Approval Dwd B Coyle
Original Date 12-6-93
Revised Date

ONS ASME Valve and Pump Testing Directive

1.0 SCOPE

The purpose of this directive is to give an insight to the Oconee Nuclear Site program for performing valve and pump testing in accordance with NRC and ASME guidelines on how to establish asses operational readiness of safety related pumps and valves. This directive will only discuss the intent of the ASME Nuclear Plant IST Program and the Duke Power Section XI Manual not reiterate it. The directive will also outline the procedure for an individual to add, change, delete equipment information from the site testing equipment database. Technical Specification 4.0.4 requires performance of this In-service Testing program. This document defines how we maintain compliance with the Technical Specifications. Failure to meet the requirements of this program is a violation of Tech. Specs. and 10CