| Valve(s) | |
| ASME Classification | Valves affected by this relief request are identified in TABLE B. |
| Function | |
| Code Testing Requirement | Quarterly valve exercising (IWV-3411) |
| | |
| Bases for Relief | Valves cannot be opened against the differential pressure which exists across them during power operations. Reactor coolant system pressure holds the valves closed. |
| | Valves are located inside containment and cannot be temporarily isolated to allow testing. |
| | |
| Alternate Testing to be Performed | Valve exercising will be performed during cold shutdown. |

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TABLE B

| Valve | Code Class | Category | Function |
|-----------|------------|----------|---|
| | | | × • • |
| HPCS-V-5 | 1 | A-C | HPCS discharge to reactor vessel. |
| LPCS-V-6 | ١ | A-C | LDCS discharge to reactor vessel. |
| RHR-V-41A | 1 | A-C | RHR loop A discharge to reactor |
| RHR-V-418 | 1 | A-C | RHR loop B discharge to reactor |
| RHR-V-41C | , 1 | A-C | RHR loop C discharge to reactor |
| RHR-V-50A | ١ | A-C | RHR loop A discharge to recirculation pump discharge. |
| RHR-V-50B | ۱ | A-C | RHR loop B discharge to recirculation pump discharge. |
| RCIC-V-66 | 1 | A-C | RCIC discharge to reactor vessel head. |

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REQUEST FOR RELIEF NO. <u>RV-3</u>

| System | Containment Instrument Air | | |
|--------------------------------------|--|--|--|
| Valve(s) | | | |
| ASME Classification | Valves affected by this relief request are identified in TABLE C. | | |
| Function | | | |
| Code Testing Requirement | Quarterly testing (IWV-3412) Position indication verification (IWV-3522) | | |
| Bases for Relief | Valves are located inside containment and cannot be accessed during power operations. There is no way to remotely isolate the valves and observe the pressure decay of the accumulators. There is no local or remote position indication for these check valves. WNP-2 containment will be inerted with nitrogen during power operations. | | |
| Alternate Testing to be Performed | Proper valve opening will be verified during refueling outages. This can be done by partly bleeding off accumulator pressure and verifying that the pneumatic supply can repressurize the accumulator. Where redundant pneumatic supplies exist, each will be verified separately. During refueling outages pressure decay tests will be performed for the accumulators associated with the Main Steam Isolation Valves and with the Main Steam Safety/Relief Valves. Successful completion of accumulator pressure decay testing will constitute acceptable indication of check valve closure. | | |

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TABLE C

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| Valve | Code Class | Category | Function |
|---------------|------------|----------|---|
| CIA-V-3ÍA | 2 | 8-C | N ₂ supply to ADS valves (0/C) |
| CIA-V-31B | 2 | B-C | |
| CIA-V-41A | 2 | 8-C | Cross tie between air and N ₂ line |
| CIA-V-41B | 2 | B-C | 2 |
| CIA-V-40 seri | es 2 | A-C | N ₂ to ADS Accumulators (inside containment |
| CIA-V-36 seri | es 2 | A-C | Air supply to Main Steam Relief Valves' Accumulators (inboard check valve) |
| CIA-V-24 seri | es 2 | A-C | Air supply to Main Steam Isolation Valves (Inboard) |
| CIA-V-21- | 2 | B-C | Instrument air supply to containment (outboard check valve). |

REQUEST FOR RELIEF NO. RV-4

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| System | Standby Liquid Control (SLC) | | | |
|-----------------------------|--|--|--|--|
| Valve(s) | SLC-V-6, SLC-V-7 | | | |
| ASME Classification | Code Class: 1 Category: A-C | | | |
| Function | Standby Liquid Control discharge to reactor vessel. | | | |
| Code Testing Requirement | Quarterly exercising (IWV-3521) Cold shutdown exercising (IWV-3522) | | | |
| Basis for Relief | Valves have no operator with which they may be stroked. Exercising the valves require the initiation of the | | | |

 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 Class D explosive activated valves.

| Alternate Testing to be Performed | At least once per 18 months, one of the Standby Liquid Con- |
|--------------------------------------|---|
| | trol 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. |

REQUEST FOR RELIEF NO. RV-5

| System | Main Steam | | |
|-----------------------------|--|--|--|
| Valve(s) | MS-V-37 series (18 total), MS-V-38 series (18 total) | | |
| ASME Classification | Code Class: 1 Category: A-C | | |
| Function | Vacuum Breakers for main steam relief line downcomers. | | |
| Code Testing Requirement | Quarterly exercising (IWV-3521) | | |
| Bases for Relief | Valves have no power operator by which they may be stroked remotely. Valves are located inside primary containment and, consequently, are inaccessible during power operations. | | |

Alternate Testing to be Performed Valves are accessible during cold shutdown and will be exercised at that time in accordance with the requirements of paragraph IWV-3522.

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REQUEST FOR RELIEF NO. RV-6

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| System | Reactor Feedwater (RFW) | | |
|--|---|--|--|
| Valve(s) ASME Classification Function | Valves affected by tnis relief request are identified in TABLE C. | | |
| Code Testing Requirement | Quarterly exercising (IWV-3411, IWV-3521) | | |
| Bases for Relief | 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. Category A-C valves are held open by feedwater flow and cannot be closed during power operations. | | |

Alternate Testing Valves will be exercised during cold snutdown. to be Performed

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RV-6

TABLE C ·

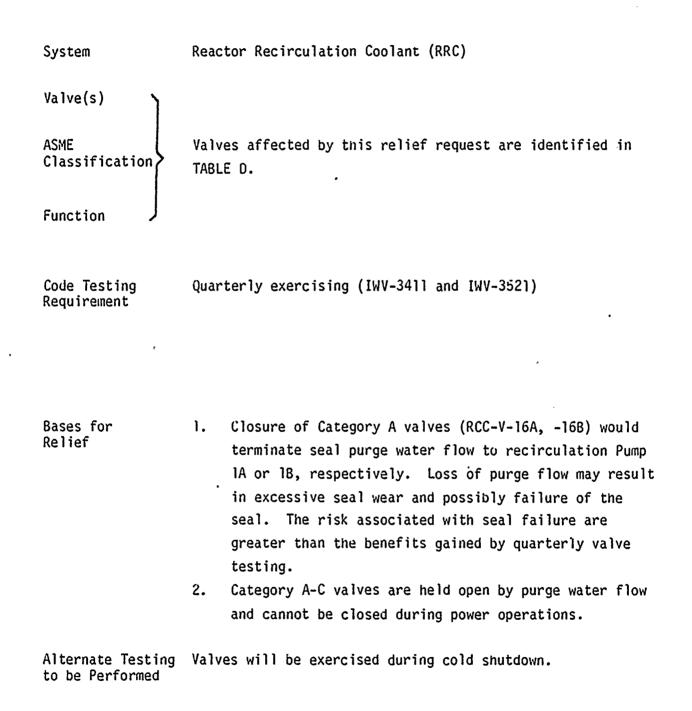
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| Valve | Code Class | Category | Function |
|-----------|------------|----------|----------------------------------|
| RFW-V-10A | 1 | A-C | Reactor Feedwater inboard check |
| RFW-V-10B | ۱ | A-C | valves. |
| RFW-V-32A | 1 | A-C | Reactor Feedwater outboard check |
| RFW-V-32B | 1 | A-C | valves. |
| RFW-V-65A | 1 | А | Reactor Feedwater stop valves. |
| RFW-V-65B | 1 | А | |



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REQUEST FOR RELIEF NO. RV-7



RV-7

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TABLE D

| Valve | Code Class | Category | Function |
|-----------|------------|----------|--|
| | | | |
| RRC-V-13A | 2 | A-C | Recirculation pumps' seal purge |
| RRC-V-13B | 2 | A-C | line inboard isolation valve. |
| RRC-V-16A | 2 | А | Recirculation pumps' seal purge |
| RRC-V-16B | 2 | А | water supply line outboard isola- tion valve. |



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REQUEST FOR RELIEF NO. RV-8

 System
 Reactor Closed Coolant (RCC)

 Valve(s)
 Valves affected by this relief request are identified in TABLE E.

 Function

Code Testing Quarterly exercising (IWV-3411 and IWV-3421). Requirement

Basis for Relief 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. The risks associated with failure of this equipment outweigh any potential benefits derived from quarterly testing of these valves.

Alternate Testing Valves will be exercised during cold shutdown. to be Performed

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* RV-8

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TABLE E

| Valve | Code Class | Category | Function |
|----------|------------|----------|---|
| RCC-V-5 | 2 | A | Isolation valves for closed Cooling water lines. |
| RCC-V-21 | 2 | Α | |
| rcc-v-26 | 2 | A-C | |
| RCC-V-40 | 2 | Α | |

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REQUEST FOR RELIEF NO. RV-9

| System | Control Rod Drive Hydraulic Control Unit (HCU) | | |
|---|---|--|--|
| Valve(s) ASME Classification Function | Valves affected by this relief request are identified in TABLE F. | | |
| Code Testing Requirement | Quarterly exercising (IWV-3411 and IWV-3521) Cold shutdown exercising (IWV-3412 and IWV-3522) Valve timing for scram valves, HCU-V-126 and HCU-V-127 (IWV-3413) | | |
| Bases for Relief | Technical Specifications require that control rods to be tested for operability at least every seven days. Acceptable operation the control rod drive mechanisms during Technical Specifications required testing will constitute acceptable operation of the associated valves. During cold shutdown, control rods will be fully inserted into the core. (On attached sheet) | | |
| Alternate Testing [.] to be Performed | Control Rod Drive Hydraulic Control Unit valves will be tested in accordance with plant Technical Specifications. | | |

RV-9

Bases for Relief (Cont'd)

3. Technical Specifications explicitly state the maximum insertion time for individual control rods and the average scram insertion time for groups of rods. Scram insertion times are measured for 10% of the control rods, on a rotating bases, every 120 days. Since control rod insertion times are very sensitive to scram valve actuation times acceptable insertion time measurement results will constitute acceptable scram valve actuation times.

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TABLE F

| Valve | Code Class | Category | Function |
|------------------------|------------|----------|---|
| HCU-V-114 | 2 | B-C | HCU discharge to scram header reverse flow check valve. |
| HCU-V-115 | 2 | B-C | CRD charging water reverse flow- check-valve. |
| HCU-V-117 HCU-V-118 | 2 2 | B B | Instrument air to scram valves. |
| 10-1-110 | ۷ | D | |
| HCU-V-120 | 2 | В | Control Rod Drive supply to rod |
| HCU-V-121 | 2 | ·В | drive mechanisms (normal |
| HCU-V-122 | 2 | В | operation). |
| HCU-V-123 | 2 | В | |
| HCU-V-126 | 2 | 8 | Control Rod Drive scram valves. |
| HCU-V-127 | 2 | В | |
| HCU-V-137 | 2 | В | Rod drive cooling water reverse flow check valve. |
| HCU-V-138 | 2 | в | Control Rod Drive water reverse [·] flow check valve. |

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REQUEST FOR RELIEF NO. RV-10

| System | Reactor Recirculation Control | | |
|-----------------------------|--|--|--|
| Valve(s) ASME | Valves affected by this relief request are identified in | | |
| Classification > | TABLE G. | | |
| Function J | | | |
| | <i>,</i> | | |
| Code Testing Requirement | Quarterly exercising. (IWV-3411) | | |

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

Alternate Testing Valves will be exercised during cold shutdown. to be Performed

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RV-10

TABLE G

| Valve | Code Class | Category | Function | | |
|----------|------------|--|-------------------------------------|--|--|
| | | ······································ | | | |
| HY-V-17A | 2 | A | Valves provide hydraulic control | | |
| HY-V-178 | 2 | A | fluid to the reactor recircula- | | |
| HY-V-18A | 2 | А | tion flow control valves' hydrau- | | |
| HY-V-18B | 2 | Α. | ' lic operators. Recirculation flow | | |
| HY-V-19A | 2 | А | control valves are RRC-V-60A and | | |
| HY-V-19B | 2 | А | RRC-V-60B. | | |
| HY-V-20A | , 2 | А | | | |
| HY-V-20B | 2 | А | · | | |

REQUEST FOR RELIEF NO. RV-11

System Residual Heat Removal Valve(s) ASME Classification Valves affected by this request are identified in Table H. Function

Code Testing Quarterly exercising (IWV-3411) Requirement

Basis for 1. Valves are interlocked with reactor coolant system Relief 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.

- Over pressurization of the suction line may cause the loss of shutdown RHR cooling capability.
- Interlocks cannot be bypassed with normal control circuits.

Alternate Testing Valves will be exercised during cold shutdowns. to be Performed

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| RV- | 11 |
|-----|----|
|-----|----|

TABLE H

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| Valve | Code Class | Category | Function |
|-----------|------------|----------|--|
| RHR-V-8 | 1 | A | Isolation valves in RHR shutdown |
| RHR-V-9 | 1 | A | cooling suction line from recir- culation Loop A |
| RHR-V-23 | 1 | A | RHR supply to Vessel head spray |
| RHR-V-53A | ۱. | A | Shutdown cooling return Loop A outboard isolation valve |
| RHR-V-53B | ۱ | А | Shutdown cooling return Loop B outboard isolation valve |

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4.6 Listing of Category A Valves

ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWV defines a "Category A" valve as one "for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of its function". For this type of valve, individual leak rate test will be performed to determine leakage past the valve seat. Tests will be conducted in accordance with the requirements of IOCFR50, Appendix J, Section XI, or both, as indicated on the following table.

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Listing of Category A Valves

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Leak Rate Testing Required

| Valve | Class | Appendix J. | Section XI | Valve Function |
|--|--|--|------------|---|
| RCIC-V-8 RCIC-V-13 RCIC-V-19 | 1 1 2 | X X X | X X | Steam to RCIC Turbine RCIC injection (outboard) RCIC miniflow to Wetwell |
| RCIC-V-31 RCIC-V-63 | 2 1 | X X | X | RCIC suction from Wetwell Steam from Rx to RHR Hx's & RCIC Turbine |
| RCIC-V-64 RCIC-V-66 RCIC-V-68 RCIC-V-69 | 1 1 2 2 | X X X X | X X | Steam to RHR Hx's Vessel head spray Ch.vv Turbine Exhaust to Wetwell Vacuum pump return to |
| RCIC-V-76 RCIC-V-110 RCIC-V-113 | 1 2 2 | X X X | Χ. | Wetwell RCIC-V-63 Bypass valve Turbine Exchange line vacuum breaker Turbino Exchange line |
| | _ | | | Turbine Exchange line vacuum breaker |
| LPCS-V-1 LPCS-V-5 LPCS-V-6 LPCS-FCV-11 LPCS-V-12 | 2 1 1 2 2 | X X X X X | X X | LPCS suction from Wetwell LPCS injection (outboard) LPCS injection (inboard) LPCS Miniflow valve Test line Iso. valve |
| HPCS-V-4 HPCS-V-5 HPCS-V-12 HPCS-V-15 HPCS-V-23 | 1 1 2 2 2 | X X X X X | X X | HPCS injection (outboard) HPCS injection (inboard) HPCS miniflow valve HPCS suction from Wetwell HPCS test return to Wetwell |
| RHR-V-4A RHR-V-4B RHR-V-4C RHR-V-8 RHR-V-9 RHR-V-11A RHR-V-11B RHR-V-16A RHR-V-16B RHR-V-17A RHR-V-17B RHR-V-21 | 2 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | X X X X X X X X X X X X X X | X X | RHR suction from Wetwell RHR suction from Wetwell RHR suction from Wetwell Shutdown cooling suction Valves Condensed steam return from Hx's to Wetwell Drywell spray lines' isolation valves Drywell spray lines' isolation valves Loop C test line return to Wetwell |

Wetwell

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Listing of Category A Valves

Leak Rate Testing Required

| Valve | Class | Appendix J. | Section XI | Valve Function |
|---|--------------------------------------|--|---------------------------------|--|
| RHR-V-23 RHR-V-24A | 1 2 | X X | X | RHR to head spray line Loop A test line return to Wetwell |
| RHR-V-248 | 2 | X | | Loop B test line return to Wetwell |
| RHR-V-27A | 2 | X | | RHR to suppression pool spray header |
| RHR-V-27B | 2 | x | | RHR to suppression pool spray header |
| RHR-V-41A | 1 | х - | х | RHR injection to reactor vessel |
| RHR-V-418 | 1 | х | X | RHR injection to reactor vessel |
| RHR-V-41C | 1 | х | х | RHR injection to reactor vessel |
| RHR-V-42A RHR-V-42B RHR-V-42C RHR-V-50A RHR-V-50B RHR-V-53A RHR-V-53B RHR-FCV-64A RHR-FCV-64B RHR-FCV-64C RHR-FCV-64C RHR-V-123A RHR-V-123B | 2 | X X X X X X X X X X | X X X X X X X | RHR injection Iso. valve RHR injection Iso. valve RHR injection Iso. valve Shutdown cooling return check valves Shutdown cooling return isolation valves RHR pump miniflow valves RHR pump miniflow valves RHR pump miniflow valves RHR pump miniflow valves RHR-V-50A Bypass RHR-V-50B Bypass |
| RHR-V-124A RHR-V-1248 RHR-V-125A RHR-V-125B RHR-V-134A RHR-V-134B | 2 2 2 2 2 2 2 2 | X X X X X X | ~ | RCIC steam to RHR Hx steam line drip pot drain valves Hz recombiner scrubber drains to Wetwell |
| SLC-V-4A SLC-V-4B SLC-V-6 SLC-V-7 | 1 1 1 1 | X X X X | X X X X | SLC pump explosive-actuated discharge valve SLC injection line isolation valves |
| RWCU-V-1 RWCU-V-4 |]] | x x | X X | Cleanup Water Pump suction line isolation valves |

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Listing of Category A Valves

Leak Rate Testing Required

| Valve | Class | Appendix J. | Section XI | Valve Function |
|--|--|--------------------------------------|----------------------------|---|
| RCC-V-5 RCC-V-21 RCC-V-26 RCC-V-40 | 2 2 2 2 | X X X X | | Closed cooling water supply to containment equipment isolation valves |
| FPC-V-153 FPC-V-154 FPC-V-156 | 2 2 2 | X X X | | Suppression pool cleanup outlet and return line isolation valves |
| MS-V-16 MS-V-19 | 1 1 | X X | X X | Main steam line drain isolation valves |
| MS-V-22A MS-V-22B MS-V-22C MS-V-22D | 1 1 1 1 | X X X X | X X X X | Main steam lines' inboard isolation valves |
| MS-V-28A MS-V-28B MS-V-28C MS-V-28D | 1 1 1 1 | X X X X | X X X X | Main steam lines' outboard isolation valve |
| MS-V-37 Series MS-V-38 Series | 2 2 | | X X | S/RV discharge downcomer vacuum breakers. |
| MS-V-67A MS-V-67B MS-V-67C MS-V-67D | 1 1 1 1 | X X X X | X X X X | Main steam line drains (outside containment) |
| RFW-V-10A RFW-V-10B RFW-V-32A RFW-V-32B RFW-V-65A RFW-V-65B | 1 1 1 1 1 | X X X X X X | X X X X X X | Feedwater line isolation valves |
| HY-V-17A HY-V-17B HY-V-18A HY-V-18B HY-V-19A HY-V-19B HY-V-20A HY-V-20B | 2 2 2 2 2 2 2 2 2 2 2 2 | X X X X X X X X | | Isolation valves for reactor recirculation flow control valve hydraulic supply |

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Listing of Category A Valves

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Leak Rate Testing Required

| Valve | Class | Appendix J. | Section XI | Valve Function |
|--|--|---------------------------------|------------|--|
| EDR-V-19 EDR-V-20 | 2 2 | X X | | Drywell equipment drain sump discnarge line iso- lation valves |
| FDS-V-3 FDR-V-4 | 2 2 | X X | | Floor drain sump discharge line isolation`valves |
| CEP -V - 1B CEP -V - 2B CEP -V - 3B CEP -V - 4B | 2 2 2 2 | X X X X | | Containment purge exhaust isolation valves |
| CSP-V-5 CSP-V-6 CSP-V-7 CSP-V-8 CSP-V-9 CSP-V-10 | 2 2 2 2 2 2 | x . X X X X X X X X | | Containment purge supply isolation valves |
| CVB-V-1A through CVB-V-1T | 2 | | X | Vacuum breakers for drywell- wetwell down comers. |
| CAC-V-2 CAC-V-4 CAC-V-5 CAC-V-8 CAC-V-11 CAC-V-13 CAC-V-15 CAC-V-17 | 2 2 2 2 2 2 2 2 2 2 2 | X X X X X X X | | H2 recombiner inlet/ exhaust stop valves |
| CAC-FCV-1A CAC-FCV-1B CAC-FCV-2A CAC-FCV-2B CAC-FCV-3A CAC-FCV-3B CAC-FCV-4A CAC-FCV-4B | 2 2 2 2 2 2 2 2 2 2 2 2 | X X X X X X X | | H2 recompiner inlet/ exhaust throttle valves |

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Listing of Category A Valves

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Leak Rate Testing Required

| Valve | Class | Appendix J. | Section XI | Valve Function |
|--|------------------|------------------|------------------|--|
| CIA-V-20 | 2 | X | | Containment instrument air outboard Iso. valve |
| CIA-V-24 | 2 | Х | • | Inboard MSIV Instrument air |
| CIA-V-30A CIA-V-30B | 2 2 | X X | | supply check valve Backup N2 supply to con- tainment Iso. valves (outboard) |
| CIA-V-36 (series) | 2 | X | | Main steam safety/relief valve instrument air |
| CIA-V-40 | 2 | X | | supply check valve N ₂ supply to ADS valves (inboard insolation) |
| MSLC-V-2A MSLC-V-2B MSLC-V-2C MSLC-V-2D | 1 1 1 1 | X X X X | X X X X | MSLC line isolation valve (first off) |
| MSLC-V-3A MSLC-V-3B MSLC-V-3C MSLC-V-3D |]]]] | X X X X | X X X X | MSLC line isolation valve (second off) |

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4.7 <u>Reporting of Valve Inservice Test Results</u>

Records and reports pertaining to Valve Inservice Testing will be maintained according to the intent of Article IWV-6000 of the Code. Valve Operability reference data will be kept in the Valve Operability test result (history) file at the plant.

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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.

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6.0 Flow Diagrams

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The Flow Diagrams used to generate this Program are included in the FSAR. Due to the time required for Program publication, an administrative cut-off date of December 1980 was chosen to "freeze" drawing revisions used for Revision 0 of the Program. However, system design is not expected to change radically, and more current diagrams will be used when the Program is updated.

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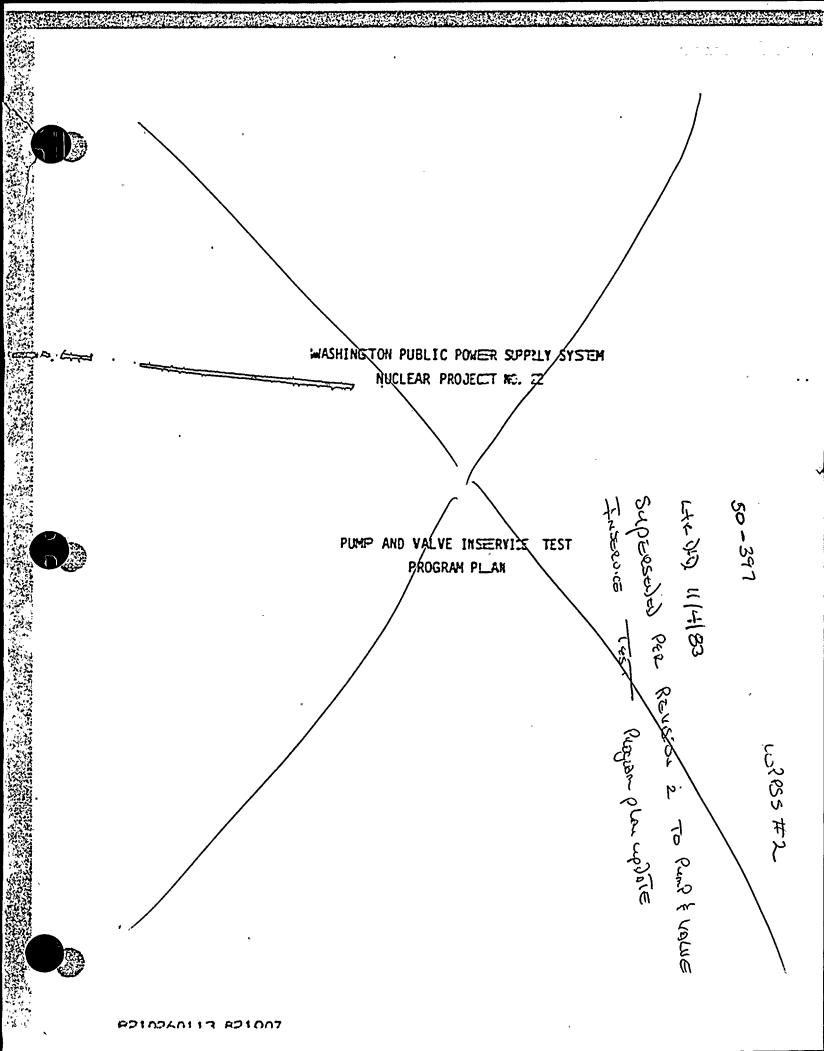
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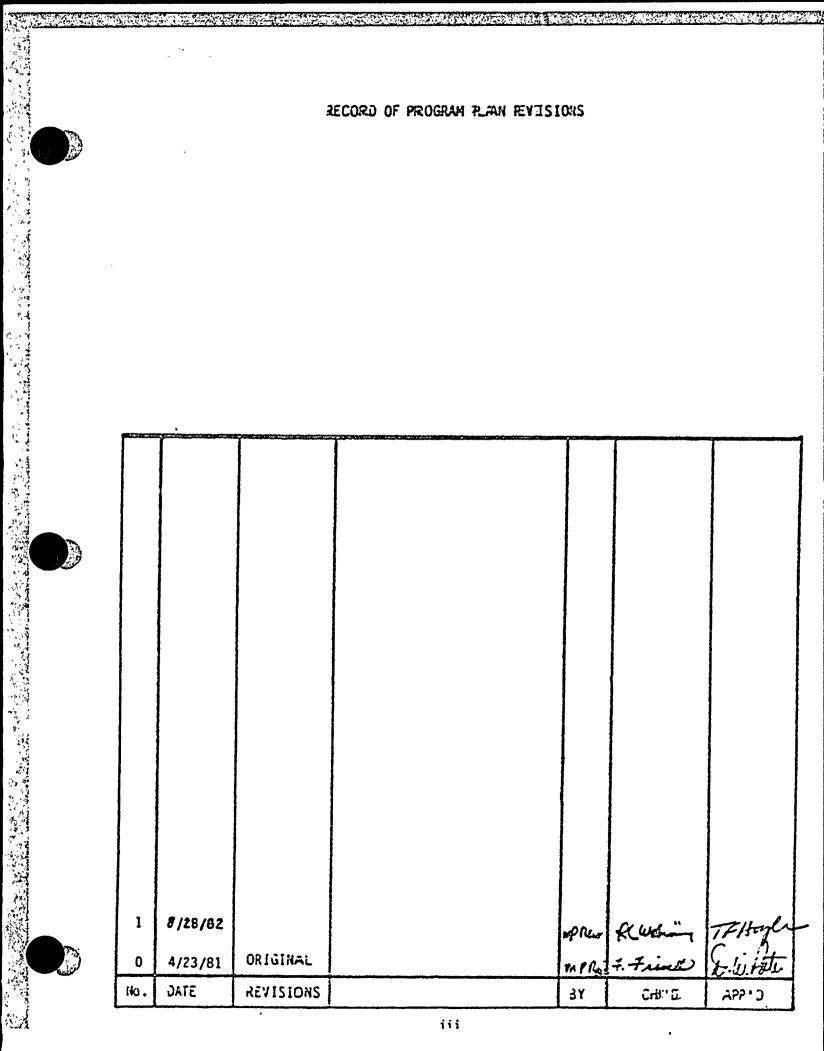
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PUHP AND VALVE INSERVICE TEST PROGRAM PLAN - REV. 1 WASEINGTON PUBLIC POWER SUPPLY SYSTEM NUCLEAR PROJECT NO. 2 Derations Support Ergineering 5/31/52_ late Prepared by 9/1/82 Lead Ergineer, Flant Engineering & Surveillance Approved by 9/1/F2 BALLeater Banager. WhP-2 Enganzering Approved by 9/1/82 Da Reularger for Assistant Director, Generation Engineering Approved by . 91.182 Men-Technical Manager, UNP-2 Reviewed by Dint Manager, WHI-2 9/1/82 Approved by D. Malber Mant CHA Mor for Manager, Operational Quality Assistance 9/1/92 Reviewed by Reviewed by <u>9/3/87</u>

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| Control | * 522 | 12 | | | |
| Reactor Witer | | | | | |
| Cleanup | % 523 | 39 | | | |
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| Water | * 524 | 30 | | | |
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| Cooling | ¥ 525 | 34 | | | |
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| Feedwater | * 529 | 29 | | | |
| Reactor Recirc | | ~ 7 | | | |
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| Equip. Drain | | | | | |
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Parae 1-1 Revision

1.0 INTRODUCTION

This Pump and Valve Inservice Test Program Plan is applicable to the WPPSS Nuclear Project No. 2, hereinsfter referred to as ENP-2. A single unit Boiling Water Reactor (BWR), the power plant is located 11 milles sorth of Richland, Washington, on the tanford 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 drivell/wetwell containment vessel designated Mark II. The pliant rated electricæl octput is 1,094 Male.

This program plan has been prepared as the controlling document giverning Pump and Valve Inservice Testing at WNP-2. The reguirements for Fump and Valve Inservice Testing are outlined in the ASME Boiler and Pressure Vessel Code, Section XI, entitlec "Rules for Enservice Inspection of Nuclear Power Plant Components." The scope of this flan encompasses the testing of ASME Section III Nuclear Class 1, 2 and 3 pumps and valves, as defined by Sub-sections IWP and IWV of ASME Section 31.

The WKP-2 FSAR commits to testing Class 1, 2 and 3 pumps and walves according to the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1977 Edition with Adderda through Samer 1975. However, Revision 1 is written to comply with the requirements of the 1980 Code Edition with addenda through Einter, 1980. This is consistent 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 independent subprograms - the Pump Inservice Test Program and the Valve Inservice Test Program. The development, implementation and administration of these two programs is detailed in subsequent sections (3.0 ard 4.0).



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2.0 TABLE OF COTENTS

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- 2.0 Table of Contents
- 3.0 Pump Inservice Test Program Description
 - 3.1 Program Development Philosophy
 - 3.2 Program Implementation
 - 3.3 Program Administration
 - 3.4 Pump Reference List
 - 3.5 Pump Inservice Test Tables
 - 3.6 Requests for Relief from Certain JP Regirements
 - 3.7 Proposed Pump Test Flow Paths
 - 3.8 Records of Inservice Tests

4.0 Yalve Inservice Test Program Description

- 4.1 Program Development Philosophy
- 4.2 Program Implementation
- 4.3 Program Administration
- 4.4 Valve Test Tables
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3.0 WNP-2 Pump Inservice Test Program

3.1 Program Development Philosophy

Highly reliable safety related equipment is a vital consideration in the operation off a nuclear generating strion. To help assure operativity, the MNP-2 Pump Inservice Test Program (Section 15) has been developed.

The Program is designed to detect and evaluate significant hydraulfic or mechanical change in the operating parameters of vital pumps and to infitize corrective action when necessary. The frogram is based on the requirements of the ASME Lofiler and Pressure Vessel Ede, Section XI, Subsection IWP. To the maximum extent practical, the Program complex with the specifications of the approved Lodes, (1) regulations (2) and guidelines. (3)

Consistent with the intent of Subsection $\exists W^2$, the Supply System has incorporated into this program certain requirements which exceed the specifications of the Code. In particular, the Diesel Fuel O'l Transfer Pumps are included for testing due to their pitentially significant impract on plant safety.

The Supply System recognizes that design differences among plants may render impractical certain Cote requirements. For example, it is not practical to require suction pressure measurement on vertical turbine ("deep well") type pumps. Where such impracticalities exist, they have been substartiated 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.

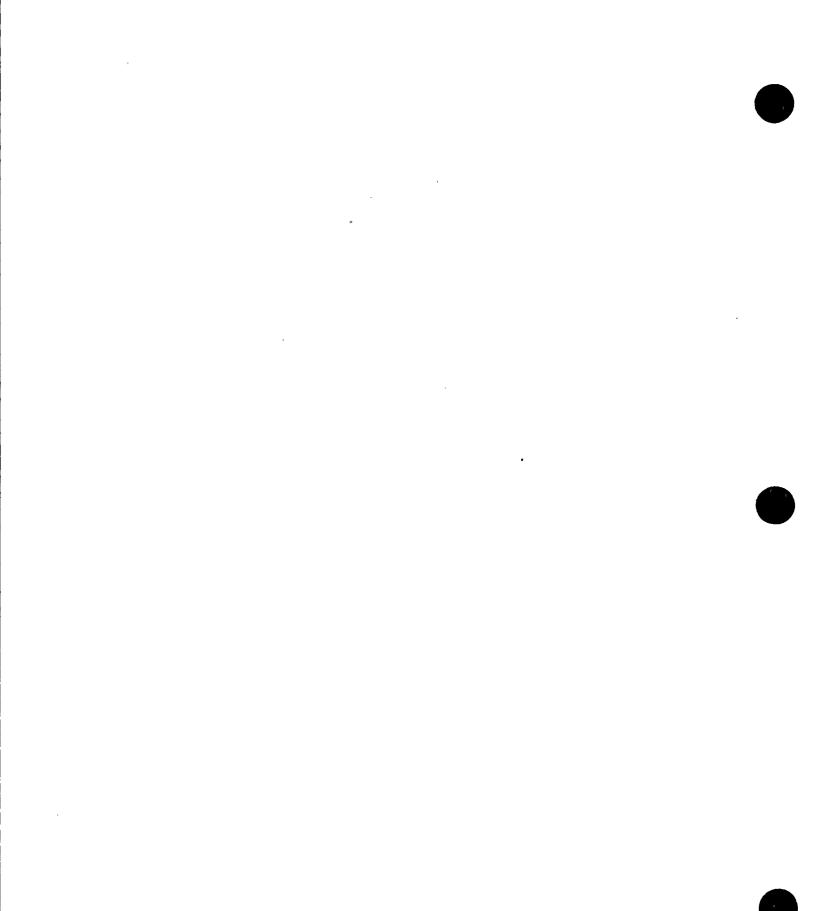
The Supply System is confident that the WNNP-2 Pump Inservice Test Program complies with the intert of the approved Comes, (2) regulations (2 and guide Lines (3) and contributes to ensuring the safety of the general public.



^{1.} ASME Beiler and Pressure Vessel Tone, Section XI, Subsection IWP, (1980 Edition with Addemda through Winter, 1980).

^{2.} IOCFR 50:55 z(g).

^{3.} NRC Staff Guidelines for complying with certain provisions of 10CFR 30:55 a(g) "Inservice Inspection Requirements".



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3.2 Program Implementation

Surveillance Esting is performed the relect equipment malfunction or degradation and to initiate corrective stipm. Since the safety related pumps are normally in a standby south, periodic testing of this equipment is especially important. The WN-2 Put Inservice Test Program provides a schedule for testing safety related sumps and will be implemented as part of the normal surveillance routing.

It is anticipzed that reference datta all be gathered during initial surveillance tests. In most cases, tet parameters will be measured with normal plant instrumentation. This approach will simplify the test program and will incomote timely completion of surveillance testing. When permanent by initialled instrumentation is not available, portable instrumentation will be used to record the mainted parameters.

During subsequent surveillance tests, flow rate will normally be selected as the independent test parameter and all be set to match the reference flow rate. Then other hydraulic and other ical performance parameters will be measured and evaluated against the appropriate reference values. The results of such evaluations all commine whether or mot corrective action is warranted.

Each pump fin the Pump Test Program will be tested according to a detailed test procedure. The procedure will include, as a minimum:

- a) Statement of Test Furpose. This action will identify test objectives, rearence applicable Terminical Specifications and note the operating modes for which the test is appropriate.
- b) Frerequisters for Testing. Syster value alignment, equipment for proper put operation (cooling water, weitilation, etc.) and additional intrumentation (e.g., portable temperature or vibration monitors) will be noted. Itent if tation numbers, range and calibration verification of additional instrumentation will be recorded.
- c) Test Instructions. Directions will be sufficiently detailed to assure completeness and uniformity r testing. Instructions will include provisions for returning astern to its normal standby configuration following testing. (Fr informational purposes, proposet flow paths are illustrated in Sectorn 3.7.)
- d) Acceptance Criteria. The ragges within which test data will be considered amentable will be establined by the Supply System and included in the test procedure. In the event that the data fall outside the acceptable range, openator action will be governed by approved Amministrative Procedures.

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



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3.3 Program Administration
The operations staff of WNP-2 is responsible for the a execution of the Pump Isservice Test Program. The Proclally implemented upon the issuance of an Operating I govern pump testing for a 120 month period. Prior to gram will be reviewed and upgraded periodically to ass pliance with 10CFR 50:55a (g)(4). The Program may also f the pre-fuel loading surveillance testing program. Operating License, the program will be revised to refirequirements consistent with 10CFR 50:55a (g)(4). The operations staff of WNP-2 is responsible for the administration and execution of the Pump Inservice Test Program. The Program will be officially implemented upon the issuance of an Operating License and will govern pump testing for a 120 month period. Prior to that time, the Program will be reviewed and upgraded periodically to assure continued compliance with 10CFR 50:55a (g)i4). The Program may also be used as part of the pre-fuel loading surveillance testing program. Subsequent to Operating License, the program will be revised to reflect current ASME



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3.4 Pump Reference List

This list gives a brie description of each pump identified in the Pump Test Program. The pumps' ASME Code Classifications are specified in the Program.

HPCS-P-1

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

HPCS-P-2

This pump is dedicated to providing coolling water to the HPCS Emergency Diesel Gemerator, the standby power source for the High Pressure Core Spræy System. HPCS-P-Z is located in the Pump House and takes suttion from the spray pond.

LPCS-P-1

A high capacity, low held pump, the Low Pressure Cire Spray pump provides coolling spray to the relator core upon receipt of loss of coollant signal_ LPCS-P-1 teles sution from the suppression pool except when testing to the Reactor Pressure Vessel.

RHR-P-24, 28, 20

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

- a) In conjunction with other systems, restores and maintains reactor coolant investory in the event of æ LOCA
- b) Removes decay theat after shutdown
- c) Cools the supression pool
- d) Condenses steam generated during Host Standby
- e) Can provide compling spray to supper and lower trywell and to the wetwell
- f) Can assist in flue: pool cooling
- g) Can provide a concensing spray to the reactor head
- Provides a flow path for Standby Service Water in case containment flooding is required.

Pump's take suction ffrom the suppression pool in the standby operating mode.





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9LC-P-1A, 1B

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

SI-P-1A, 18

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.

RIC-P-1

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

D-P-1A, 18, 2

These pumps transfer diesel generator fuel oil from the subterranean storage tanks to the diesel's Day Tanks. Fump 2 is dedicated to the HPCS Diesel. The discharge lines of Pump 14 and 18 are cross tied, and each pump can supply fuel to either Diesel 1A or 18.

F?C-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.

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3.5 Pump Inservice Test Tables

The Test Table is the heart of the Pum 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 mounts. The Table incorporates the exceptions requested in Section 3.5 (Relief Requests).



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MNP-2 Pump Inservice Test Table

IMP Parameter

| Pump 1dent. | ASHE Code Class | Inlet Pressure, Pj | Discharge Pressure, P ₀ | Differentia) Pressure, P | Flowrate, Q | Vibration, V | Bearing Temperature Tb | Pump Speed, R | Lubrication Level/ Pressure | Rølløf Request(s) |
|----------------|--------------------|--------------------------|--|--------------------------------|----------------|------------------|------------------------------|---------------------|-----------------------------------|----------------------|
| HPCS=P=1 | 2 | Q | Q | Q | Q | 0 | N/A | HR | Q | 4 |
| HPCS-P-2 | 3 | H/A | Q | H/A | Q | Q | Ħ/A | NR | Q | 4,5 |
| LPCS-P-1 | 2 | Q | Q | Q | Q | Q | H/A | KR | Q | 4 |
| RIR-P-2A | 2 | Q | Q | Q | Q | Q | H/A | NR | Q | 4 |
| RHR-P-20 | 2 | Q | Q | Q | Q | Q | N/A | MR | Q | 4 |
| RHR-P-2C | ? | Q | Q | Q | Q | Q Q | N/A | hR. | Ú. | 4 |
| SLC-P-1A | 2 | N/A | Q | N/A | Q | Q | N/A | KR | Q | 2 |
| SLC-P-1R | 2 | N/A | Q | H/A | Q | Q | H/A | NQ | Q | ? |
| SW-P-1A | 3 | N/A | Q | N/A | Q | 0 | N/A | MQ | ņ | 4,5 |
| SW-P-1B | 3 | N/A | Q | N/A | Û | Q | N/A | NR | ŋ | 4,5 |
| RCIC-P-1 | 2 | Q | Q | Q | Q | Q | A | Q | ŋ | |
| 00-P-1A | 3 | Q See Note A | Q | Q | Ú. | Q | H/A | HN | Q | 4 |
| 00-P-18 | 3 | Q Sue Hole A | Q | Q | Q | Q | H/A | NR | Q Q | 4 |
| D()+P=7 | 1 | 1) Sou Hita A | י ח | d | ŋ 1 | 1 1 1 | N/A | HN | 122231111.211211. Ω | 4 |
| FPC-P-1A | 3 | Q | Q | Q | Q | Q | ₩/λ | HR | Q | 4 |
| FPC-P-18 | 3 | v v | Q | ų | | າ | n/A | NR | Q | 4 |

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Legend

- Quarterly (92 day interval) test Q =
- A = Annual test

- Not applicable. See Relief Requests K/A =
- NR. =
- Not required IWP 4400 does not require pump speed measurement if pump is directly coupled to a constant speed motor driver.

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Note A:

Storage Tank levels will be recorded and correlated to pressure in order to determine Pi and $\triangle P$.

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3.6 Purn Test Program Relief Fequests

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Relief Requests identify tode 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.

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RELIEF REQUEEST RP-1 (Deleterd)

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RELIEF REQUEST RP-2

Pump(s)

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SLC-P-IA SLC-P-IB

Section XI Code Requirement for which Relief is requested

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

Bases for Recuest

- 1. The SLC pumps are positive displacement pumps which, at a constant speed, deliver essentially the sme capacity at any poressure within the capability of the driver and the strength of the pumps. The SLC pumps are directly coupled to constant speed drive motors.
- 2. Surveillance requirements specify system alignments which assure adequate NFSH for the pumps.
- 3. There is no provision for suction pressure insstrumentation.
- Acceptatle discharge pressure and flowrate will suffice as proof of acequate 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 lavel of quality and safety since inadequite suction pressure would be imdicated by erratic discharge pressure indication, subnormal flow rates and increased pump vibration and noise. These abnormal indications will be investiguated and corrected as required by MP-3200.

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RELIEF REQUEST RF-5

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HPCS-P-2 SM-P-1A SM-P-1E

Section XI Code Requirement for which Relief is Requested

Measure pump inlet pressure, Pi, and differential pressure, AP. (IWP-3100)

Bases for Request

- SH-9-1A, 18 and HIPCS-P-2 are vertical turbine type pumps which are impersed in their water source. They have mc suction line which can be instrumented.
- (2) Technical Specifications will state minimum allowable sprray poind level to assure adequate mPSH and cooling water supplies.
- (3) Difference between allowable maximum pond level and minimum level is only six (6) inches of water or 0.2 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

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

Quality/Safety Impact

The effect of granting this request will be to introduce an error of 0.5 ft./500 ft. = 0.1% at rated discharge flow for SW-P-1A mc 1B and ar error of 0.5 ft/135 ft. = 0.3% for HPCS-P-2. These shall errors will not significantly impact the quality of test results for jumpardize the safety of the public.

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3.7 Proposed Pump Test Flow Paths

These flow paths are proposed for use during pump testing and may be used during the value test program. The value alignment shown on these drawings reflect value position during testing. Walve position during operations may be different. Surveillance procedures will define actual flow paths.



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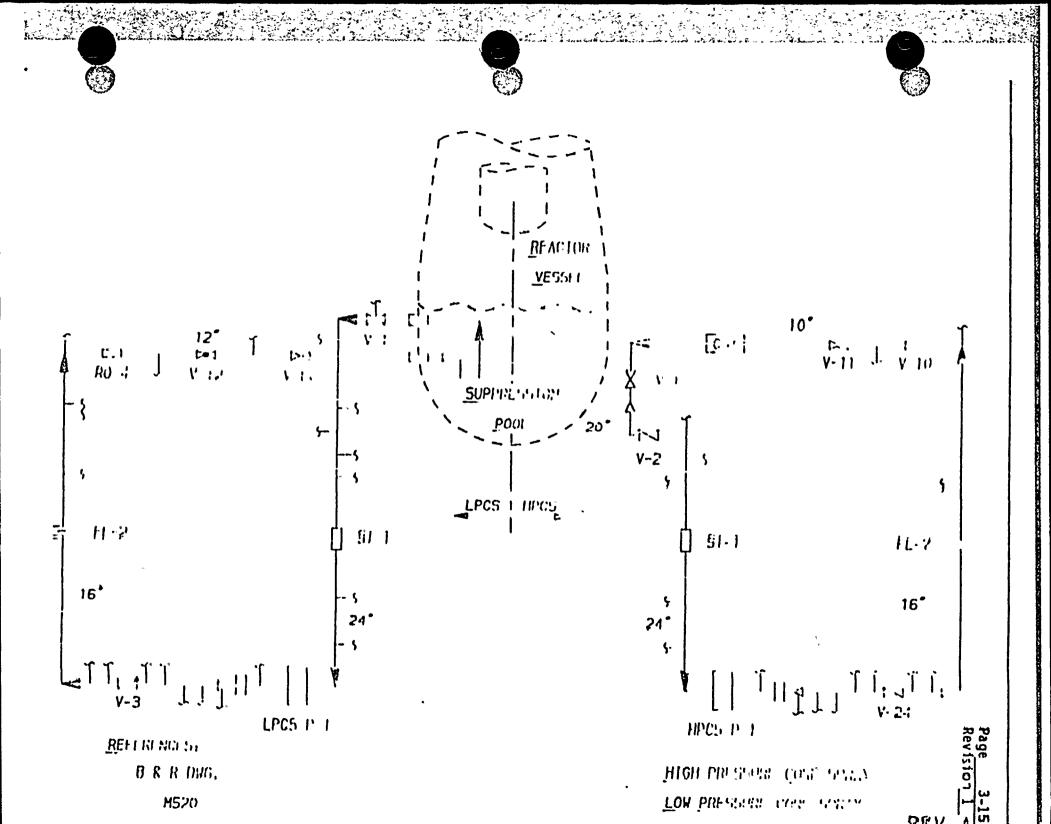
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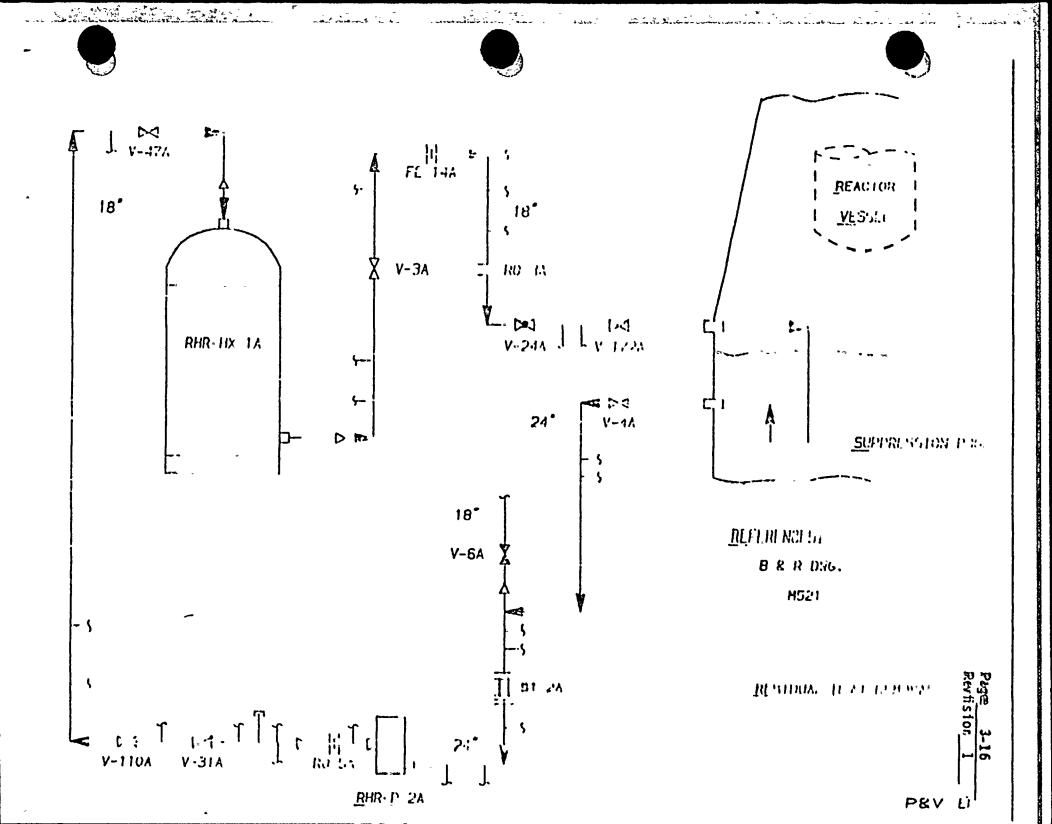
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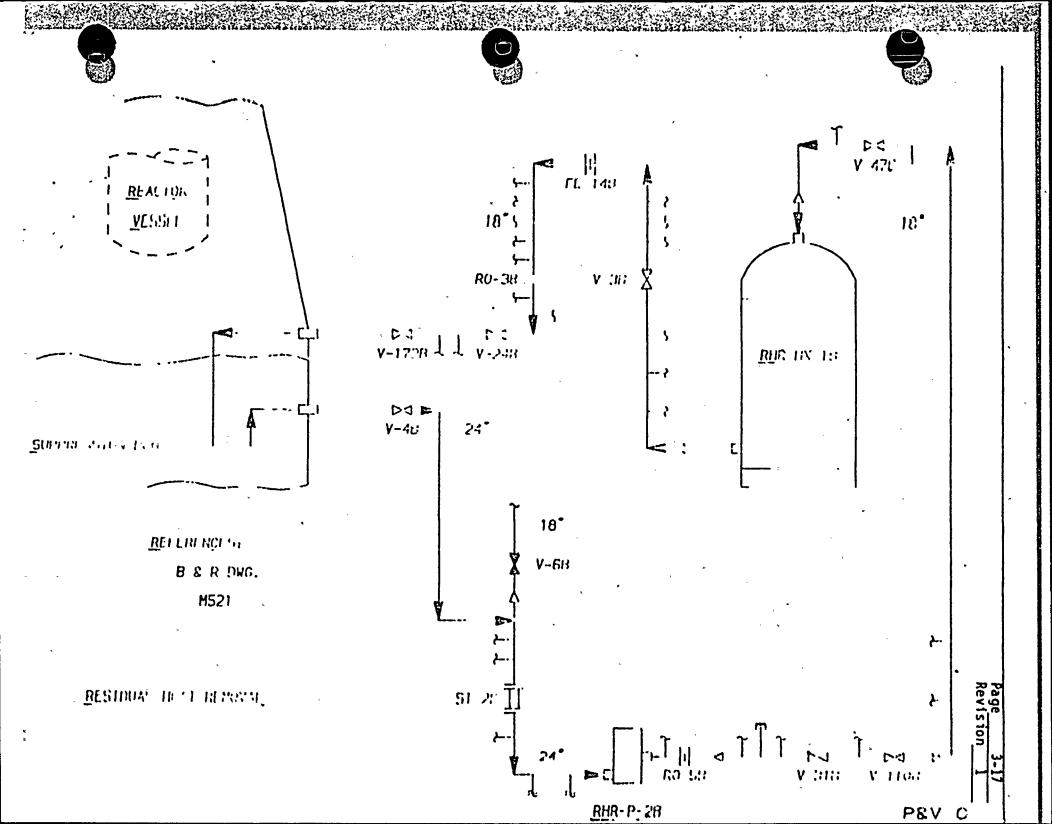
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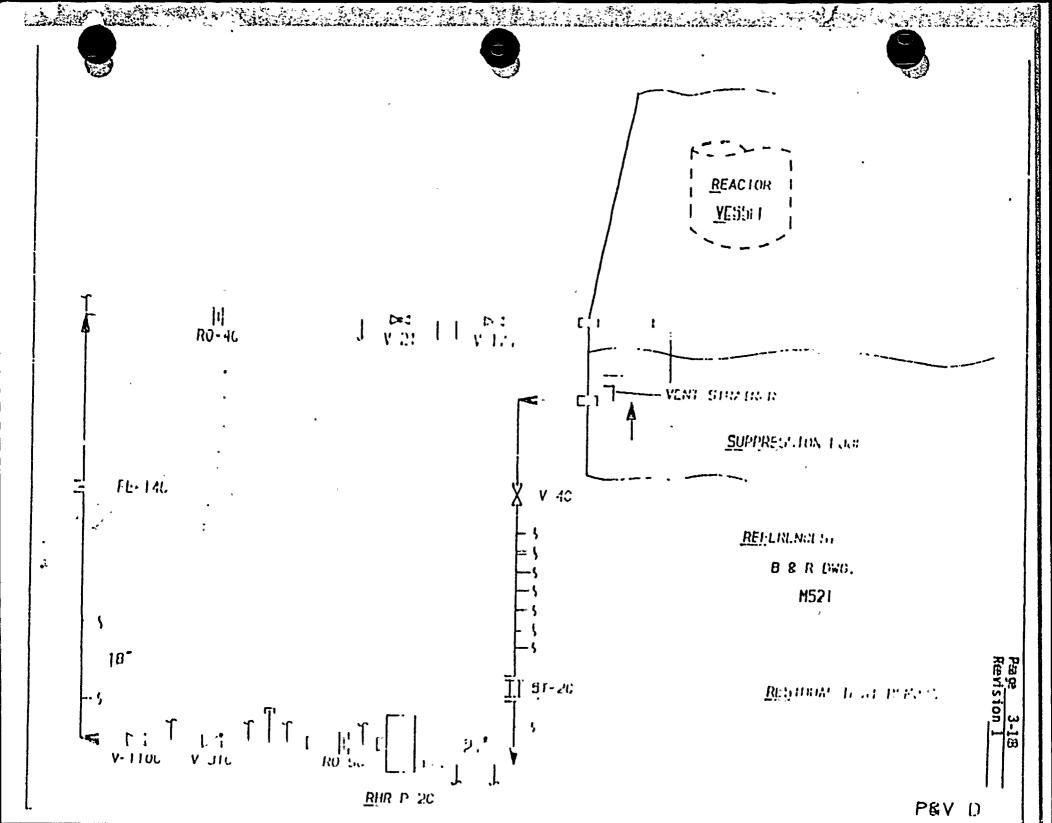
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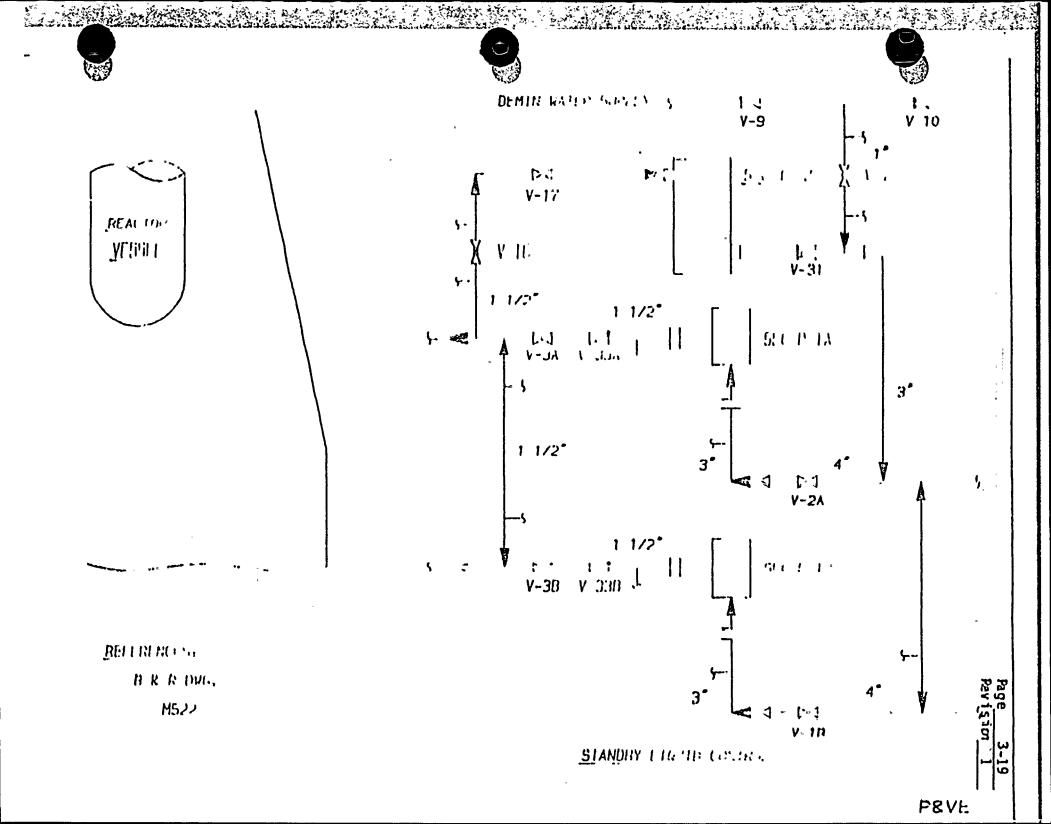
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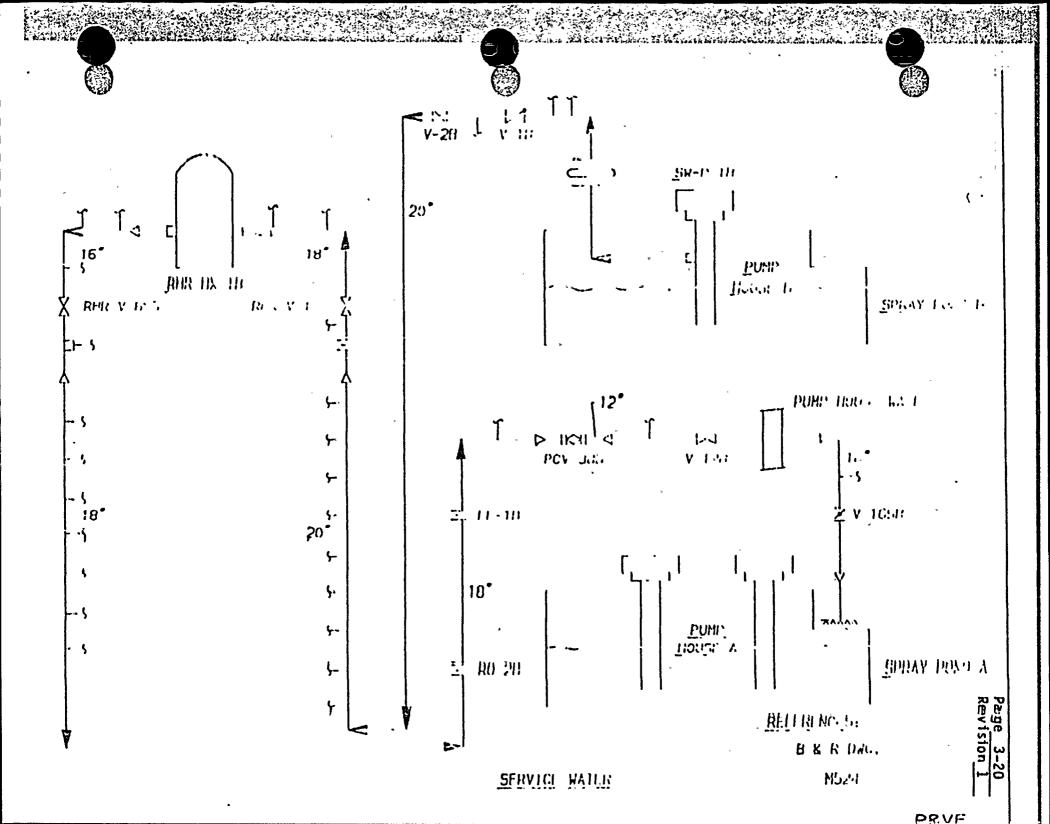
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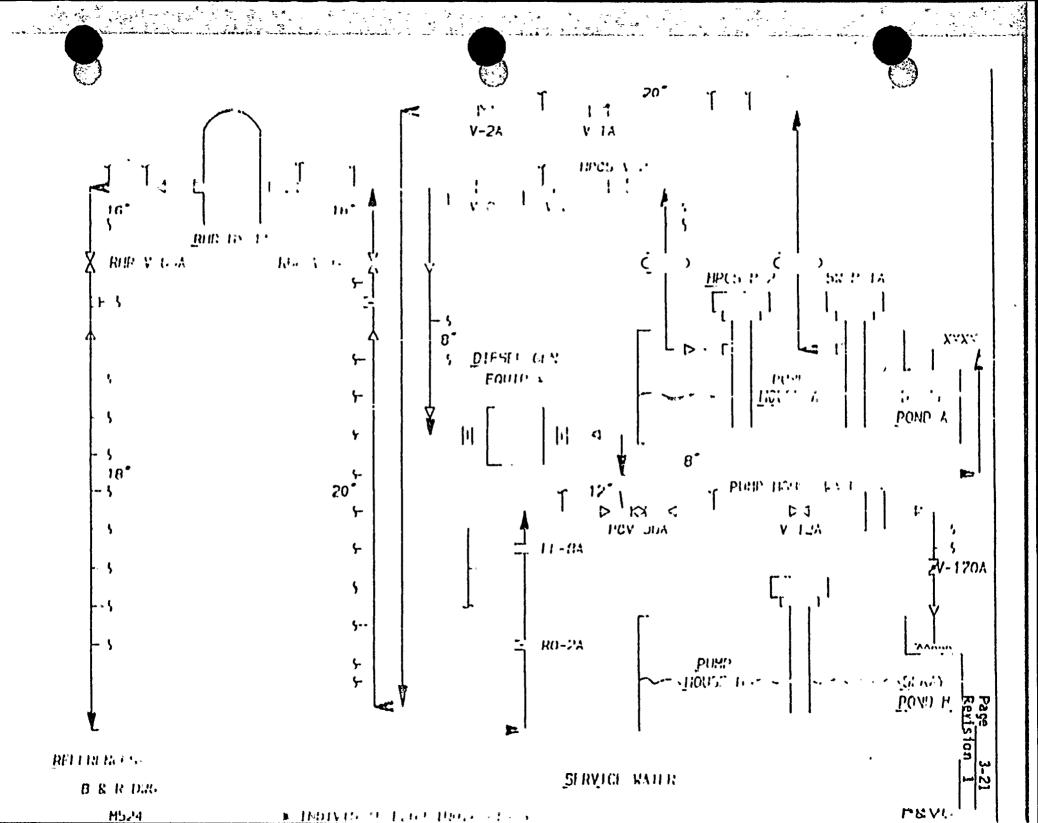
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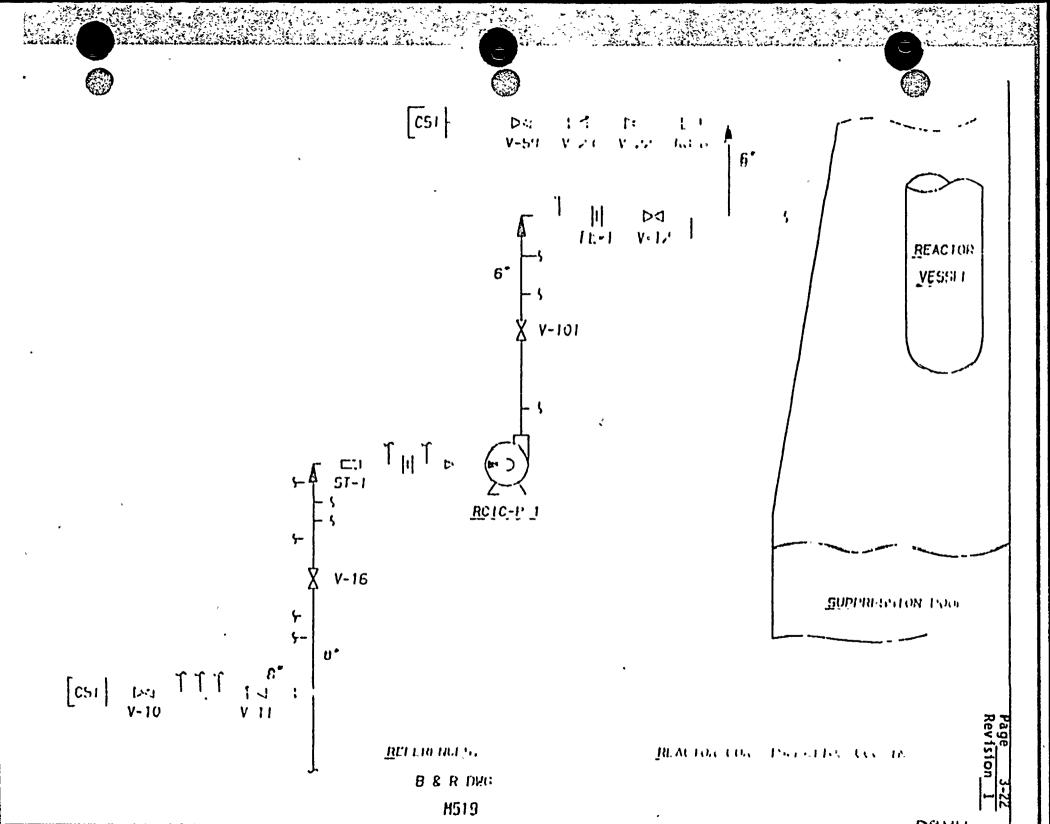
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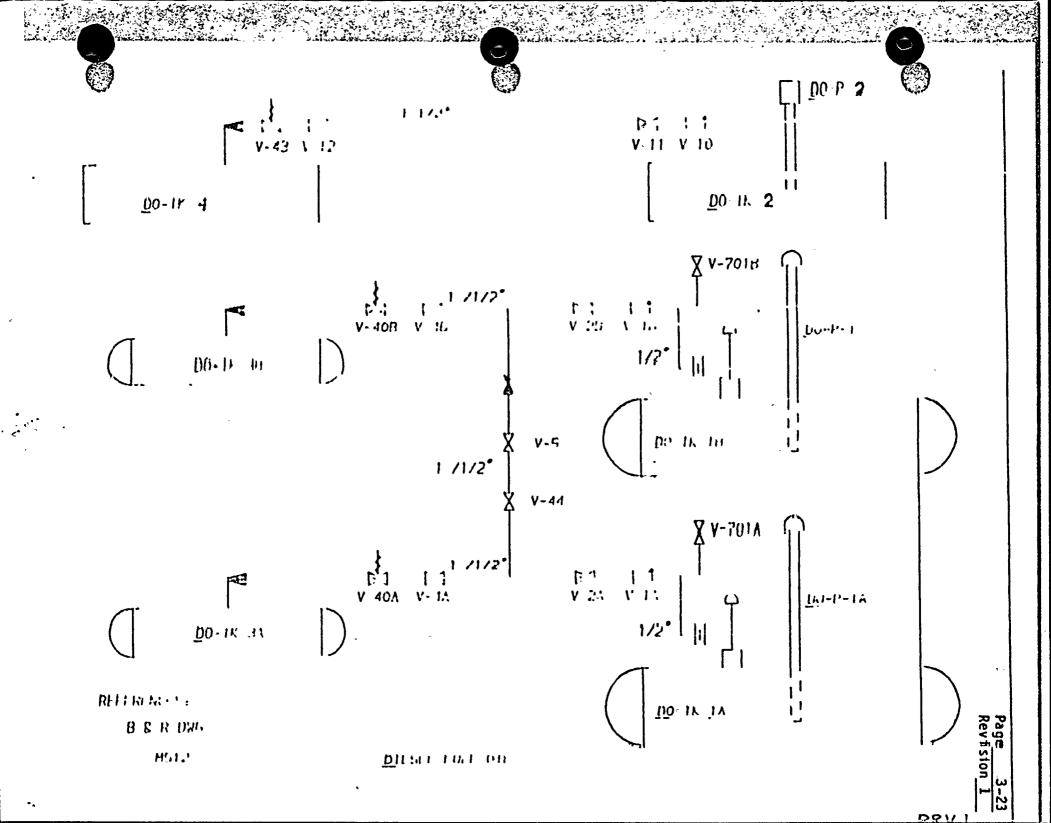


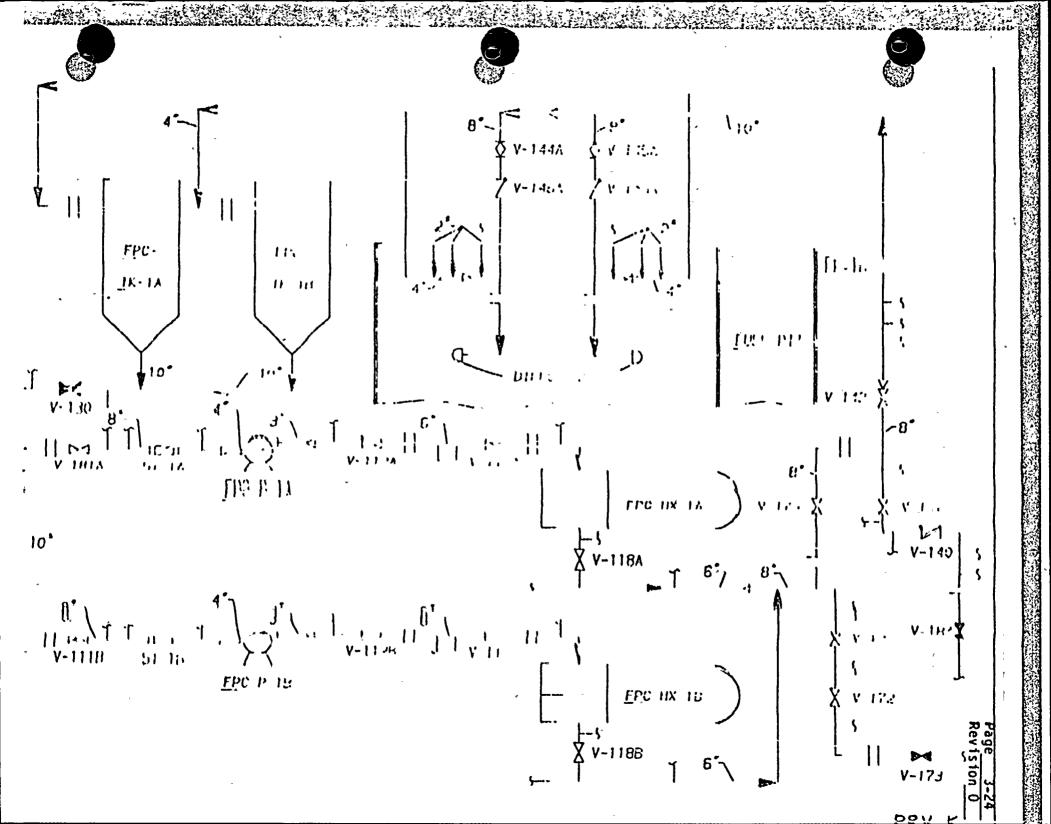












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3.8 Records of Inservice Teests

Records of Pump Inservice Test results will be maintained in accordance with Article INF-500-onf the Code. A file will be established for each pump and will include:

- Pump identification by equipment piece number, manufacturer, and serial number.
- 2) Inservice trest glasns. This may be by reference to the surveillance test procedure by which the pump is tested.
- 3) Summaries off preective action.

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

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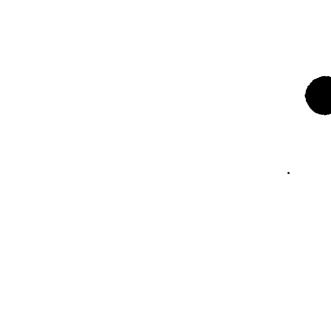
SAPLE PUMP TEST DATA SHEET

| Pump ID | | | D | | | |
|---|--|---------|------------------|-----------------|-------------------|-------|
| Parameters | | , , | Action* Range | Aler#* Range | Measured Value | init. |
| Pump Suttion Press (Before Pump Start) | (PI) (Calib. Due Date |) | N/A | n/A | psig | |
| Pump Suction Fress (During Test) | (PI) (Calib. Due Date |) | N/A | 'N/A | psig | |
| Pump Discharge Press | (PI) (Calib. Due Date |). | N/A | N/A | psig | A |
| Calculated Pump $\triangle P'$ (line 3 - line 4) | • | | psiD | psiD | ps 10 | |
| System Flow | (FI) *** (Calib. Due Date |) | gpm | gpn | gpn | |
| Pump Bearing Yibiration (See Reverse Side) | l | | | | | |
| Lubrication Level or F | Pressure Satisf | actory_ | Unsa | atisfactory_ | | |
| COMMENTS: | | | | | | |
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- * If deviations fall within the ALERT RANGE, the test frequency is increased to once each 45 cays. If deviations fall within the ACTION RANGE, the pum shall be declared inoperable and the deviation investigated and/or corrected.
- ** Where flow is calculated rather than measured, record identification numbers and calibration due date of instruments used to collect data (e.g., level indicator, stepwatch).



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4.0 WHP-2 Valve Inservice Test Program

4.1 Program Development Philosophy

Washington Public Former Supply Systemm Nuclear Project Unit 2 (WNP-2) is a Boiling Water Reactor being constructed in compliance with the ASME Boiler and Pressure Vessel Code. Them Code requires periodic testing of certain safety related values in ordeer to werify their operability and physical integrity. The WNP-2 Value Inservvice Test program satisfies these requirements and conforms to FSSAR commitments for value testing.

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

To generate the MNP-2 Program, all ASSME liess I, 2 and 3 values were analyzed to determine the required type and frequency of testing for each value. The values to be tested under Section II, Subsection IVV comitments are listed, by system, in the VWalve Trest Tables (Section 4.4). The Tables schedule only walve exercise trests. Leek rate testing mandated bw Section XI will be incorporated into a MP-2 unified leak rate testing program which will satisfy Section XI. at other requirements.

The WNP-2 FSAR commits to meeting their requirements of both 10 CFR 5C, Appendix J(1), and of Section XI. Earch of these documents addresses particular but slightly different conners with respect to valve leakage. Each contains quidance for valve leak rate testing. Appendix J is primarily concerned with leakage out of containment subsequent to a Loss-of-Coolant Accident (LOCA). It meetimes leak rate testing of containment isolation vallves at the maximum differential pressure (ΔP) expected during an accident. Sectors XI requires leak rate testing of all valves for which seat leakage for limited to a specific maximum amount" and that testing be performed at three valves' operating ΔP unless

Title 10, Code of Federal Regullations. Fart 50, Appendix J.
 "Primary Reactor Containment Leakage Testimp for Water - Cooled Power Reactors."

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a lower ΔP can be shown to give conservative results. Operating Δ^p may be many times the maximum post-LOCA ΔP . Finally, plant Technical Specifications also address hak rate testing and impose specific testing requirements (e.g. excess flow check walve operability demonstration; test ΔP for drywell-weigell commonmer vacuum breakers.

The testing requirements imposed by the various sources are not igntical nor are they mutually eclusive. It is anticipated that Appendix J testing may satisfy Section XI leak rate testing in some instances. however, some valves may require both Appendix J and Section XI testing. Section 4.6 identifies valves which, under the scope of Section XI, Subsection IWV, are subject to leak rate testing beyond Appendix J requirements. Relief valves are not required to be leak rate tested (IWI-3512) subsequent to bench testing and are not included in Section 4.6. Normally closed, nanually operated comtainment isolation valves are excluded since these waves are subject only to Appendix J testing. For implementation purposes, the mast frequencies mandated in Appendia J, Section II and the Technical Specifications are the same. Leak rate testing will, in general, be performed during outages although some valves may be amenable mode leak in gover operations.

Similar testing frequencies and overlapping requirements necessitzes a unified leak rate testing program which will maximize compliance with the various commitments, privide consistancy in test methodology and reduce duplication of effort. The Suply System is actively developing a unified program which will be summitted for review at a later date. Procedures to implement this program are being prepared.

Verification that position indication agrees with actual value position will be accomplished bianually as part of the value exercise tests. Although the tables in faction 4.4 specifically designite position indication verification only for certain manually operated values and check values, the position indication for power operated values will be checked biannually during an exercise test.

The Code recognized that certain of its requirements may be impractical for a specific plant and contrins 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. Most of the requests ask only for the postiomement of test-ing, not cancellation.

The Supply System is confident that the WNP-2 Valve Intervice Test Program complies with the intent of all applicable codes, regulations,(2) and guidelines(3) and that it will make a positive contribution to the safe operation of the plant.

- (2) 10CFR 50:55 a(g)(2)
- (3) NRC Staff guidelines for excluding exercising (cycling' tests of certain valves during Plant operations.

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4.2 Program Implementation

The Valve Test Program will be executed as part of the normal plant surveillance routine. Two types of tests will be conducted as part of the Valve Test Program:

- 1) Walm Operability Tests
- 2) Walm Leak Rate Tests

The Opermility Tests will verify 1) the value responds to control commands, 2) the value stroke time is within specific limits and, 3) remote position indication accurately reflects the observed valve position. Base line data for stroke times will be obtained from iritial Walm Operability Tests. The initial Valve Operability Tests will meet the requirements for preservice testing (IWV-3100). Where applicable, acceptance criteriz for initial stroke times will be within the limits specified in Table 6.2-I6 of the WNP-2 FSAR. Otherwise, the Supply System will specify acceptable times. When these times are estabilished, they will be inserted in the Valve Test Tables under the Stroke Time column.

Remote valve position indication will be verified eveny two years. Manua Tay operated valves with remote position indication have been included in this program.

Fail safe valves will be 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.

Value lear rate baseline data will be obtained in accordance with IWV-3100 and accepted industry practice. Leak rate acceptance criteria will be secified by the Owner.

4.3 Procram Aministration

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



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4.4 <u>Yalve Test Tables</u> The Valve Test Tables are the essence of meet ASME Section XI, Subsection IWV require the positions taken in support of the rel in the interpretation of the Tables, brie headings and abareviations are provided. The Valve Test Tables are the essence of the Supply System's Program to meet ASME Section XI, Subsection IWV requirements. The Tables reflect the positions taken in support of the relief requests. To aid the reader in the interpretation of the Tables, brief explanations of the Table

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

ASME Code Class per Section III of the ASME Epiler and Pressure Vessel Code. These are roughly ecziwalent to the safety classes cefined in Chapter 3 of the FSAR.

The specific coordinates of each value are supplied to facilitate location of the values on the fluw diagram provided.

Categories are defined by ASME Section XI, subsection IWV. Each value has specific testing requirements which are determined by the category to which it belongs.

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

The following abreviations are used to describe value type:

| 6F | | Butterfly valve | GT | Ħ | Gate Valve |
|-----|---|-----------------|-----|---|---------------------|
| x | R | Check walve | ٦C | × | Rupture disc. |
| DIA | x | Diaphragmualve | RV | Ξ | Relief Valve |
| ទ | × | Globe walve | S/? | × | Safety/Relief Valve |
| | | | SV | Ξ | Solenoid lallve |

(2) <u>Cliass</u>

(1) Vælve Numbær

- (3) Coordinates
- (4) Valve Category
- (5) <u>Size</u>
- (5) Yalve Type

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(7) Actuator Type

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

A0 = Air operated

HO = Hydraulic operated

MAK = Manuælly operated

MO = Motor operated

- SA = Self actuated (actuated by a mange in system parameters such as flow or pressure, e.g., check and melief valves).
- SOL = Solempid operated

Valves may be either normally common (C) cr normally closed (C). Throttle valves are not included in the scope of this program since they are either passive or regulating type valves. Both types of valves are exempt from IWV testing (IWV-ZOD).

This column defines the operating modes as defined by the Technical Specifications, during which the valve may be safely tested. See below for the definition of "all," "CSD" and "Refuel."

Meaning

Testing is approved during all operating modes and will be conducted on a quarterTv basis, as permitted by plant status.

(8) Normal Position

(9) Test During

Legend

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Cold shudown. Eufidance for Inservice value testing at cold shutdown is: Value testing should commence not later than 48 hours after cold shutdown is achieved and continue until complete or until plant is ready to return to power. Completion of all value testing fis not a prerequisite to return to power.

Any testing not completed at one cold shutdown should be performed during the subsequent cold shutdowns to meet the Code specifiet testing firequency.

Test will be conducted during refueling outages but at least every two years. Certain work which is mominally scheduled for a refueling coutage may be performed at other times when pllant conditions permit. The two year minimum frequency will be mairtaimed.

Test frequency will be according to vendor specifications.

Testing requirements identified for the valve are identified here.

Stroke elerchiss; valve timing not relevant.

Refuel |

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(10) <u>Test</u>

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| Page | 4-8 |
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| Revi | sion 1 |

S/T -

Bencin Test

IWV-320

Pos Int

(11) Stroke Time

(12) Notes

(13) Requests for Relrief

Stroke time; value must meet stroke timim<u>c</u> requirements specified in the FSAR or elsewhere.

Relief valves will be tested in accordance with IWV-3500 requirements.

Rupture disc will be tested in accordance with Section XI, Subsection IWV, paragraph 3620.

<u>Position Ind</u>ication verification only. Used only for manual valves. Power operated valves⁺ position indication will be verified biannually during exercise test.

Reference stroke time will be listed where () appears. Takues will be determined during initial surveillance testing and will comply with Timiting values of full stroke time specified in the FSAR, Technical Specifications or other commitment documents

Generally self explanatory, e.g., NO = Normally open FO = Fails open NC = Normally closed FC = Fails closed

Cross references documentation which requests waiver of certain code requirements. A`valve may have more than one associated relief request.



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| | 97249 End 97 9 44 | 1948529474933894944444 | | | 0 | <u>ب</u> د | | | • | • | | |
|-----------------|-------------------|------------------------|------------------------------|----------------|---------------|------------------|--------------------|-----------------------|-------------------------|----------------|-------|---------------------|
| System Name | CONTRO | L AND SERVICE A | IR | t | Dwg. | No. <u>M510</u> | | 314318 IIX S I | 137] I 73 8 | ***** | age | nr <u></u> . |
| Valve Number | Class | Coordinates | Value Category A B C D | sise Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests for |
| CAS-V-453 | ? | K8 | X | 1 | 54 | SOL | C | ALL | \$/E | H/A | | 1 |
| CAS-CYX82e | 2 2 | K8 | X X | 1 | CK | SA | C | ALL | S/E [°] | N/A | > | |

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| System Hame DIESEL DIL AND HISC. (M) | | | Dug. No. <u>H 512</u> | | | | | Page of | | | | |
|--------------------------------------|----------|-------------|------------------------------|-------|---------------|------------------|--------------------|----------------|------|----------------|-----------------|---------------------------|
| Valve Heater | Class | Coordinates | Valve Category Á B C D | Size | Valve Type | Actuator Type | Horma) Position | Test During | Test | Strnke Time | Hotes | Requests For Relief |
| DO-V-1A | 3 | 03 | X X | 1 1/2 | CK | SA | C | ALL | S/E | H/A | | |
| 00-7-18 | J | 01 | X X | 1 1/2 | CK. | SA | C. | ALL | S/E | H/A | | *** *** |
| DO-V-10 | 3 | HS | X X | 1 1/2 | ск СК | SA | C | ALL | 5/E | N/A | | |
| DO+V+40A | <u>د</u> | £3 | X | 1 1/2 | SV | SOL. | C | ALL | 5/E | H/A | MGIN LANALOS IN | |
| DO-V-408 | 3 | [] | X | 1 1/2 | 54 | SOL | ć | AL | \$/E | N/A | | |
| DO-Y-43 | 3 | 116 | X | 1 1/2 | SA | SOL | C | ALL | S/E | N/A | | |

Page 4-10 Revision 1 



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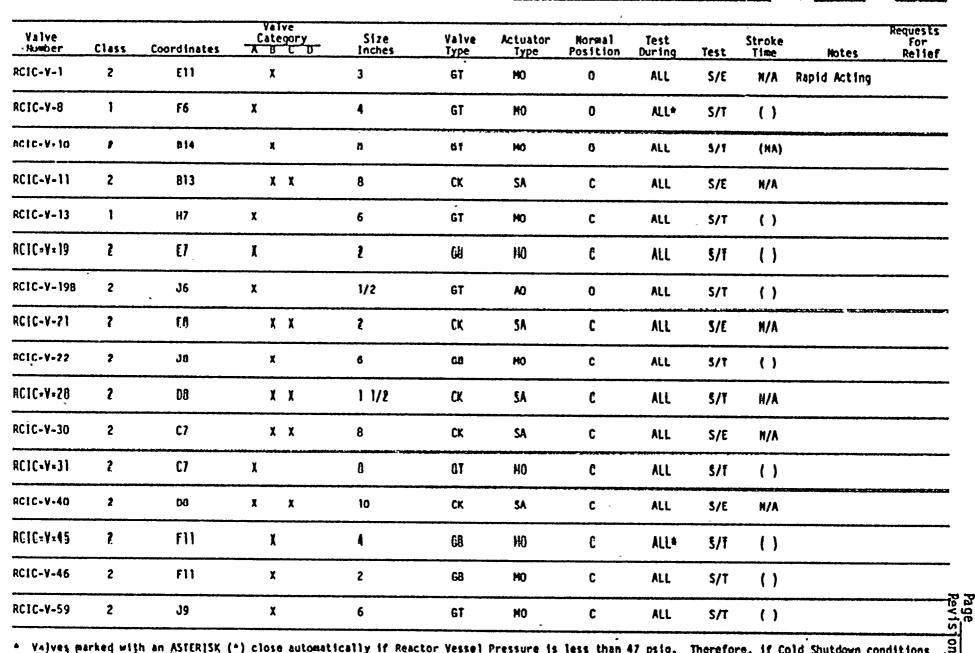
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| System Name | REACTOR CORE | ISOLATION | COOLING SYSTEM | (RCIC) |
|-------------|--------------|-----------|----------------|--------|
|-------------|--------------|-----------|----------------|--------|

Dwg. No. __ H 519



Valves marked with an ASTERISK (*) close automatically if Reactor Vessel Pressure is less than 47 psig. Therefore, if Cold Shutdown conditions (kend beyond 4.3 month period, INV testing frequency may not be mat. However, valves will be tested prior to resuming power operations INV-3416)

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-12

| System Name | PEACIO | R COME ISOLATIO | M COOLI | ING (ACIC) | · · · · · · · · · · · · · · · · · · · | Dug, I | ka. <u>H</u> | 519 | | | Pag | A | ot <u>2</u> |
|------------------|--------|-----------------|--------------|---------------------------------------|---|-----------------|------------------|---------------------|------------------|---------------|----------------|--------------------|---------------------------|
| Valve Hundser | Class | Coordinates | 7 Ca T | legory C N | Size Inches | Valve lýpě | Actuator Tyne | Normal Postition | Test flur Ing | iest | Stroke Time | Hotes | Requests For Relief |
| RCIC-V-63 | 1 | НЭ | X | | 10 | GT | MO | 0 | ALL* | 5/1 | () | - | |
| AC1C-V-64 | 1 | 66 | X | **** | 10 | 61 | HO | C | ALL* | 5/T | () | | |
| RCIC-V-65 | 1 | 116 |) | K X | 6 | CX | AO/SA | C | ALL | S/E | N/A | | |
| RC1C-V-66 | 1 | J4 | X | X | 6 | CX | A0/SA | C | CSD | S/E | N/A | | ? |
| RCIC=Y=60 | 2 | [7 | 1 | • • • • • • • • • • • • • • • • • • • | 10 | GT | HO | 0 | ALL | \$/T | () | | **** |
| HEIC-V-89 | 2 | U) | K | ż | 1-1/2 | 61 | HQ | 0 | ALL | 5/T | · () | | |
| RC1C-Y-76 | 1 | 113 | X | | 1 | G8 | MO | C | ALL+ | s/t | () | | |
| PC1C-V-086 | 2 | A1J |) | L X | ? | CK | AZ | C | ALL | \$ | | | |
| RCIC-V-110 | 2 | E7 | X | | 2 | GT | но | 0 | ALL+ | S/T | () | | |
| RCIC-V-113 | 2 | £6 | X | | 2 | 61 | H0 | 0 | ALL* | s/t | () | | |
| RCIC-RD-1 | .? | . D11 | | X | 10 | RIPTIRE DISC | 5A - | Ç | 1WY+3620 | | | | |
| RCIC-RD-2 | 2 | C12 | | X . | 10 | RUPTIRE | SA. | C | IWY-3620 | IWV-367 |) N/A | | |
| RCIC-RV-17 | 2 | C13 | | X | 1 x 1 | RV | SA | C | REFUEL | BENCH TEST | N/A | | |
| RCIC-RV-18 | 2 | D9 | | X | 3/4 x 1 | RY | N | r, | REFUEL | BENCII | N/A | لکلا جان ی هشتیند. | 1 264 76 4 16 4 3 2000 CO |

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* She hate an ACIC System page 1 of 22

| - | LON PA | RESSURE CORE SPR | AY SYSTEH (LPCS) | | Dug. | Nn. <u>HS20</u> | | | | Paqe | | of <u>1</u> |
|-----------------|-------------------|------------------|-------------------------------------|----------------|---------------|------------------|--------------------|----------------|---------------|----------------|--|--------------------|
| Valve Kusber | Llass | Coordinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | Manna) Postrion | Test Ouring | Test | Stroke Tipe | Notes | Remie fo Re3 |
| LPCS-V-1 | ? | 011 | X | 24 | 61 | HO | Û | ALL | 5/1 | () | | |
| LPCS-V-3 | ≠1 6×2 ₩ 846 2 | B13 | XX | 16 | CK | SA | C | ALL | S/E | N/A | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | |
| 1 PC 5= V= 5 | 1 | C11 | 1 | 12 | at | NO | Ç | ALL | 5/1 | () | | |
| LPCS-Y-6 | 1 | 119 | X X X | 17 | CX | AO | C | CSD | S/E | H/A | | |
| LPCS-V-12 | 2 | F14 | X | 12 | G8 | NO | с | ALL | S/T | () | | |
| LPCS-Y-33 | 2 | C12 | <u>x</u> x | 1 1/2 | CK | ĸ | 0 | ALL | S/E | n/A | | |
| LPCS-V-SI | • **** * | 119 | X | 12 | Ta | KAN | n | REFUEL | Pns | IND N/A | | ***** |
| IPCS-FCY-11 | 2 | B13 | x | 3 | 68 | MO | C | ALL | 5/1 | () | | |
| LPCS-RV-10 | 2 | F12 | - wither - withe monthly population | 1 1/2 × 2 | RV | SA | c | REFISEL | BERCH TEST | N/A | | |
| LPCS-RV-31 | 2 | C15 | X | 1 | R¥ | RZ | C | REFUEL | NENCH TEST | N/A | | ****** |

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| System Hame | _ н тен т | RESSURE CORE SPI | RAY _SY | STEN | (IPCS) | Dwg, | Hn. <u>H570</u> | | | | | • | of1 |
|----------------|------------------|--------------------|---------------|--------------------------|-------------------|---------------|------------------|--------------------|----------------|--------------|----------------|--|--|
| Valve duber | Class | Coordinates | Ca | alve itegory B C C | Size Inches | Yalve Type | Actuator Type | Normal Position | Test During | Test | Stroke Tine | Notes | Requests For Relief |
| IPCS-V-1 | 2 | C6 | | X | 14 | at | NO | 0 | ALL | 5/1 | () | | |
| lipcs-V-2 | t | C6 | ***** | X X | 20 | CK | SA | c | ALL | S/E | R/A | | |
| IPCS=Y=4 |) | 6) | I | -74 8 | 13 | 61 | ho | ć | ALL | s/t | () | | • |
| HPC5-V-5 | 1 | H8 | X | X | 12 | CK | AQ | Ê | C SD | \$/E | N/A | pageapanana apatera da Bilanda da | 2 |
| HPCS-Y-7 | 2 | C5 | | X X | 1 1/2 | CX. | SA | 0 | ALL | \$/E | N/A | | |
| HPCS-V-10 | 2 | EJ | ******** | x | 10 | 68 | но | C | ALL | S/T | () | * <u></u> | |
| HPCS-V-11 | 2 | E3 | | X | 10 | G8 | 110 | с | ALL | 5/1 | () | | |
| HPC5-V-12 | 2 | BS | X | | 4 | GT | HQ | Ç | ALL | 5/T | () | | |
| HPC\$-Y-15 | ? | 07 | X | | 18 | 61 | HO | 6 | ALL | <u>\$/</u> † | () | 19-9-00-00-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0 | , 4-a- (- 17-a- (- 17 |
| 1188 ¥ 18 | \$ | ib | | 1 X | 24 | CK | SA | C | ALL | 5/F | N/A | **** | ***** |
| IIPCS-V-23 | 2 | E4 | X | | 12 | 8.3 | HO | ſ, | ALL | \$/T | () | | |
| HFCS-V-74 | 2 | 85 | | XX | 16 | CK | SĄ | ٢ | ALL | \$/E | H/A | | |
| HPCS-V-28 | 3 | M524 Rev. 19 J5 | A. A & 2 a da | X X | , z | CK | SA | C | ALL | S/E | N/A | | , |
| HPCS-V=51 | 1 | 10 | | X | التنا بينية مراجع | GI GI | Nan | م ا | REFILL | POS IN | N/A | | |
| | | | | | **** | ******** | | | REFILEL | BERCH | | | |

| | 🚅 RESIDUAL | HEAT, REMOVAL. | <u>SYSTEM (DB)</u> | | | No. <u>M521</u> | | | | Page | 1 | of <u>R</u> |
|---------------------------|------------|---|------------------------------|------|---------------|------------------|--------------------|----------------|------|----------------|-------|--|
| Yalve Number | Class (| coordinates | Valve Category A_R_C D | Size | Valve Type | Actuator Type | Normal Pristian | Test During | Test | Stroke Time | Kntes | Requests For Relief |
| AL-V-JA | 2 | J13 | X | 18 | ĞŤ | 64 | 0 | ALL | \$/1 | () | | |
| 151 • ¥ • 30 | 2 | J4 | 1 | 18 | GT | но | 0 | ALL | \$/T | () | | - <u> </u> |
| 11.4.44 | 2 | E11 | X | 24 | Gt | HO | 0 | ALL | \$/1 | () | | - <u> </u> |
| el #1 + ¥ + 4 () | t | be | t | 24 | 61 | HO | n | ALL | 5/T | () | | |
| 1)R-Y-4C | ? | DII | X | 24 | AT | MO | n | ALL | ٢/٢ | () | ····· | |
| 110 • ¥ • 6A | 1 | CIP | X | 18 | 6T | HU | C | ALL | \$/T | () | | |
| RIA.V.60 | t | C6 | 1 | 18 | 61 | HQ | c | ALL | \$/1 | t | | |
| RI & - Y - A | 1 | F11 | X | 20 | GT | но | C | CSD | \$/1 | () | |)) } |
| 161-4-9 | 1 | F 10 | X | đ | 61 | 110 | £ | C\$0 | 5/T | () | | 11 |
| RIM-V+11A | \$ | r12 | ų | 4 | 10 | НО | C | ALL | 5/T | () | | |
| n in 10 unio RIR-Y-118 | ? | 1332. in . in . i . i i i i i i i i i i i i | X | 4 | GT | HO | Ċ | ALL | 5/1 | () | | |
| RHR-V-16A | 2 | H11 | X | 16 | GT | MO | С | ALL | 5/1 | () | | |
| RIG-V-168 | 2 | F6 | X | 16 | GT | MO | C | ALL | S/T | () | | ************************************** |
| RHR-V-17A | 2 | H10 | X | 16 | GT | м0, | C | ALL | s/t | () | | |
| RIR-Y-178 | 2 | F6 | X | 16 | GT | Ht) | C | A! L | 5/T | () | | |

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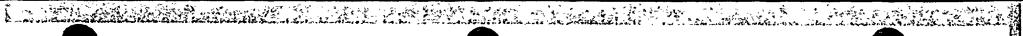
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| System NAME RESIDENT INAL NEMULAL SYSTEM (MM) | Iwg. No | Page 7 | of |
|---|---------|--------|----|
|---|---------|--------|----|

| NA-V-21 | ž | Ell | | gory | In hes | Valve Type | Actuator | Rormal Posttion | Test huring | test | Stroke 11me | Hates | For Relief |
|-----------|---|------------------|-----|---------------------|------------|---------------|--------------|--------------------|----------------|------|----------------|------------------------------|--|
| | | | X | | 18 | ĠŜ | Ho | Ċ | ALL | s/t | () | | |
| RIA-4-23 | 1 | H7 | X | | 6 | 68 | HO | r, | CSD | S/T | () | a tracta | 1) |
| RIR-V-24A | ? | F 17 | , I | | 18 | 63 | HQ | C | ALL | 5/1 | () | | |
| RIR-Y-248 | 2 | E6 | X | r | 18 , | G8 | HO | C | ALL | S/T | () | | |
| RHR-V-27A | 2 | Ell | X | • | 6 | GT | M 0 | C | ALL | s/t | () | | |
| RIR-V-278 | 2 | £7 | X | | 6 | GT | MO | ¢ | ALL | S/T | () | | |
| RHR-V-31A | 2 | B13 | X | X | 18 | CK . | SA | C | ALL | S/E | N/A | | |
| HIM-V-318 | 2 | 84 | X | X | 18 | CK | SA | Ç | ALL | \$/E | N/A | | |
| RIR-V-JtC | > | ħ) | ¥ | ¥ | 1 0 | 'n | RA | r | ALL | 1/1 | N/A | | ······································ |
| RHR-Y-40 | 2 | 64 | X | | 4 | GR | 140) | Ç | VÍF | 5/1 | () | | |
| RIR-Y-41A | 1 | G10 | X | X | 14 | CK | A0 | ŗ, | C 50 | S/E | H/A | | 7 |
| RHR-Y-41B | 1 | G8 | x | X | 14 | CK | A0 | C | ເຮົາ | S/E | N/A | | 7 |
| RIR-V-41C | 1 | G10 [°] | X | X | 14 | CK | A0 | ſ. | C SO | S/E | H/A | | 7 |
| RIR-V-42A | 1 | G11 | X | . B & 4 & ans 2 & a | 14 | GT | HO | C | ALL | 5/T | () | ● ▲ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ | |

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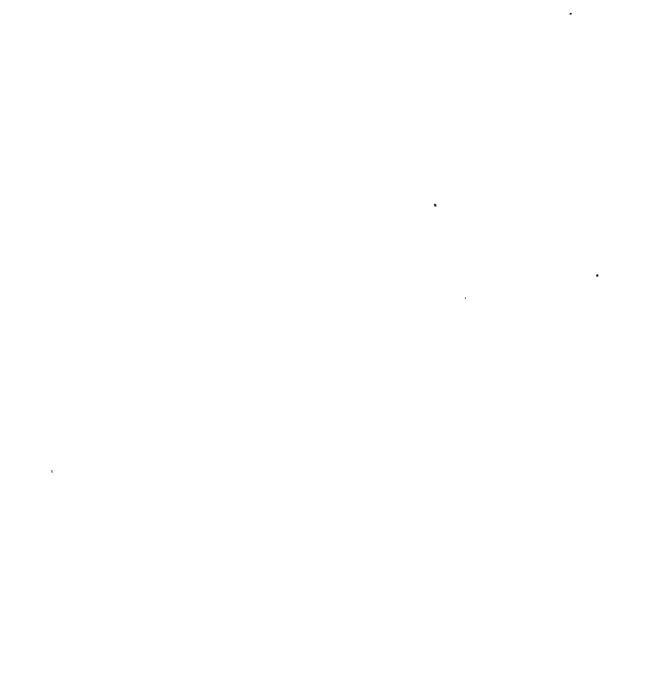






| System Ham | ACSIDU | IAL HEAT REMOVAL | 5421 | M (RIR) | | Dug. | No. <u>4571</u> | | | | Paq | • | of <u>6</u> |
|-----------------|------------------|------------------|--|---------------------------|----------------|---------------|------------------|--------------------|----------------|-------|----------------|---------|---------------------------|
| Valve Number | Class | Coordinates | Ca | Valve stegory B C D | Size Inches | Valve Type | Actuator Type | Hormal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
| RI#-V-428 | 1 | 67 | X | | 14 | GT | MO | C | ALL | S/T | () | | |
| RIR-V-42C | 1 | G11 | 5 X | | 14 | GT | M 0 | C | ALL | 5/T | () | | |
| NID V-46A | ; | D12 * | ¥ | R | £ | ÇK. | 14 | ć | ALL | S/E | H/A | | ***** |
| RIQ-V-468 | 2 | [6 | 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 1 | X | 6 | ČK | SA | C | ALL | S/E | ¥/A | | |
| RIR-V-46C | 2 | DII | x | x | 6 | CK | SA | с | ALL | S/E ' | N/A | | |
| RIR-Y-47A | 2 | J14 | | x í | 18 | GT | MO | 0 | ALL | S/T | () | | • |
| RHR-V-47B | ? | J3 | | X | 18 | GT . | MO | 0 | ALL | \$/T | () | | <u></u> |
| RHR-Y-48A | Z | J13 | | X | 18 | 68 | MO | 0 | ALL | S/T | () | | |
| RIR-V-480 | 2 | JS | | X | 18 | 68 | H() | 0 | ALL | \$/t | () | | |
| RIR-Y-49 | 2 | G4 . | | X | 4 | et | NO | ŗ | vit | \$/T | () | | |
| RIR-V-50A | 1 | GlO | X | X | 12 | CX | AO | C | C.SD | S/E | H/A | | 2 |
| RHR-V-500 | 1 | G8 | X | X | 12 | CK | A0 | C | CSD | 5/E | Ħ/A | <u></u> | ? |
| RIR-V-53A | 1 | G11 | X | **** | 12 | C8 | HO | C | CSN | s/t | () | | |
| RIR-V-538 | 1 | G7 | X | | 17 | G(; | N0 | C | CSN | S/T | () | | 11 |
| ****** | 10. Xula ala ana | esestielai Afla | b | 4 w. ūĭ. | | · ±·- | nsge velvge | | | | | | |

Page Rev 1570



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| Valve Humber | <u>Class</u> | Coordinates | Val Cate A B | gory CD | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Iest. | Stroke Tlan | Notes | Requests For Relief |
|-----------------------|--------------|--------------|--------------------|-------------------|----------------|---------------|------------------|--------------------|----------------|-------|----------------|-------|---------------------------|
| RI R - V - 60A | 2 | н12 | X | | 3/4 | SV | SOL | C | ALL | S/E | N/A | | 1 |
| RIR-V-608 | 2 | JS | X | | 3/4 | 5V | SOL | ſ. | ALL | \$/F | N/A | | 1 |
| RIR-V-68A | 3 | N524 REV. 19 | | X | 16 | GT | HO | 0 | ALL | \$/T | ·() | | |
| RIR - Y - 680 | } | H524 REV 19 | X | 6 8 744 474 Avenu | 16 | GT | HI) | 0 | ALL | \$/T | () | | = |
| RIR - Y - 75A | 2 | H12 | X | | 3/4 | SY | SOL | r. | ALL | S/E | H/A | | |
| RIR-Y-758 | 2 | J5 | X | | 3/4 | S¥ | SOL | C | ALL | \$/E | N/A | | |
| RIR-V-84A | 2 | 613 | X | X | 1 1/2 | CK | SA | C | ALL | \$/E | H/A | | |
| NIR-V-848 | 2 | 87 | X | X | 1 1/2 | CX | SA | C | ALL | S/E | H/A | | |
| BIB-V-B4E | ž | 84 | ¥ | X | 11/2 | ćk | ša | ć | ÂĹĹ | \$/E | H/A | | |
| RIR-Y-89 | ? | ,)6 | X | X |]1 | Lk | M | ۱ | ALL | \$/E | H/A | | |
| RIR-V-101A | 2 | F14 | X | χ | 2 | CK | SA | C | ALL | S/E | M/A | | |
| RHR-V-1018 | 2 | F4 | X | X | ? | CK. | SA | ů. | ALL. | 5/E | N/A | | `` |
| RIR-V-103A | 2 | F14 | X | xx | 2 | ск. СК | SA | C | ALL | \$/E | N/A | | |
| RIR-V-1038 | 2 | F4 | X | x | 2 | СК | SA | С | ALL | \$/E | N/A | | <u></u> |

Page 4

| System Name | RESIN | IAL HEAT REINDYAL | SYSTEII (RIMR) | | | tho. <u>4521</u> | | | | Pan <u>e</u> | <u> </u> | nf <u>f</u> |
|-----------------|--|-------------------|------------------------------------|-------|---------------|------------------|--------------------|--------------------------|--------------|----------------|---------------------------|--|
| Yalve Numior | Class | Cost Itinales | Valve Category | Size | Yalve Ivez | Artuator | Normal Post Lon | tast tast thur ing | | Strate Time | Hates | Populacia For Raliat |
| RIM+V+111A | 1 | () a | I | 14 | 61 | PAN | Ô | PEFUEL | PO\$ 140 | N/A | | |
| #I#E-V-1118 | 1 | 68 | Χ | 14 | GT | MAN | n | REFIHEL | PN5 140 | ٩/٨ | | |
| RIR-4-111C | 1 | G9 | X | 14 | 61 | МАН | n | REFUEL | P05 150 | M/A | | |
| HIM-V-117A | 1 | 69 | I | 12 | 6T | МЛЯ | n | RELIAT | P05 [110 | N/A | | 5 |
| RIR-V-1178 | 1 | GR | X | 12 | ta | MAN | n | - | PH\$ 140 | N/A | | |
| RIR-Y-113 | 1 | 69 | X | 20 | F1 | MAN | 0 | REFINEL | POS 140 | n/A | | |
| RIR-Y-115 | 2 | Ji zz se z | X 5187682 2 096838 |]1 | GT | Ng | r | ALI, | ۲/۲ | () | College - 1992-1-1 | |
| RI#1-¥+116 | 2 | J& | x | 14 | ন | HO | r | Al.1 | 5/T | () | (Same og 46 i Sami | , 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 199 |
| RIFL-Y-171A | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | []] 1 | , 100 2002 100 200 200 200 200 | 1:1/7 | 68 | щ | F | ALL | <u>\$/</u> † | [] | | an a |
| RI#1-V-1248 | ? | 014 | X | 1-1/7 | 98 | ۳ ۵ | C | ALL | 5/1 | () | | |
| RIR-Y-175A | 7 | D4 | X | 1-1/? | GB | HI) | r | ٨١٤ | \$/1 | () | | |
| RIH-V-1258 | 2 | D4 | X | 1-1/? | nt | אוז | ſ. | ALL | \$/T | () | | |
| R182+V+134A | ? | 615 | х х | , | r.8 | μŋ | r | ALL | 5/T | () | | |
| | 2 | F2 | x | , | 68 | | ر | | 5/1 | () | | |

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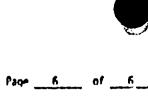
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System Name RESIDUAL HEAT REMOVAL SYSTEM (RHR)





Dug. No. _ H521_



| Yalve Humber | <u>C</u> lass | Coordinates | Valve Category | Size | Valve Type | Actuator Type | Normal Pealtim | Test | | Stroke Time | Notes | Requests For Relief |
|---------------------|---------------|-------------|-------------------|-------------|---------------|------------------|-------------------|---------|---------------|----------------|-------|---------------------------|
| RIR-FCY-64A | | C12 | X | 3 | 68 | HO | 0 | ALL | 5/1 | () | | |
| RIR-FCV-648 | 2 | C5 | X | 3 | G 8 | MO | 0 | ALL | \$/T | () | | |
| RIR-FCY-64C | 2 | C8 | X | 3 | G8 | HO | 0 | ALL | S/T | () | | |
| RIR-RY-1A | 2 | J14 | X | 3/4 x 1 1/2 | RY | SA. | C | REFUEL | BENCH TEST | n/A | | |
| RIR-RV-18 | 2 | 73 | X | 3/4 x 1 1/2 | RY | SA | r. | REFUEL | BENCH TEST | H/A | | |
| RIA-RY-5 | 2 | C11 | X | 1 x 2 | R¥ | SA . | (| REFILEL | RENCH | #/A | | |
| RIR+77-25A | 2 | F12 | X | 1 x 2 | RY | SA | C, | REFUEL | BEHCH TEST | N/A | | |
| RIR-RY-25B | 2 | F6 | X | 1 = 2 - | R¥ | A2 | C | REFUEL | BENCH | H/A | | |
| NM-NY 25C | ? | EN | X | 117 | RV | <u>SA</u> | 8 | REFUEL | ALACH TEST | H/À | | |
| RI IR-RY-3 0 | 2 | N7 | X | ¥4 x 1 | R¥ | SA | C | REFUEL | BENCH TEST | N/A | | |
| RIN=RV=35 | 2 | 01) | X | 6 x 8 | RV | SA | C | REFLIEL | REHCH TEST | M/A | | |
| RIR-RY-BRA | ? | £11 | X | 3/4 x 1 | R¥ | ۶۸ | ſ | REFUEL | AEKCH | H/A | | |
| RIR-RY-888 | 2 | E6 | X | 3/4 x 1 | RV | SA | C | REFUEL | BERCH TEST | H/A | | |
| RIR-RV-88C | 2 | C11 | X | 3/4 x 1 | R¥ | SA | C | REFUEL | BENCII | N/A | | |

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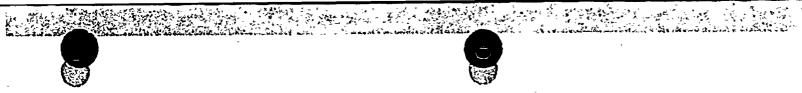
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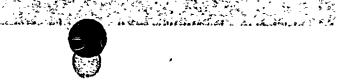
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| System Name | STAND | Y LIQUID CONTRO | <u>). (</u> | <u>sc)</u> | | Nwg. | No. <u>M522</u> | <u></u> | | <u></u> | Pag | e _ 1 | of |
|-----------------|---------|-----------------|-------------|---------------------------|----------------|---------------|------------------|--------------------|----------------|----------------|----------------|---------------------------|--|
| Yalve Nucher | <u></u> | Coordinates | | talvá itegory I C D | Size Inches | V_lve Type | Actuator Type | Normal Position | Test During | Test | Stroke 11na | Kites | Regunsts For Relief |
| 5LC-V-1A | 2 | ٤4 | | X | 4 | 68 | HO | C | ALL | 5/1 | () | | |
| 5L C-V-18 | 2 | D4 | | X | 4 | GR | H0 . | C | ALL | \$/1 | () | | |
| SLC-Y-4A | 1 | F8 | | X | 1-1/2 | SHEAR PLUG | SQU188 | С | REFUEL | 1WV 3610 | N/A | | |
| SLC-Y-48 | 1 | 08 | | X | 1-1/2 | SHEAR PLUG | SQU188 | c | REFUEL | 1WY 3610 | N/A | | |
| SLC-Y-6 | 1 | F11 | x | x | 1-1/? | CK | SA | ŗ, | REFUEL | \$/E | N/A | | 4 |
| SLC-Y-7 | 1 | F13 | X | X | 1-1/2 | CK | SA | C | REFUEL | S/E | N/A | | 4 |
| SLC-V-8 | 1 | F 12 | | X | 1-1/2 | 61 | HAH | 0 | REFUEL | POS IND |) H/A | | |
| SLC-Y-33A | 2 | F7 | | XX | 1-1/2 | CK | SA | C | ALL | S/E | N/A | | |
| SI C+4+338 | ; | p7 | | 1 1 | 1-1/7 | C.K. | 24 | Ĉ | ALL | ۲/£ | N/A | ¥ 5 1 2 16 16 3 1 3 5 3 1 | · · · · · · · · · · · · · · · · · · · |
| SLC-RY:79A | 1 | [6 | | X | 1 x 2 | RV | ۶A | C | AEFUEL | BEHCII TEST | H/A | | |
| SLC-RV-298 | 2 | D6 | | X | 1 x ? | RV | SA | C | REFUEL | BENCH TEST | N/Ņ | n | |

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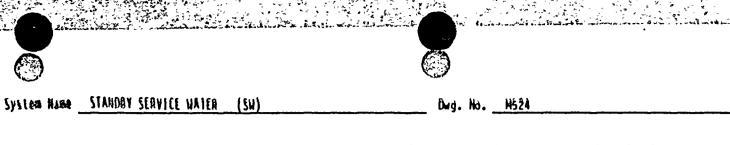


| System Name | RLACTU | R WATER CLEANUP | (RWCU) | | Dwg. | Ho. <u>H523</u> | | | | Pan | • | of <u>1</u> |
|----------------|--------|-----------------|------------------------------|----------------|---------------|--------------------|--------------------|----------------|------|----------------|------------------|---------------------------|
| Value Møber | Class | Coordinates | Valve Calegory A B C D | Size Inches | Valve Type | Artustor - Type | Normal Position | test During | Test | Stroke Time | Intes | Regimete for Relief |
| RWCU-V-1 | 1 | F15 | x | 6 | GT | HO | 0 | ALL | 5/1 | () | ha daharan siyan | ******** |
| RWCU-V-4 | 1 | £15 | X | 6 | GT | HŰ | 0 | ALL | \$/T | () | | |
| RWCU-V-40 | 1 | н11 | X | 6 | GT | MO | 0 | AL | S/T | () | | |

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| Valve Nucher | Chan | Coordinates_ | Valve Category TA H C. U | Size Inches | Valva Trre | Actuator Trpe | Harmal Pasitian | Test | _Test_ | Stroke | Notes | Requests for Relief |
|-----------------|------|----------------|--------------------------------|----------------|---------------|------------------|--------------------|----------|--------|--------|--------------------------------|----------------------------------|
| SW-Y-1A | 3 | IIS | X X | 20 | CK | SA | C | ALL | \$/E | H/A | | |
| SW-7-18 | 3 | Sh Z Gʻs | X X | 20 | CK | SA | C | ALL | S/E | N/A | | <u></u> |
| SW-V-2A | 3 | | X - | 20 | BF | HO | C | ALL | S/T | () | | <u></u> |
| SH-4-58 | 3 | 24 27 27 | X | 20 | • BF | MO | ¢ | ALL | \$/T | () | | |
| SH-4-4A | 3 | 5h 1 E9 | X | 8 | GT | ĦO | 0 | ALL | S/T | () | | |
| SW-Y-4B | 3 | Sh 2 G9 | X | 8 | GT | NO | 0 | ALL | S/T | () | | |
| SW-V-4C | 3 | Sh 1 F7 | X | 8 | GT | H0 | Û | AI, L | \$/T | () | | |
| 5W-V-12A | 3 | 54 J 63 | X | İİ | ĠŢ | MO | C | ALL | \$/T | () | 6 2⁴⁴⁰⁻³⁶² A | |
| SM-A-158 | 3 | 63 54 X | X | 18 | GT | NO | C | ALL | S/T | () | | |
| SW-Y-24A | 3 | 54 T 69 | X | 2 | GT | MO | 0 | ALL | S/T | () | | |
| SW-Y-24B | 3 | 5n 2 F10 | X | 2 | GT | HO | 0 | ALL | S/T | () | | |
| SW-V-24C | 3 | sn 2 K10 | X | '2 | 10_ | НО | 0 | ALL | S/T | () | | |
| SH-4-58 | 3 | 54 T Gð | X | 8 | ßF | NO | C | ALL | S/T | () | | |
| SW-V-34 | 3 | Sh 2 C11 | X | 1 1/2 | 68 | SV | 0 | ALL | S/T | () | | |
| 54-4-44 | 3 | Sh 1 19 | X | 2 | 61 | HO | 0 | ŅL | \$/T | () | | |
| SN-V-54 | 3 | Sh I Ft | X | 2 | gt | NO | c | ALL | s/t | () | | May 23 Cold St. 2 1976 Installad |

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| System NameSTARUBY_SERVICE_HATER(SH) | Durg. | Mn. | <u>1624 HR</u> | 107 | Pa şa | | of_ | ! |
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| Value Rueber | Class | Coordinates | Valve Lategory A B C D | Size Inches | Valve Type | Actuator - Type | Normal Position | Test During | Test | Stroke Time | Kotes | For Reliaf |
|----------------------|-----------------------|------------------------|------------------------------|----------------|---------------|--------------------|--------------------|----------------|------|----------------|----------|---------------|
| SN-A-R94 | 3 | 61 61 | x | 18 | GT | MO | n | ALL | \$/T | () | | |
| SW-V-698 | 3 | Sh Z F3 | X | 18 | GT | HO | 0 | ALL | S/T | () | | |
| SU+V=70A | } | Sh 1 07 | l | 18 | Gt | HO | 0 | ALL | \$/t | () | | |
| SW-V-708 | 3 | Sh Z F3 | X | 18 | 61 | HO | 0 | ALL | \$/T | () | | |
| SM-A- 2 0 | 3 | SR Y HS | X | 2 | 61 | MO | C | ALL | S/T | <u>(</u>) | | |
| SH-Y-92 | 3 | Sh 2 H9 | XX | 2 | CK | SA | C | ALL | S/E | N/A | <u> </u> | |
| SW-V-201 | 7 REU7 5 | 6 Z C14 | X | 1/2 | SV | SOL | C | ALL | S/E | N/A | | 1 |
| SM-A-505 | ig 1507, 5 3 | h 2 C14 | X | 1/2 | CX | SA | C | ALL | S/F | N/A | | |
| zm-a-sój m | ig 16507, 5 J | 5 2 E14 | J | 1/2 | EK | SA | 0 | ALL | S/E | H/A | | |
| 5W-V-204 | ng ' Mail 7 10 1 J | C14 | X Aryoth Cyar an Shownood | 1/2 | SV | SOL | 0 | ALL | S/E | H/A | | 1 |
| 2M-A-109 | 18-18117 | M 7 BIS | | 1/2 | 54 | SOL | C | ALL | \$/E | N/A | ····· | } |
| 15 105-y-207 | 19 1807, 3 3 | n 7 815 | Y | 1/7 | ſĸ | 5A | ¢ | ALL | \$/t | N/A | | |
| US 10-1-108 | 19 1007, 5 3 | 815 | X | 1/2 | ά | SA | 0 | ALL | S/E | #/A | ¥ | |
| SW-V-209 | rg HSO7, 3 3 | n 2 815 | X | 1/2 | SV | sol | 0 | ALL | S/F | N/A | | 1 |
| SW-V-210 | ig 1607. 3 | אז ב איז | X | 1/? | 5V | SM. | 0 | ALI | S/E | H/A | | |
| | 19-1461173 3 | 811 | X | 1/2 | S¥ | SOL | - C | ALL | S/E | N/A | | 1 |

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| System Name | STANDB | SERVICE WATER | (SW) | ···· | Dug. | No. <u>H524</u> | MS | 17 | | Pag | • _ 3 _ • | of <u>3</u> |
|------------------|---------------|---------------|------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|-----------|---------------------------|
| Valve Ruster | Class | Coordinates | Valve Category A B C U | Size Inches | Yalve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Kequests For Relief |
| 2M-A-515 Emil | 14507, S 3 | A14 | X | 1/2 | SV _ | SOL | 0 | ALL | 5/E | H/A | | 1 |
| 54-4-513 | 1 HEU7, 5 | h Z B13 | X | 1/2 | SV | SOL | C | ALL | s/t | n/A | | 1 |
| SW-V-214 | 3 | 68 68 | ¥ | é | AF | M | · [| ALL | \$/T | () | | |
| 54.4.214 | 3 | Sh Z Ca | ° X | ٤ | ØF | A() | C | ALL | 5/1 | () | | |
| 54-4-516 | 3 | Sh 2 H8 | X | 6 | BF | N) | C | ALL | S/T | () | | |
| SW.V.217 | 1 | 11a 24 S | a | é - | #1 | Al) | C | ALL | 5/1 | () | | |
| SW-V-75A | 3 | 5h T A13 | 1 | 2 | 68 | И | C | ALL | S/T | () | (1) | |
| SH-Y-758 | 3 | 5h 2 B14 | 1 | 2 | 68 | M | C | ALL | S/T | () | (1) | |
| SW-Y-187A | 3 | Sh 1 614 | X | 6 | 0T | H | C | ALL | \$/T | () | (1) | |
| SW-V-1878 | 3 | Sh 2 C13 | X | 6 | GT | М | C | ALL | S/T | () | .(1) | |
| 5W-V-188A | 3 | Sh T H13 | X | 6 | GT | M | C | ALL | S/T | () | (1) | |
| SW-V-1888 | 3 | Sh 2 012 | Ľ | 6 | GT | N | c | ALL | 5/1 | () | (1) | |

(1) These values are not yet installed and may not be installed until the first fuol outage. Above test program will be implemented after values are installed and operable.

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| System Name REACTOR CLOSED COOLING (RCC) | Durg. No. <u>H525</u> | Page 1 | of <u>1</u> |
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| Valve Munber | C1483 | Coordinates | Valve Category A B C B | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Strnke Time | Hotes | Requests For Reliaf |
|-----------------|-------|-------------|------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|----------------|---------------------------|
| RCC-V-S | 2 | DIO | X | 10 | GT | HO | 0 | CSD | \$/T | () | | 8 |
| RCC-V-21 | 2 | D10 | X | 10 | GT | HO | 0 | CSD | S/T | () | | 8 |
| RCC-V-26 | 2 | Bll | x x | łó | ĆX | SA | 0 | CSD | S/E | N/A | | 8 |
| RLL-V-4() | 2 | DID | X | 10 | GT | HO | 0 | c.so | \$/T | () | innenin Insenä | |
| RCC-V-104 | 7 | FIN | Y | ta | nt | HO | ń | t su | 4/1 | t | | A |
| RCC-V-129 | 3 | E5 | X | . 8 | GT | НО | 0 | ALL | S/T | () | | |
| R(C-V-130 |] | ti | X | 8 | Ġf | Но | Ö | ALL | \$/1 | () | | |
| RCC-V-131 | 3 | L6 | X | 8 | GT | но | 0 | vŕŕ | \$/T | () | ***** | <u></u> |

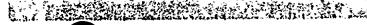
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| System Name | רענן_ ו | OUT COULTRY SAZ | <u>ITH (FPC)</u> | | Deg. | No. <u>4576</u> | | | | Pao | • <u> </u> | n* <u>1</u> |
|------------------|----------|-----------------|--------------------------------------|----------------|---------------|------------------|----------------|----------------|---------------|---------------|--------------------|---------------------------------------|
| Yalve Number | <u> </u> | Coordinates | Valve Calegory A.B.C.D | Size Inches | Yalve Type | Actuator Type | Position | Tost During | Test | Strate Tim | Mates | Banipels For Rallet |
| 1 PC - V - 1 12A | 3 | 012 | X | (, | ΓK ΄ | sv. | n | ALL | 5/6 | M/A | | |
| FPC-V-1128 | 3 | 510 | X | б | א | SA | 0 [*] | ALL | 5/F | <u>4/A</u> | | |
| FPL-¥-153 | 2 | 811 | ¥ . | 6 | GT | 40 | ٦ | ALL | §/T | () | | |
| FPC-4-154 | 7 | F11 | 3 | r. | nt | 40 | ŕ | A11 | 415 | + > | | |
| 126-4-124 | 1 | (1) | L - | ٨ | 61 | ч () | 1 | ALL | 5/1 | () | | · · · · · · · · · · · · · · · · · · · |
| FPC-Y-172 | 3 | C9 | X | 2 *1 th | GT | 40 | n | AI,L | <u>\$</u> /1 | () | | |
| FPC-V-173 | 3 | CB | X | 8 | GT | 40 | 0 | ALL | S/T | () | L# | |
| FPC-V-175 | j | £9 | i | A | ¢† | HO | r | ALL | \$/T | () | - | |
| FPC-Y-181A | 3 | n14 | ľ | ß | n | 'N' | n | AU | \$/T | 1) | | |
| FPC-Y-1818 | 3 | D14 | so "deniñ vezitek ten: _ − e.t. X | 8 8 | f.T. | 40 | 0 | ALL | 5/1 | () | | |
| FPC+V-101 | 3 | C9 | X | 8 | GT | 40 | n | ALI, | 5/7 | () | | |
| FFC-RY-117A | 3 | DII | X | 3/4 x 1 | R¥ | A2 | ŗ | REFUEL | REMAN TEST | M/A | | |
| FPC-RV-1179 | 3 | c11 | x | 3/4 x 1 | RV | SA | r | REFIJEL | BENCH | I 4/A | LOCAL CHINESCOME (| 1 x 1023.013.243 643 |

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|-----------------|---------------|-------------|---------------------------|----------------|---------------|------------------|--------------------|----------------|-------|----------------|--|---------------------------|
| yttem Himd | <u>CONTHO</u> | L ROD DRIVE | (CRD, IKU) | | | NJ. <u>Hota</u> | <u></u> | | | P | age <u>1</u> | of |
| Valve Number | Class | Coordinates | Valve Category ABCD | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Tine | fates | Requests For Relief |
| RD-V-10 | \$ | K6 | X | 1 | Gð | AO | 0 | ALL | S/T | () | | |
| RD-Y-11 | 2 | F6 | X | 2 | G8 | N) | 0 | ALL | S/T | () | | |
| CRD-V-110A | 2 | D13 | X | 1-1/2 | SV | SOL. | N/A | CSD | S/E | N/A | Normally ene to pressuria | ergized y |
| CRD-V-1108 | 2 | D13 | X | 1-1/2 | siv | SUF | H/A | CSD | S/E | H/A | Scran Valve diaphragas | 9 |
| RD-Y-111 | 2 | 013 | X | 1-1/2 | CK | SN | C | CSD | 5/E | H/A | | |
| CRD-RV-12 | 2 | 116 | x | 3/4 x 1 | RV | SA | C | REFUEL | BENCH | N/A | | |
| KCU-V-114 | 2 | CS | X X | | nx | SA | C | ALL | 5/F | H/A | | 9 |
| 100-4-112 | 2 | C5 | XX | | CK | SA | C | ALL | S/E | H/A | | 9 |
| HCU-¥-117 | 2 | D3 | X | | SV | SA. | 0 | AI L | 5/F | N/A | | ٠ |
| 10114-118 | 2 | DJ | X | | SV | Ś¥ | 0 | ALL | 5/E | H/A | | 9 |
| HCU-V-120 | 2 | C4 | X | | S¥ | SV | C | ALL | S/E | N/A | TYPICAL OF | 9 |
| 101-4-151 | 2 | C4 | X | | S¥ | SA | C | ALL | S/E | N/A | and the second second second second second second second second second second second second second second second | 9 |
| IKU-A-155 | \$ | C4 | X | | SV | _ SV | C | ALL | S/E | H/A | | 9 |
| 101-1-123 | 2 | C4 | X | | S¥ | SV | С | ALL | S/E | N/A | <u> </u> | ą |
| HCU-V-126 | 2 | C4 | X | 1 | GT | A O | C | ALL | S/E | H/A | | 9 |

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| System Name | CONTROL | L ROO DRIVE | (CRO, HCU) | | | No. <u>H578</u> | | , | | Paq | * | of |
| Valve Hunber | Class | Coordinates | Category TABCD | Size . Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Mates. | Reijunsts For Rollef |
| HCU-V-127 | 2 | C3 | X | 1 | GT | AO | с | ALL | S/E | N/A | | 9 |
| HCU-V-137 | 2 | C4 | XX | | CX | SA | С | ALL | S/E | N/A | | 9 |
| HCU-Y-138 | Z | C4 | XX | | CK | SA | C | ALL | S/E | N/A | <u></u> | 9. |

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(MS) System Name MAIN STEAN SYSTEM

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Page 1 of 3

| Valve | Class | Coordinates | Valu - Cate | gory | Size Inches | Valve Tyre | Actuator Type | Normal Publicion | Test Nuring | Test | Strake Tide | Hotes | Requests For Relief |
|-------------------|----------|-------------|----------------|---|----------------|---------------|------------------|---------------------|----------------|--------|----------------|---|---------------------------|
| H2+A+J8 | 1 | 813 | X | | 3 | ĜT | HO | C | ALL | \$/T | () | | h. |
| H7-A-18 | 1 | B14 | x | - | 3 | GT | но | Ċ | ALL | S/T | () | | |
| H5-V-22A | 1 | £12 | x | | 76 | R.) | A | 0 | ALL | 5/1 | () | | |
| MS-V-228 | 1 | £15 | ¥ | | ?6 | 68 | N | 0 | ALL | \$/1 | { } | | |
| HS-V-22C | 1 | F5 | X | 1945 - 19-1 19- 1 19-1 | 26 | GB | A0 | 0 | ALL | \$/T | () | - | |
| H5+V-220 |) | t b | X. | | 26 | 68 | A0 | 0 | ALL | S/T | () | · · · · · · · · · · · · · · · · · · · | |
| HS-V-28A | 1 | F13 | X | | 26 | G8 | A0 | 0 | ALL | S/T | () | • | |
| MS-Y-288 | 1 | E13 | ۲, | | 26 | 68 | N | 0 | ALL | S/T | () | ······································ | |
| H3-4-50C | 1 | FA | X | <u>+_</u> | 26 . | 68 | AÐ | Ð | ALL | §/Ŧ | E) | | |
| HX V=### | 1 | #4 | X | | 26 | យុង្គ | N) | 0 | AL | • \$/1 | () | ₩,₩,₩,₩,₩,₩,₩,₩,₩,₩,₩,₩,₩,₩,₩,₩,₩,₩,₩, | 2.71740224548201 |
| MS-V-37 SERIES | 2 | C6-C11 | X | X | 10 | CK | SA | C | CSD | * \$/E | H/A | TYPICAL OF 18. | 5 |
| MS-V-38 SERIES | 2 | C6-C11 | X | X | 10 | CK | SA | С | CSD | S/E | H/A | TYPICAL OF 18 | 5 |
| NS-V-67A |] | F13 | X | <u>, , , , , , , , , , , , , , , , , , , </u> | 1-1/2 | GT | MO | С | ALL | \$/T | () | | |
| HS-V-678 | <u> </u> | . F13 | X | | 1-1/2 | ĜŤ | HO | C | ALL | S/T | () | an na manana kata kata kata kata kata kata kata | |
| HS-Y-67C | 1 | F4 | X | | 1-1/2 | GT | ħJ | C | ALL | S/T | () | | |

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| Valve Runber | Class | Cocrdinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test Nuring | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|-------------|------------------------------|----------------|---------------|------------------|--------------------|----------------|--------------------------------|----------------|--|---------------------------|
| MS-V-67D | 1 | D4 | X | 1+1/2 | GT | HO | C | ALL | 5/1 | () | | |
| H3-RV-1A | 1 | 10 | L | 6 x 10 | S/H | AD/SA | C | REFUEL | BENCH TEST | N/A | ************************************** | |
| MS-RV-18 | 1 | Ell | X | 6 x 10 | S/R | A0/SA | C | REFIFL | BENCH | ¥/A | | |
| MS-RV-1C | 1 | F6 | X | 6 x 10 | S/R | AO/SA | C | REFUEL | BENCH TEST | N/A | | |
| MS-RY-10 | 1 | E7 | X | 6 x 10 | S/R | A0/SA | C | REFUEL | BENCH | N/A | | |
| HS-RV-2A | 1 | F10 | X | 6 x 10 | \$/k | AD/SA | C | REFUEL | BÉNCH TEST | H/A | | |
| MS-RV-28 | 1 | E10 | X | 6 x 10 | S/R | 10/SA | C | REFUEL | BEHCH TEST | H/A | ******** | |
| NS-RV-2C | 1 | F7 | X | 6 x 10 | . \$/R | AD/SA | C | REFUEL | BENCH TEST | H/A | | |
| H5-KY-20 | 1 | Ð | X | 6 x 10 | 5/R | A0/5A | C | REFUEL | BENCH IEST | H/A | | |
| HS-RV-JA | 1 | F9 | X | 6-± 10 | \$/A | A0/5A | C | REFUEL | PESCH | H/A | | |
| MS-RV-38 | 1 | E9 | X | 6 x 10 | S/R | AN/SĄ | Ç | AEFUEL | EEHCH TEST_ | N/A | | |
| MS-RV-3C | 1 | F7 | X | 6 x 10 | S/R | NO/SA | C | REFUEL | BENCH | N/A | | |
| M\$+KV+30 | 1 | £ 13 | X | 6 x 10 | S/R | A0/5A | C | REFUEL | TEST S/L4 Dt/ICH TEST | H/A | ***** | |
| HS-RV-4A | 1 | F9 | X | 6 x 10 | S/R | N0/SN | C | REFUEL | S/E® BEHCH ILST | H/A | ADS VALVE | |
| MS-RY-4B | 1 | E9 | X | 6 x 10 | S/R | AO/SA | C | REFUEL | S/E4 BENCH TEST | N/A | ADS VALVE | ******* |
| MS-RV-4C | 1 | F8 | X | 6 x 10 | S/R | AO/SA | C | REFUEL | S/E DERCH TEST | N/A | ADS VALVE | |

 Tech Specs require stroking ADS Valves at least every 18 months with Reactor steam dome pressure greater than or equal to 100 psig. Page 4-29 Revision 1

| yst on Nam | e <u>Ha</u> th s | IEAH SYSTCH | (H <u>S)</u> | | fwq. | Hn. H529 | + 20 - 1 - 1 + 1 | ™#1649 - an ⊂ g | ** ********* | | · · · · · · · · · · · · · · · · · · · | nt |
|--------------------------------|------------------|--------------------------|--------------|--------------------------|---------------|------------------|--------------------|-----------------|-------------------------------|-------------|---------------------------------------|---------------|
| | | | Valve | | | | | | atranta | 1017. L MAR | | Requisere |
| Naber | Class | Coordinates | A B C D | sise Inches | Valve Type | Actuator Type | Mormal Position | fest During | Test | Stroke | fotes | tar |
| | Class 1 | <u>Coordinates</u> L8 | <u>ABCD</u> | Size Inches 6 x 10 | - | - | | | Test 5/E* BEHCH TEST | Tiet | Rotes Ans valve | tor Relief |
| Minder HS-RV-4D HS-RV-5B | Class 1 | | <u>ABCD</u> | Inches | Туре | Туре | Position | During | S/E* BEHCH | Tiet | يلاني يوجنها جه التبايي أوجها الت | tar |

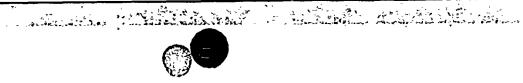
See note on previous page.

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| System Name | REACTO | R FEEDWATER SYS | TEM | (RFW) | | | Nn. <u>H529</u> | | | | Paq | • | nf <u>1</u> |
|-------------------|--------|-----------------|-----|------------|----------------|---------------|------------------|--------------------|-----------------|------|----------------|-------|---------------------------|
| Valve Hijtliff | (1455 | Coordinates | | egory C | Size Inchas | Valve Type | Actuator Type | Hormal Politión | Test Ruf Íñg | test | Stroke flme | Hates | Requests For Relief |
| RFW-Y-10A | 1 | 61S | X | X | 28 | CK | SA | 0 | C SN | S/E | N/A | | ĸ |
| 9FW-Y-1C8 | 1 | 65 | X | X | 24 | CX | SA | 0 | CSN | S/E | ¥/A | | 6 |
| RFW-Y-32A | 1 | 613 | X | X | 24 | CK | A) | 0 | CSN | 5/E | N/A | | ß |
| RFW-Y-328 | 1 | G5 | X | X | 24 | rx. | A0 | 0 | CS0 | S/E | N/A | | ĥ |
| RFW-Y-65A | 1 | 613 | | | 24 | QT | NO | 0 | CSD | 5/1 | () | | ķ |
| RFW-Y-65B | 1 | G4 | | χ | 24 | GT | MO | 0 | ารก | 5/1 | () | | ĥ |

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| REACTO | R RECTROULATION | COOL 1M | G (RRC, H | <u>17)</u> | Duc | 1. Ho. <u>H53</u> | 0 | | | | Page 1 | of <u>7</u> | | | | | | | |
|--------|--------------------------------------|---|---|--|---|--|---|---|--|---|--------|---------------------------|--|--|--|--|--|---|--|
| Class | Coordinates | Cate | egory | | | Actuator Type | Normal Position | Test During | Test | Stroke Tina | Holes | Requests For Relief | | | | | | | |
| 2 | C12 | X | X | 3/4 | , CK | AZ | 0 | REFUEL | S/E | h/A | | 7 | | | | | | | |
| 2 - | 812 | X | X | 3/4 | ; CX | SA | 0 | REFIHEL | S/E | H/A | | 7 | | | | | | | |
| 2 | ° C14 | X | | 3/4 | GT | HO | - 0 | REFILEL | 5/1 | () | | 7 | | | | | | | |
| 2 | B14 | X | | 3/4 | GT | HÔ | 0 | REFUEL | \$/1 | () | | 7 | | | | | | | |
| 1 | F 1 1 | X | | 3/4 | SV | SOL | 0 | ALL | S/C | " N/A | | 1 . | | | | | | | |
| 1 | F12 | X | , | 3/4 | SV | SOL | n | ALL | \$/F | MA | | 1 | | | | | | | |
| | 2 2 2 2 2 2 2 1 | Class Coordinates 2 C12 2 812 2 814 1 F11 | Class Coordinates A B 2 Cl2 X 2 812 X 2 814 X 1 F11 X | Vilve Class Coordinates ABCII 2 Cl2 X 2 812 X 2 812 X 2 812 X 2 814 X 1 F11 X | Class Coordinates A B C II Inches 2 C12 X X 3/4 2 B12 X X 3/4 2 B12 X X 3/4 2 B14 X 3/4 1 r11 X 3/4 | Valve CategoryClass CoordinatesCoordinatesABCIInchesType2C12XX $3/4$ CK2812XX $3/4$ CK2812XX $3/4$ CK2812XX $3/4$ GT2814X $3/4$ GT1r11X $3/4$ SV | Valve Category Size Valve Actuator Class Coordinates A B C Inches Iype Type 2 C12 X X 3/4 CK SA 2 812 X X 3/4 CK SA 2 812 X X 3/4 GT MO 2 814 X 3/4 GT MO 1 r11 X 3/4 SV SOL | Valve CategorySize ValveValve Actuator TypeRormal RormalClass CoordinatesABCIIInchesTypeTypePosition2C12XX3/4CKSAO2812XX3/4CKSAO2812XX3/4GTMOO2814X3/4GTMOO1r11X3/4SYSOLO | Valve Category Size Valve Actuator Rommal Test Class Coordinates A B C II Inches Type Actuator Rommal Test Class Coordinates Type Type Position During 2 Class Coordinates Type Position During 2 Class A C Type Position During 2 Bl2 X X 3/4 GT MO REFIHEL 2 Bl4 X 3/4 GT MO O REFIHEL 2 Bl4 X 3/4 GT MO O ALL <th <="" colspan="6" td=""><td>Value Category Size Value Actuator Normal Test Class Goordinates Tope Normal Test Class Goordinates Type Normal Test Class Goordinates Type Normal Test 2 Class Goordinates Type Normal Test 2 Class Goordinates Type Normal Test 2 Class X 3/4 CK SA O REFUEL S/E 2 Bl4 X 3/4 GI MO O REFUEL S/E 2 Bl4 X 3/4 GI MO O REFUEL S/E 2 Bl4 X 3/4 GI MO O<!--</td--><td>Value Category Size Value Actuator Normal Test Stroke Class Coordinates A.B. (.II Inches Type Position During Test Stroke 2 Cl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl4 X 3/4 GT HO O REFUEL S/T () 1 F11 X 3/4 SY SOL O ALL S/E N/A</td><td>Valve Category Size Category Size Category Size Coordinates Regues Coordinates Normal Test Stroke Coordinates A B C II Inchas Type Normal Test Stroke 2 C12 X X 3/4 CK SA O REFUEL S/E N/A 2 B12 X X 3/4 CK SA O REFUEL S/E N/A 2 B12 X 3/4 CK SA O REFUEL S/E N/A 2 B14 X 3/4 GT NO O REFUEL S/E 2 <th colspa<="" td=""></th></td></td></th> | <td>Value Category Size Value Actuator Normal Test Class Goordinates Tope Normal Test Class Goordinates Type Normal Test Class Goordinates Type Normal Test 2 Class Goordinates Type Normal Test 2 Class Goordinates Type Normal Test 2 Class X 3/4 CK SA O REFUEL S/E 2 Bl4 X 3/4 GI MO O REFUEL S/E 2 Bl4 X 3/4 GI MO O REFUEL S/E 2 Bl4 X 3/4 GI MO O<!--</td--><td>Value Category Size Value Actuator Normal Test Stroke Class Coordinates A.B. (.II Inches Type Position During Test Stroke 2 Cl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl4 X 3/4 GT HO O REFUEL S/T () 1 F11 X 3/4 SY SOL O ALL S/E N/A</td><td>Valve Category Size Category Size Category Size Coordinates Regues Coordinates Normal Test Stroke Coordinates A B C II Inchas Type Normal Test Stroke 2 C12 X X 3/4 CK SA O REFUEL S/E N/A 2 B12 X X 3/4 CK SA O REFUEL S/E N/A 2 B12 X 3/4 CK SA O REFUEL S/E N/A 2 B14 X 3/4 GT NO O REFUEL S/E 2 <th colspa<="" td=""></th></td></td> | | | | | | Value Category Size Value Actuator Normal Test Class Goordinates Tope Normal Test Class Goordinates Type Normal Test Class Goordinates Type Normal Test 2 Class Goordinates Type Normal Test 2 Class Goordinates Type Normal Test 2 Class X 3/4 CK SA O REFUEL S/E 2 Bl4 X 3/4 GI MO O REFUEL S/E 2 Bl4 X 3/4 GI MO O REFUEL S/E 2 Bl4 X 3/4 GI MO O </td <td>Value Category Size Value Actuator Normal Test Stroke Class Coordinates A.B. (.II Inches Type Position During Test Stroke 2 Cl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl4 X 3/4 GT HO O REFUEL S/T () 1 F11 X 3/4 SY SOL O ALL S/E N/A</td> <td>Valve Category Size Category Size Category Size Coordinates Regues Coordinates Normal Test Stroke Coordinates A B C II Inchas Type Normal Test Stroke 2 C12 X X 3/4 CK SA O REFUEL S/E N/A 2 B12 X X 3/4 CK SA O REFUEL S/E N/A 2 B12 X 3/4 CK SA O REFUEL S/E N/A 2 B14 X 3/4 GT NO O REFUEL S/E 2 <th colspa<="" td=""></th></td> | Value Category Size Value Actuator Normal Test Stroke Class Coordinates A.B. (.II Inches Type Position During Test Stroke 2 Cl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl2 X X 3/4 CK SA O REFUEL S/E N/A 2 Bl4 X 3/4 GT HO O REFUEL S/T () 1 F11 X 3/4 SY SOL O ALL S/E N/A | Valve Category Size Category Size Category Size Coordinates Regues Coordinates Normal Test Stroke Coordinates A B C II Inchas Type Normal Test Stroke 2 C12 X X 3/4 CK SA O REFUEL S/E N/A 2 B12 X X 3/4 CK SA O REFUEL S/E N/A 2 B12 X 3/4 CK SA O REFUEL S/E N/A 2 B14 X 3/4 GT NO O REFUEL S/E 2 <th colspa<="" td=""></th> | |

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| Valve Hunder | Class | Coordinates | Valve Category A B C D | Size Inches | Yalve Type | Actuator Type | Normal Position | Test During | Test | Stroke Tina | Notes | Reminists For Rellef |
|-----------------|-------|-------------|------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|----------|----------------------------|
| IN-V-17A, B | 2 | E4 | X | 3/4 | S¥ | SOL | 0 | CSO | S/E | N/A | | 1, 10 |
| 117-V-10A, B | 2 | ٤٩ | X | 3/4 | S¥ | SOL | 0 | CSD | \$/E | N/A | | 1, 10 |
| 117-V-19A, B | 2 | <u>į</u> 4 | X | 3/4 ' | SV | 501, | 0 | ୮.୨୦ | \$/E | %/ Å | | 1, 10 |
| HY-Y-20A, B | 2 | E4 | X | 3/4 | 54 | SOL, | 0 | CSO | \$/E | N/A | | 1, 1 |
| IM-V-33A, B | - 2 | £13 | X | 3/4 | SV | SOL | 0 | CS0 | S/E | N/A | <i>۲</i> | 1, 1 |
| HY-V-34A, B | 2 | E13 | X | 3/4 | SY | SOL. | 0 | ពុទ្ធព | S/E | N/A | | 1, 1 |
| IM-4-35A, B | 2 | E13 | X | 3/4 | SV | SOL | Ö | C.SN | S/E | H/A | | 1, 1 |
| 11Y-V-36A, B | 2 | £13 | X | 3/4 | SY | - SOL | 0 | CSD | 5/E | H/A | ı | 1, 1 |

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| Valve Nordsef | Class | Coordinates | Valve Category | Size Inches | Velve type | Actuator Type | Horma) Position | Test During | Test | Stroka Time | Notes | Requests For Relief |
|------------------|-------|-------------|-------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|-------|---------------------------|
| FDR-V-3 | 2 | 06 | · X | 3 | GT | An | 0 | ALL | \$/1 | () | | |
| rdr-v-4 | - 2 - | D6 | X | 3 | Ģt | AO | 0 | ALL | S/T | () | | |

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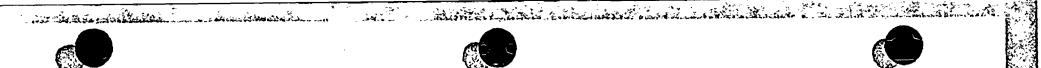
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| System Name | | ENT DRAIN RADIO | ACTIVE (EDR) | | Dwq. | Na, <u>M537</u> | | | ****** | Pa | Ω. [™] T **** | of James |
|-----------------|-------|-----------------|------------------------------|----------------|---------------|------------------|--------------------|----------------|--------|----------------|------------------------|---------------------------|
| Valve Husber | Class | Coordinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Reginsts For Relief |
| [12-4-19 | 2 | no. | X | 3 | GT | A0 | 0 | ALL | 5/1 | () | | |
| FIR-¥-70 | ? | 09 | X | 3 | GT | N0 | 0 | ALL | 5/1 | () | | |

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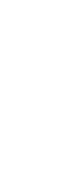
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| Yalve Number | Class | Coordinates | | tegory BCD | Size Inčhes | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Tipe | Hotes | Renuests For Relief |
|-----------------|-------|-------------|---|---------------|----------------|---------------|------------------|---------------------|----------------|------|----------------|--------|---------------------------|
| SP-4-5 | 7 | C5 | 1 | ĸ | 24 | BF | AO | C | ALL | \$/T | () | NC/FO | |
| :SP-V-6 | 2 | B14 | 1 | χ | 24 | ßF | A 0 | C | ALL | s/t | () | NC/FO | |
| :5P-V-7 | 2 | 86 | X | X | 24 | CK. | A0/5A | c | ALL | s/t | %/A | | |
| :SP-Y-8 | ? | B15 . | X | X | 24 | CK | AO/SA | C | ALL | S/E | N/A | | |
| SP-Y-9 | 2 | 86 | | • | 24 | ßľ | A0 | C | ALL | 5/1 | () | NC/FO | |
| CSP-V-10 | 2 | 56 | X | X | 24 | CK | A0/SA | C | ALL | S/E | H/A | | ***** |
| CEP-V-18 | 2 | J13 | X | | 2 | GT | AQ | 0 | ALL | \$/T | () | NO/FC | ~~~~~~~~~~ |
| Lt P-V-28 | 2 | JIJ | X | | ? | <u>a</u> t | AQ | Q | ALL | 5/T | () | N0/FC | |
| rep-v-38 | 7 | C14 | x | | ? | £1 | An | n | ALL | 4/1 | () | HI1/FF | |
| CEP-Y-4B | 2 | C14 | X | | ? | GT | M | 0 | ALL | s/T | () | HO/FC | |
| CVB-V-1A | 2 | B12 | X | X | 24 | , UK | AO/SA | ſ, | ALL | 5/E | N/A | | |
| CVB-V-18 | 2 | B12 | X | X | 24 | CX | AO/SA | C | ALL | S/E | Ņ/A | | |
| CVA-V-1C | 2 | B12 | X | X | 24 | C.K | AO/SA | C | ALL | \$/Ľ | H/A | | |
| CAR-A-1D | 2 | 812 | X | X | 24 | ттанат. СК | AO/SA | , 101222012121 C | ALL | s/E | N/A | | |
| CV8-1-1E | 2 | 811 | X | X | 24 | CK | A0/5A | °C | Alt | \$/Ę | N/A | | |



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| Valve Number | Class | Coordinates | | ngory L C D | Size Inches | Valve Type | Actuator Type | Hormal Position | Test During | Test | Stroke Time | Notes . | Requests for Relief |
|-----------------|-------|--------------|-----------------|----------------|----------------|---------------|------------------|---|----------------|------|----------------|--------------------------|---|
| CVR-V-IG | 7 | P11 | X | x | 74 | CK | A0/5A | - C | ALL | 5/t | N/A | | |
| CVB-V-1H | ? | 81] | X | X | 24 | CK | AO/SA | C | ALL | S/E | H/A | | ,, <u>,,,,,,,,,,,,,,,,,,</u> ,,,,,,,,,,,,,,,, |
| CYB-Y-1J | 2 | 89 | X | X | 24 | CX | AO/SA | C | ALL | S/E | H/A | | |
| CVB-V-1K | 2 | 89 | X | x | 24 | CK | AO/SA | C | · ALL | S/E | N/A | • | |
| CVB-V-IL | ? | 88 | X | X | 24 | (X | _A0/5A | Ċ. | ALL | \$/t | H/A | | |
| CA8-A-1H | 2 | 88 | X | X, | 24 | * CK | AD/SA | ſ. | ALL | S/E | N/A | <u> </u> | |
| CVB-V-IN | 2 | 88 | X | X | 24 | (* | A0/5A | G | AL | ۲/۲ | N/A | | ÷ |
| CV0-V-1P | 2 | ₿ 8 * | X | X | 24 | CK | AN/SA | C | ŅĻ | 5/E | N/A | | , , , , , , , , , , , , , , , , , , , |
| CVA+V=1Q | 1 | 87 | X | X | 24 | CX | A0/5A | C | ALL | 5/E | H/A | | |
| CYB-V-1R | 2 | 87 | X | X . | 24 | LK | AO/SA | C | ALL | s/F | N/A | | |
| CVB-V-15 | ş | B7 | X | X | 24 | κ | A0/5A | <u>، </u> | ALI | ۲/۲ | N/A | | |
| CVB-V-1T | 2 | 87 | X | X | 74 | CK | A 0 | C | <u>A</u> LL | S/E | H/A | <u>n evenin pre er</u> . | **** |
| P]=YX=250 | 2 | F13 . | سبَّسه ه شد ، م | X | 1 1 | , <u>sv</u> | SUT SUF | 0 | ALL | \$/E | H/A | | 1 |
| P[-VX-75] | ? | F13 | | X | 1 | SV | 50L | 0 | ALL | 5/E | N/A | | 1 |
| P1-YX-753 | ? | F13 | | X | 1 | SY | SOL | | ALL | 5/E | N/A | بڪ ڪي ڪي ڪري ته جي ٿار | 1 |

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| Yalve Hundser | Class | Coordinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | Hormal Position | Test During | Test | Stroke Time | Rominists For Nates Reliar |
|------------------|-------|-------------|------------------------------|----------------|---------------|------------------|--------------------|----------------|------|----------------|----------------------------------|
| 'l - VX - 256 | 2 | F7 | x | 1 | 24 | SOL | 0 | ALL | 5/8 | N/A | 1 |
| ·1-VX-257 | 2 | F7 | X | 1 | SV | SOL | 0 | ALL | S/L | N/A | 1 |
| 1.98.750 | 9 | F 7 | ¥ | 1 | ٩V | ың. | Ü | ALL | \$/E | H/A | 1 |
| N-NIMBERED | 2 | F12 | XX | 1 | CK | SA. | C | ALL | s/t | ٩/٨ | HAVE POSITION |
| m.ninmenen | ? | ; 7 | ¥ 4 | ١ | f H | 0A | ß | ALL | 5/2 | H/A | |
| 1-YX-762 | 2 | E13 | X | 1 | SV | SOL | 0 | ALL | S/E | N/A | 1 |
| 1-Vx-263 | ? | £13 | X | 1 | ŚŸ | SOL. | 0 | ALL | S/E | H/A | 1 |
| 1-VX-264 | 2 | E13 | X | 1 | SV | SOL | 0 | AL | S/E | N/A | 1 |
| 1-VX-265 | 2 | E14 | X | 1 | ŚV | snil | Ô | A.L | S/E | n/A | 1 |
| 91-VX-266 | 2 | E7 | X , | 1 | S¥ | SOL | n | ALI | S/E | n/A | |
| 1-¥X-267 | 2 | ٤7 | X | 1 | SV | SOL | 0 | ALL | S/E | H/A | ` 1 |
| 1-41-208 | 2 | E7 | X | 1 | SV | SOL. | 0 | ALL | 5/E | r/A | 1 |
| PI-VX-269 | 2 | E6 | ¥. | 1 | SY | SOL | 0 | ALL | S/E | N/A | 1 |

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System Name <u>CONTAINMENT ATHOSPHERE CONTROL</u> (CAC)

ACCIDENT MITIGATION Requests For Valve Actuator Valve Category 7 8 C U Size Valve Hormal Test Stroke Coordinates Nucher Class Position Test Notos Relief Inches During Time Type ivpe. () CAC=V=1A 2 F15 -X 2 DIA 110 Ĉ ALL \$/1 CAC-Y-18 F1 X 2 DIA C ALL \$/T ()2 110 . CAC-V-2 2 X GT S/T (.) G10 4 KO Ľ ALL 112 S/T () CAC-V-ZA 2 X 4 DIA 110 C ALL () CAC-V-28 2 F5 X 4 DIA ID C ALL 5/3 ()ā† HO C ALL 5/T £10 X 4 CAC+V+4 2 H10 GT HO C ALL S/T () CAC-V-6 2 X 4 \$/1 () 010 4 41 HO Ċ ALL R-V-JA1 2 X CAC-V-11 2 66 GT ()X 4 HO C ALL \$/T 2 CAC-V-13 ÉÉ X 4 Ġť Ċ ALL 5/1 () KO но CAC-V-15 2 115 X GT C ALL S/T () 4 CAC=V=17 2 () Dð 61 X 4 HO Ĉ ALL \$/T 1405 CAC-V-318A 2 DIZ X 1 GT MAN C REFUEL H/A IND POS • CAC-V-3188 2 D12 X 1 GT HAN С REFUEL N/A IND ÷ 2-1/2 68 ALL S/T (). CAC-FCV-1A 2 H10 X HO C

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| Valve Number | Class | Coordinates | Valve Category X B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Notes | Requests For Relief |
|-----------------|-------|-----------------------------|--|----------------|---------------|------------------|--------------------|----------------|---------------|----------------|------------|---------------------------|
| CAC-FCV-18 | 2 | H6 | X | 2-1/2 | G8 | - HO | C | ALL | S/T | () | '. | |
| CAC-FCY-2A | 2 | G10 | x | 2-1/2 | GB | 110 | C | ALL | S/T | () | - | , |
| CAC-FÇV-28 | • ? | G5 | X | 2=1/2 | 68 | 11) | Ĵ | , ALL | S/T | () | , | |
| "A"+FDV+3A | + | pin | R '. | 2-1/2 | 68 | 110 | C | ALL | \$/1 | () | | <u></u> |
| CAC-FCV-38 | 2 | `D6 | X . | 2-1/2 | Ģ8 | łD | Ċ | ALL | S/T | () | | |
| CAC-FCY-4A | 2 | F10 | X | 2-1/2 | 68 | 10 | C | ÂLL | S/T | () | - * | · · · |
| CAC-FCV-48 | 2 | tó | <u>x.</u> | 2-1/2 | 68 | 10 | C | ALL | . 5/1 | () = | | |
| CAC-FCV-5A | 3 | F14 | X | 1 | 68 | - HQ | C | ALL | 5/1 | () | | |
| CAC-FCV-58 | 3 | FZ | X | 1 | 68 | Ю | C | ALL | \$/T | () | | |
| CAC-FCV-6A | 7 | A12 | ¥ | > | 64 | 111 | r | ALL | N/1 | t } _ | | |
| CAC-FCY-6B | 2 | 64 | X | • <u>?</u> | GR | 10 | Ç | ALL | \$/T | () | | |
| CAC-RY-63A | 3 | E12 | X | 1 x 2 | RV | , sa | C | RFFIFT | BENCH TEST | H/A | | |
| CAC-RV-638 | 3 | E4 | X | 1 x 2 | RV | SA | ć | REFUEL | BENCH TEST | | | |
| CAC-RY-65A |] | متحدث کا مدر رسندهند DIJ | And Anno Friday and Anno Friday and Anno Friday and Anno Friday and Anno Friday and Anno Friday and Anno Friday Anno Friday and Anno Friday and | 1 1/2 x 3 | RV | SA | C | REFUEL | BENCH TEST | N/A | | |
| LAC-HV-658 | 3 | D4 | X | 1 1/2 x 3 | RV | SA | C | REFUEL | BENCH | N/A | | ***** |

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|--------------------|------------|-----------------|------|-----------------|-----------------------------|---------------|------------------|--------------------|----------------|------|----------------|---------------------------------------|---------------------------|
| System Name | CONTAI | MHENT INSTRUMEN | TAIR | (CIA) | A i e takan En da ita a Lua | Dug, | Na. <u>11556</u> | | | | | Page <u>1</u> | of <u>1</u> |
| Valve hunder | Class | Coordinates | | 1ve 2007 y - | Size Inches | valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Ting | Notes | Pequests For Reliaf |
| :IA-V-20 | 2 | J6 _ | X | | 3/4 | G8 | 040 | 0 | ALL | S/T | `() | | - |
| CIA-V-21 | 2 | J6 | - X | X | 3/4 | 1 CK | SA | 0 | REFUEL | S/E | N/A | | 3 |
| IA-V-24 | 2 | H4-K4 | X | X | 1/2 | (X | şa | Ç | REFIEL | S/E | N/A | TYP. OF 4 | 3 |
| CIA-Y-30A | 2 | HS | X | | 1/2 | 68 | HO | 0 | ALL | \$/1 | () | | |
| CIA-V-308 | 2 | F6 | x | | 1/2 | 68 | 150 | Q | ALL | \$/T | () | · · · · · · · · · · · · · · · · · · · | <u>,</u> |
| CIA-V-31A | 2 | H6 | X | X | 1/2 | CX | SA | 0 | REFUEL | S/E | n/A | ****** | 3 |
| CIA-V-318 | Ż | F6 | X | X | 1/2 | CX | SA | 0 | REFUEL | S/E | R/A | - - | 3 |
| CIA-V-36 SERIES | 2 | B4-14 | X | X | 1/2 | α | SA | C | REFUEL | S/E | N/A | TYP. OF 18 | 3 |
| C14+A×34V | 2 | 117 | X | | 1/2 | 58 | SOL | 0 | ALL | S/E | H/A | | 1 |
| CIA-V-398 | <i>,</i> 3 | H7 | X | | 1/2 | SV | SOL | 0 | ALL | S/E | #/A | - | 1 |
| CIA-V-40 SERIES | 2 | H5-85 | X . | X | 1/2 | CX | SA - | 0 | REFUEL | \$/E | H/A | TYP. OF 7 | 3 |
| CIA-Y-41A | 3 | H7 | X | x | 1/2 | α | SA | 0 | REFUEL | S/E | H/A | | 3 |
| CIA-V-418 | 3 | · F7 | X | X | 1/2 | ĆX. | SA | 0 | REFUEL | \$/E | H/A | | 3 |

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| JYSTPA HARE | MAIN | ITEAN LEAKAGE CO | HITROL (MSLC) | | Dwg. | No. <u>H557</u> | | | | Pad | • | of <u>1</u> |
|-----------------|-------|------------------|------------------------------|----------------|---------------|------------------------------|--------------------|----------------|------|----------------|-------|--|
| Valve Number | Class | Coordinates | Valve Category A B C D | Size Inches | Valve Type | Actuator Type | Normal Position | Test During | Test | Stroke Time | Hotes | Requests For Relief |
| MSLC-V-1A | 2 | 87 | X | 1-1/7 | GT | M0 | C. | ALL | 5/1 | () | | |
| MSLC-Y-18 | 2 | . 85 | X | 1-1/2 | GT | MO | C | ALL | S/T | () | | |
| HSLC-V-1C | 2 | D7 | X | 1-1/2 | GT | MÓ | C | ALL | \$/T | () | | |
| HSL C-V-10 | ? | n5 | X | 1-1/2 | LT. | MO | C | ALL | \$/T | () | | ₽ |
| HSLC-V-ZA | 1 | 87 | X | 1-1/2 | 61 | M() | C | ALL | 5/1 | () | | |
| H\$LC-V-28 | 1 | CB | X. | 1-1/2 | GT | HO | C | ALL | S/T | () | | |
| MSLC-Y-2C | 1 | EB | X | 1-1/2 | GT | MO | C | ALL | S/T | () | | ******* |
| HSLC-V-20 | 1 | [8 | X | 1-1/2 | GT | M0 | C | AFL | \$/T | () | | |
| HSLC+V-JA | 1 | C9 | | 1-1/2 | 61 | HO | C | ALL | \$/T | () | | |
| H51 6-V+38 | } | 68 | ¥ | 1-1/2 | â f | HO | ć | ÁLL | \$/t | () | | |
| MSLC-Y-3C | 1 | E8 | X | 1-1/2 | GT, | HO | C | ALL | S/T | () | | |
| HSL C-V-JO | 1 | 68 | X | 1-1/2 | GT | HÚ | ¢ | ALL | \$/T | () | | |
| HSL C-V-4 | 2 | JS | X | 1-1/2 | GT | HO | с, | ALL | \$/T | () | | |
| MS1 C-Y-S | 7 | J5 | X | 1=1/? | GT | n - s an actaire in a HI) | | ALL | s | .) | , , | |
| HSLC-V-9 | 2 | 115 | X | 1-1/2 | GT | HO | C | ALL | s/t | () | |)- 11-12-12-12 -12-12-12-12-12-12-12-12-12-12-12-12-12- |
| HSLC-V-10 - | 2 | HS | X | 1-1/2 | GT | H0 | с. | ALL | \$/T | () | | |
| | | | | | | | | | | | | |

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4.5 Requests for Relief from Certain Code Requirements

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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.





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GENERAL RELIEF REQUEST (DELETED)

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1. Valve Exercising Test Frequency - Exceptions

IN-3411 states that category A and $\exists all ves shall be exercised at least once every 3 months, except as privide by <math>WV-3412(a)$. IWV-3412(a) states:

Values shall be exercised to the position required to fulfill their function unless such operation is not or actical during plant operation. If only limited operation is prestrical during plant operation, the value shall be part-stroke exercised during clant operation and full stroke exercised during cold shutdows - Values that cannot be exercised during plant operations shall be specifically identified by the Owner and shall be full-stroke exercised during cla suctowns.

Furthermore, NRC Guideance, Faftlerg. Guide MS901-4, states "valves which when exercised (cycled; could put the plant in an unsafe condition" should be excluded from testing or cheferre: until appropriate plant test conditions are provided.

The following values are specificily identified by the Owner as being impractical to exercise during plant corrations and will therefore be full-stroke exercised during concistations. The testing of these values shall commence immediately (within 24 bours) following the establishment of cold shutdown conditions is accordence with the owner's established schedule. Testing shall continue or ly as long as the plant is scheduled to be in cold shutdown to perform required mainten ance. During each cold shutdown, testing shall commence with the sext value in succession after the previous cold shutdown. All of these salues will be tested during each refueling outage. The values are identified by unique value numbers and Code identification as to Commence and Value Category.

a) Valve Number Code Id. Function

CRD-Y-110A, B 2, B Frowides i mean dat means of depressurizing the CRD-Y-111 2, B-C somet value diphrigms.

Justification -- Cycling the valve's weak messime in scramming the reactor, therefore this testing shall be done or in coll shutdown plant conditions.

b) Valve Number Code Id. Furnation

RCIC-V-65, 66 1, A-C RCIC discarge to the reactor vessel head LPCS-V-6 1, A-C LPCS discarge to the reactor vessel HPCS-V-5 1, A-C RECISCAR geto the reactor vessel RHR-Y-41A, B. C 1, A-C RHF LOOD 1, 5, C discarge to the reactor vessel RHR-Y-50A, B 1, A-C RHF LOOD 1, B tiscarge to the recirculating pump discharge

Justification--Valves cannot be opened against the differential pressure which exists across them during power operators. Flector coolant system pressure holds the valves closed. Also, valves are located inside the containment (except RCIC-V-65) and cannot be temporar i) result to allow testing.

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c) Vive himber Code Id. Function

| R·F - V - 8 R·F - V - 5 R·F - V - 23 R·F - V - 534, B | 1, A 1, A 1, A 1, A | Jisolation values in RH shutdown coolin; suction line from recirculation loop A RHR supply to vessel head spray [Loo; A, B outbord isolation value for shutdown [cooling return |
|--|------------------------------|---|
|--|------------------------------|---|

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Justification -- Yalves are interlicked with reator coolant system pressure such that valves automatically close to protect the RHR pump suction line from elevated reactor coolant system tressures. Opening circuit is disatled by the same tressure interlocks. Over tressurization of the suction line may cause the lass of shutdown RHR cooling capability. Interlocks cannot be type.ssed with comma control circuits.

d) Vive Ambier Code Id. Function

| RII-¥'-5 | 2, A | 7 Isciation valves for reactor closed coo'irg |
|-----------|--------------|---|
| R11-4-21 | 2, A | water lines |
| R∷-₩°-4: | 2, A 2, A | |
| RCI-W-114 | 2, A | |

Justification -- Closure of any islation valve will interrupt cooling water flow to the Reactor Recirculation (RRC) Pump seals, to the RRC pump rotor coolers and to the Drywell Air Coolers possibly causing failure of this equipment. The risks associated with failure of this eccipment outweigh my potential benefits from quarterly testing of these valves.

e) Vilve kunter Code Id. Function

MI-V-37 Series 2, BC - Vacuum breakers for 18 main steam relief Time MI-V-38 Series 2, BC - Concomers.

<u>Justification</u> -- Valves have no power operator by which they may be stoked removaly. Valves are located inside primary containment and, consecurity, are maccessible during power operations.

() Vive huber Code Id. Function

| RFI-W-DA, | 8 | 1, A-C | Reator feedwater inboard check valves |
|-----------|---|--------|---------------------------------------|
| RW-W-32A, | B | 1, A-C | Reator feedwater outward check valves |
| RH-¥-EA, | 6 | 1, A | Reator feedwater stop valves |

Just fication

1) Costre of either Category A raive (RFW-V-SA, SB) would result in a loss of flow to the reactor vessel and cause a significant reduction of reactor coclet invertory.

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

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g) Valve Number Code Id. Function

2, B 2, B

2, B

2, B. 2, B

2, B

В

B

2, 2,

HY-Y-17A, B

HY-V-18A, B

HY-V-19A, B

HY-V-20A, B HY-V-33A, B

HY-V-34A, B

HY-V-35A, B

HY-Y-36A, B

 Yalves 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.

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

h) Valve Number Code Id. Function

PI-CVX-72f 1, A-C Containment isolation, located on discharge PI-CVX-73e 1, A-C lines of Radiation Leak Detection Monitors, penetrations X-73e, X-72f.

<u>Justification</u>--These containment isolation check valves are located inside the containment and can only be observed/tested during cold shutdown conditions.

i) Valve Number Code Id. Function

CIA-V-39A, B 3, B These valves cross connect the normal nitrogen CIA-V-41A, B 3, B-C supply for the Main Steam Isolation Valves and Main Steam Relief Valves (including the 7ADS Valves) accumulators to the backup nitrogen supply for the 7ADS valves.

<u>Justification</u>-Testing these values requires securing the backup nitrogen supply to the ADS value 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 RRC-V-16A, B 2, A] recirculation pumps seal purge line.

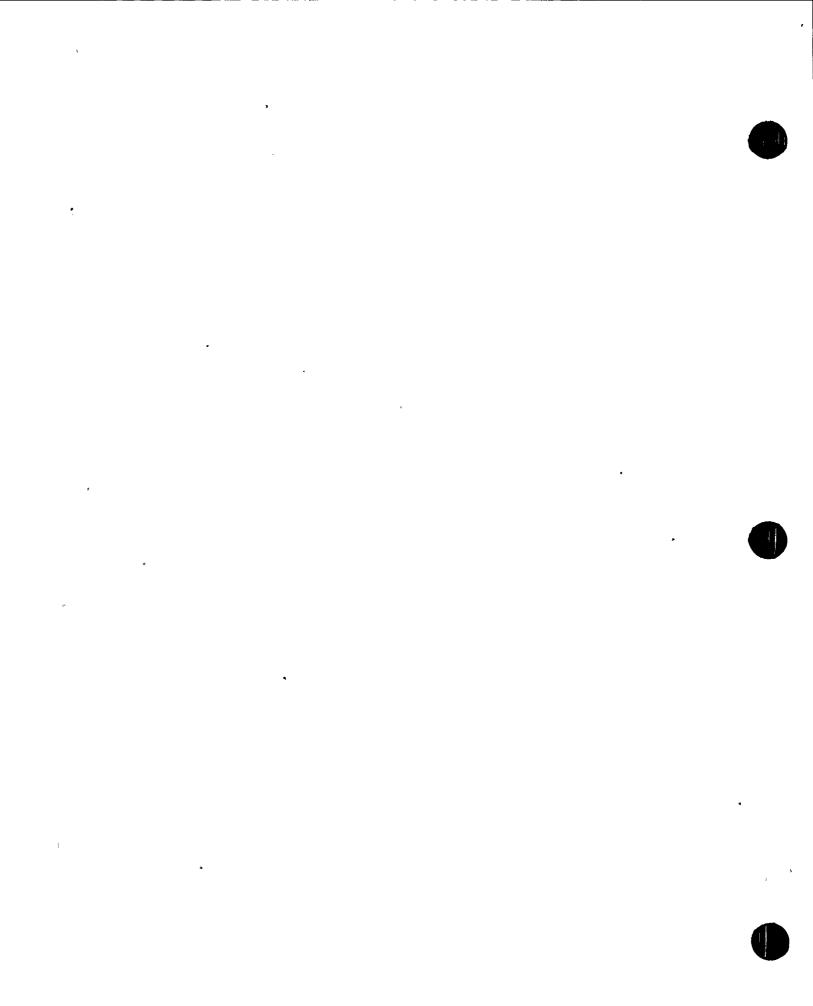
<u>Justification</u>--Closure of Category A valves (RCC-V-16A, B) would terminate seal purge water flow to recirculation Pump 1A or 1B, respectively. Loss of purge flow may result in excessive seal wear and possibly failure of the seal. The risk associated with seal failure are greater than the benefits gained by quarterly valve testing.

Category A-C values (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 valve and containment isolation.

<u>Justification</u>--Gening this valve during normal power operations will result in tripping the cain turbine generator off line.



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Only those values 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 values are not required to be tested per Subsection IWV, but due to their functional importance are included in the value list.

RCIC-V-1, 10, 11, 21, 22, 30, 45, 46, 59, 65, 086, 111, 112 RCIC-RV-17, 19 RCIC-RD-1, 2

- 3. These values are not ASME Class III. They have been assigned Washington State Special Numbers and are considered as SA105 material welded to an ASME code system pressure boundary.
 - 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 IMV-3416.

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

- a. RCIC-V-111 and V-112 are check valves isolated by RCIC-V-110 ard V-113 which close automatically if reactor vessel pressure is less than 47 psig.
- 5. These values are not required to be in service until the fuel pool cocling system is placed in service. It is not expected to be placed if service until the first refueling outage at which time this test program will be implemented as per IWV-3416.

SW-V-75A, 75B, 187A, 187B, 188A, 188B RCC-RV-34A, B FPC-V-112A, 112B, 153, 154, 156, 172, 173, 175, 181A, 181B, 184 FPC-RV-117A, B

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4.5 Requests for Relief from Certain Code 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.



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REQUEST FOR RELIEF NO. RV-1

| System | Vari | ous |
|--------------------------------------|------|--|
| Valves(s) | | |
| ASME Classification Function | | noid valves affected by this relief request are tified in TABLE A. |
| Code Testing Requirement | 1. | Timing of valve stroke (IWV-3413) |
| Bases for Relief | 1. | Solenoid valves are very rapid acting, with strole times much less than one second. It is meaningless to measure their stroke times "to the nearest second". |
| Alternate Testing to be Performed | 1. | Valves will be full stroke tested. Satisfactory operation of equipment downstream of the solenoic valve will constitute satisfactory valve operation. |

Quality/Safety Impact

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The only values in Table A for which timing might be an important parameter are the Lategory A values which are containment isolation values. However, these values have position indication displayed in the Control Room and on the Transient Data Acquisition System. Furthermore, each of the Category A values have backup values which can be used to isolate the line should it be required.

The proposed exercise testing and regular position indication verification will provide adequate assurance of quality and public safety.

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TABLE A

| Valie | Code Class | Category | Function |
|-------------|------------|----------|---|
| HY-1-17A, B | 2 | B | Hydrawlic supply for Reactor |
| | | | Recirculation Flow Control Valves |
| HY-7-18A, B | 2 | В | |
| HY-7-194, B | 2 | В | |
| HY-7-20A, B | 2 | В | |
| HY-7-33A, B | 2 | В | |
| HY-1-34A, B | 2 | В | • |
| HY-1-35A, B | 2 | В | |
| hy-1-36a, B | 2 | В | |
| RRC-V-19 | 1 | A | Reactor recirculation sampling Iso valve. |
| rrc-v-20 | 1 | A | Reactor recirculation sampling Iso valve. |
| CIA-V-39A | 2 | В | Cross ties between air and nitrogen |
| CIA-V-396 | 2 | В | headers. |
| DO-1-40A | 3 | В | Diesel fiel oil day tank 3A inlet valve |
| 00-1-403 | 3 | В | Diesel fiel oil day tank 38 inlet valve |
| DO-7-43 | 3 | В | Diesel zel oil day tank 3C inlet valve |
| CRD-V-1104 | 2 | В | Back-up Scram Valve (Air Supply) |
| CRD-V-1103 | 2 | В | Back-up Scram Valve (Air Supply) |

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TABLE A (Comt'd)

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| Valve | Code Class | Category | Function |
|--------------|------------|----------|---|
| PI-VX-251 | 2 | 5 | Rediantion momitor RAD-RE-1273 inlet valve |
| PI-VX-250 | 2 | 8 | Rediantion monitor RAD-RE-1248 outlet valve |
| PI-VX-253 | 2 | В | Religition monitor RAD-RE-198 outlet valve |
| PI-VX-255 | 2 | 8 | Rediantion momitor RAD-FE-12A inlet valve |
| PI-VX-257 | 2 | В | Rediantion monitor RAD-FE-12A inlet valve |
| PI-VX-259 | 2 | З | Radiantics momitor RADHRE-124 outlet valve |
| PI-VX-2E2 | 2 | A | H ₂ , Grammitor inlet and suttlet |
| PI-VX-263 | 2 | * A | velvers (S-SR-12) |
| PI-VX-264 | 2 | A | · · |
| PI-VX-265 | 2 | А | |
| PI-VX-266 | 2 | A | H ₂ , G monitor itlet and sutlet |
| PI-VX-257 | 2 | A . | valves (S-SR-14) |
| 2I-VX-258 | 2 | Д | |
| PI-1X-26₽ | 2 · | A | |
| CAS-V-453 | 2 | A | Air supply to drawell - wetwell down- comer vecuum breekers. |
| રાક્ર-૫-ગ્રસ | 2 | 3 | Loo A sample (inboard) |
| RHR-V-502 | 2 | 3 | Loso E sample (inboard |
| RHR-V-75A | ? | 8 | Losp A sample (outboard) |
| RHR-V-75B | 2 | 3 | Loo 🕾 sample. (orthoarrt) |
| RHR-V-182 | 2 | 3 | Draim Valbetween Valves isomating Service Water from RHR |

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TABLE A (Cont'd)

| evisV | Code Class | Category | Finction |
|----------|------------|----------|------------------------------------|
| SW-V-201 | 3 | В | Cooling Kater to 12, 0.2 analyzers |
| SW-V-204 | 3 | В | S-IR-13, 14. |
| SW-V-205 | 3 | В | |
| SW-V-209 | 3 | В | |
| SW-V-210 | 3 | В | |
| SM-A-511 | 3 | 8 | |
| SH-V-212 | 3 | 3 | |
| S%-V-213 | 3 | В | |

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|-----------------------------|---|
| | Revision1 |
| | REQUEST FOR RELIEF NO. RV-2 |
| System | Various Emergency Core Cooling Systems |
| Valve(s) | |
| ASME Classification | Talves affected by this relief request are identified in TABLE B. |
| Function | · |
| Code Testing Requirement | Quarterly valve exercising (IWV-3411) |
| Bases for Relief | Valves cannot be opened against the differential pressure which exists across them during power operations. Reactor coolant system pressure holds the valves closed. Valves are located inside containment and cannot be |
| Alternate Testing | temporarily isolated to allow testing. Valve exercising wall be performed during cold. |

to be Performed s

Valve exercising wall be performed during cold shutdown.

Quality/Safety Impact

More frequent testing of the values in Table B would require plant shuidowns solely to accommodate testing. Such requirements violate the intent off the Code (IWV-3412(a)), which recognizes that certain value tests are not practical during plant operation. Furthermore, the redundancy of the emergency core cooling system ensures that no single failure of the values in Table B will compromise the plant. The proposed testing and plant design, prowide an acceptable level of quality and safety.



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TAILE B

| Valve | Code Class | Category | Function |
|---------------|------------|-------------|--|
| HPCS-V-5 | 1 | 1-C | HPCS discharge to reactor vessel. |
| LPCS-Y-6 | 1 | #-C | LDCS discharge to reactor vessel. |
| RHR-1-41A | 1 | ٣C | RHR Nop A discharge to reactor |
| R:4R-V-418 | 1 | 1-C | RHR Thosp B dischamge to reactor |
| R.HR-1-41C | 1 | 2-4 | RHR Thoup C discharge to reactor |
| R::: R-1-5:DA | 1 | ⊬ C | RHR Thosp A discharge to recirculation gump discharge. |
| RHR-1-500B | 1 | ⊁ -C | RHR Noop B discharge to recirculation pump discharge. |
| RHR-1-2:09 | 1 . | 1-C | Pressure relief bypass around RHR-V-9. |
| RC IC-V-66 | 1 | FC | RCIC discharge to reactor vessel head. |



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Par 4-1 Revision 1

REQUEST FOR RELIEF NO. RV-3

Systen

Containment Instrument Air

veriffication (IWV-3522)

the accumulators.

these check valves.

TABLE C.

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Walve(s)

ATSHE Classification

Function

Code Testing Requirement

Bases for Relief

Alternate Testing 1. to be Performed

 Buring refueling outages, pressure ferv tests vith be performed for the accumulators associated with the Miain Steam Isolation Valves and with the Main Steam Stafety/Relief Yalves in order to verify closure abilinty of 40 series, 26 series, and 244 series valves. Each accumulator will be tested at Text every two vears.

Valves affected by this relief request are identified in

The 40 series, 25 series and 24 series values ze

Nocated inside containment and canmot a accessed during power operations. There is no may to renotely isclate the valves and observe the pressure decay of

There is no local or remote position indication for

Quarterly testing (INV-2412) Position indiction

 Closure ability of CIA-V-21, 31A annul f, and 41A and B will be verified by normal 1007RE, Amendix J (Type C) testing.

Quality/Safety Impact

The proposed testing qualitatively verifies valve closure orn the roost practrical regular basis. This satisfies the intent of the Code (10-2412). Welve opening is verified when the accumulators are pressurized in progration for the pressure decay test.

The values in Table C are in the pneumatic supply to the autio-more surfaction System values, a safety related system. However, the proposed alternate testing together with the redundancy of the pneumatic supplyies and individual accumulators, of the ADS walves themselves and of the high more inicitions systems assures an acceptable level of quality and public stafes.

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TABLE C

| Valve | Code Class · | Category | Function |
|-------------------------------|--------------|-----------------|---|
| CIA-Y-31A | 2 | 3-0 | N ₂ supply to ADS valves (0/C) |
| CIA-V-31B | 2 | 3-0 | |
| CIA-Y-41A | 2 | 3-C | Cross tie between air and N ₂ line |
| CIA-V-418 | 2 | 5-C | |
| CIA-Y-40 serie (7 valves) | es 2 | ¥-C | N ₂ to ADS Accumulators (inside containment |
| CIA-Y-36 serie (18 valves) | es 2 | к- С | Air supply to Main Steam Relief Valves' Accumulators (inboard check valve) |
| CIA-¥-24 serie (4 valves) | es 2 | ¥-C | Air supply to Main Steam Isolation Valves (Inboard) |
| CIA-Y-21- | 2 | £-C | Instrument air supply to containment (outboard check valve). |

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REQUEST FOR RELIEF NO. RV-4

System

Valve(s) SLC-V-6, SLC-V-7

ASME Code Class: 1 Category: A-C Classification

Standby Liquid Control (SLC)

Function Standby Liquid Control discharge to reactor vessel.

Code Testing1)Quarterly exercising (IWV-3521)Requirement2)Cold shutdown exercising (IWV-3522)

Basis for

Valves have no operator with which they may be stroked.

Relief

Exercising the valves require the imitiation of the SLC system and full flow injection into the reactor vessel. Initiation of SLC flow involves the discharge of Class D explosive attivated 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 will be verified in conjunction with 10CFR50 Appendix J (Type C) testing.

Quality/Safety Impact

The purposed 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.

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| | |
| • | REQUEST FOR RELIEF NO. RV-5 |
| Systen | Main Steam |
| | |
| Valwe(s) | MS-V-37 series (18 tottal), MS-V-38 series (18 total) |
| ASME Classification | Cide Class: 3 Category: A-C |
| Function | Vacuum Breakers for maain steam relief line downcomers. |
| Code Testing Requirement | Quarterly exercising ((IWT-3521) |
| Bases for Relief | Valves have no poower operator by which they may be stroked remotely Valves are located inside primary containment and, consequently, are inaccessible during power operations. |
| Alternate Testing to be Performed | Valves are accessible cduring cold shutdown and will be exercised at that time is accordance with the requirements of paragraph IWW-3522 Valves will be verified to be closed at the completicon of exercise testing. |

Quality/Safety Impact

The proposed testing complies fully with the intent of the Code (IWV-3522) which allows less frequent testing if 'succh meration is not practical during plant operation". Further, each downcomer has redundant vacuum breakers for additional reliability. The altermate testing and valve redundancy assure acceptable levels of quality and safety.

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REQUEST FOR RELIEF NO_ EV-5

System

Reactor Feedwater (RFW)

V2lwe(s)

ASME Values affected by this relieff request are identified in Classification 7 TABLE D.

Quarterly exercising (IWV-3411, IW/-3521)

Function

Code Testing Requirement

Bases for Relbef 1. Closure of either Categorry 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 can be closed during power operations.

Alternate Testing Yalives will be exercised during cold shudown. to be Performed

Quality/Safety Impact

The Code does not require disruption of plant operation to support valve testing (IWV-3412, IWV-3522). The proposed testing is the maximum practical during normal power operations and, together with a system mesign featuring three valve in series, assures acceptable levels cof quality and safety. • •

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TABLE D

| Valve | Code Class | Category | Function |
|-----------|------------|----------|----------------------------------|
| RFW-V-IOA | 1 | A-C | Reactor Feedwater inboard creck |
| RFŴ-V-10B | 1 | A-C | vallves. |
| RFW-V-32A | 1. | A-C | Reactor Feedwater outboard check |
| RFW-V-32B | . 1 | A-C | vallves. |
| RFW-V-55A | 1 | A | Reactor Feedwater stop valves. |
| RFW-V-35B | 1 | Α | |

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REQUEST FOR FELIEF NO. RY-7

System

Classification

Reactor Recirculation Coolant (RRC)

Valve(s)

ASME

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MAN DESCRIPTION

Valves affected by this relief request are identified in TABLE E.

Function

Code Testing

Requirement

Quarterly exercising (IWV-3411 and IWV-3521)

Bases for Relief

- Closure of Category A valves (RCC-V-16A, -16B) 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 fillure of the seal. The misk associated with seal failure are greater tham the benefits gained by quarterly valve testing.
 - 2. Category A-C valves are held open by purge water flow and cannot be closed during power operations.

Alternate Testing Valves will be exercised during cold shutdown. to be Performed

Quality/Safety Inpact

ARC Guidance (i.e., Draft Reg. Guide MS91-4) states that "valves which when exercised (cycled) could put the plant in an unsafe condition" should be excluded from testing. The valves in Table E, if cycled, would endanger the reliability of the Reactor Recirculation pumps and, consequently, cause unsafe conditions. Postponing, therefore, contributes to assuring acceptable levels of quality and safety.

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|---|-----------|------------|----------|---------------------------------------|
| RE-7 TABLE E Vilve Code Class Category Function RRC-W-134 2 A-C Recirculation pumps' seal purge RRC-W-133 2 A-C line inboard isolation valve. RRC-W-133 2 A Recirculation pumps' seal purge RRC-W-144 2 A Recirculation pumps' seal purge RRC-W-167 2 A Recirculation pumps' seal purge | | , | TAE | Revision 1 |
| TABLE EVelveCode ClassCategoryFunctionRRC-W-1342A-CRecirculation pumps' seal purgeRRC-W-1332A-Cline inboard isolation valve.RRC-W-1332ARecirculation pumps' seal purgeRRC-W-1642ARecirculation pumps' seal purgeRRC-W-1672ARecirculation pumps' seal purge | | · | TAE | BLE E |
| TABLE EVelveCode ClassCategoryFunctionRRC-W-1342A-CRecirculation pumps' seal purgeRRC-W-1332A-Cline inboard isolation valve.RRC-W-1332ARecirculation pumps' seal purgeRRC-W-1642ARecirculation pumps' seal purgeRRC-W-1672ARecirculation pumps' seal purge | | | TAE | BLE E |
| ValueCode ClassCategoryFunctionRPC-W-1342A-CRecirculation pumps' seal purgeRRC-W-1332A-Cline inboard isolation value.RRC-W-1442ARecirculation pumps' seal purgeRRC-W-1672Awater supply line outboard isola- | Valve | | 141 | |
| RRC-W-134 2 A-C Recirculation pumps' seal purge RRC-W-138 2 A-C line inboard isolation valve. RRC-W-138 2 A Recirculation pumps' seal purge RRC-W-154 2 A Recirculation pumps' seal purge RRC-W-167 2 A Recirculation pumps' seal purge RRC-W-167 2 A water supply line outboard isola- | Velve | | | |
| RRC-W-1382A-Cline inboard isolation value.RRC-W-1542ARecirculation pumps' seal purgeRRC-W-1672Awater supply line outboard isola- | | Code Class | Category | Function |
| RRC-W-1382A-Cline inboard isolation value.RRC-W-1542ARecirculation pumps' seal purgeRRC-W-1672Awater supply line outboard isola- | | | | |
| RRI-W-1642ARecirculation pumps' seal purgeRRI-W-1622Awater supply line outboard isola- | RPC | 2 | A-C | Recirculation pumps' seal purge |
| RRI-W-1642ARecirculation pumps' seal purgeRRI-W-1672Awater supply line outboard isola- | RFC-W-138 | 2 | A-C | · · · · · · · · · · · · · · · · · · · |
| RR-W-162 2 A water supply line outboard isola- | p | | | |
| | | | Α | Recirculation pumps' seal purge |
| tion walks | RR:-W-162 | 2 | A | water supply line outboard isola- |
| LION VAIVE. | | | | tion valve. |
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REQUEST FOR RELIEF NO. RV-8

Reactor Closed Coolant (RCC)

Valve(s)

System

ASME Values affected by this relief request are identified in TABLE F.

Quarterly exercising (IWV-3411 and IWV-3421).

Function

Code Testing Requirement

Basis for Relief

Closure of any isolation walve will interrupt cooling water flow to the Reactor Recirculation (RC) Pump seals, to the RRC pump metor coolers and to the Drysell Air Coolers possibly causing equipment failure or disruption of reactor operation. The risks associated with these consequences outweigh any potential benefits derived from quarterly testing of these valves.

Alternate Testing Valves will be exercised during cold shutdown. to be Performed

Quality/Safety Impact

Failure of any one of the walves in Table F would terminate cooling water flow to equipment inside containment. NRC guidance suggests that such valves are not required to be tested to normal IWV schedules. Therefore, granting of this relief request will contribute to acceptable leve's of quality and safety by increasing the reliability of plant equipment.



5.0 Quality Assurance Program

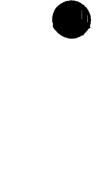
The WNP-2 Pump and Valve Inservice Test Program activities will be conducted in accordance with Topical Report WPPSS-QA-004, the Supply System's Operational Quality Assurance Program description.

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6.0 Flow Diagrams

The flow Diagrams used to generate this Program are included for user reference. Due to the time required for Program publication, an administrative cut-off date of June, 1982 was chosen to "freeze" drawing revisions used for Revision 1 of the Program. However, system design is not expected to change radically, and, in any case, more current diagrams will be prowided as the Program is updated.

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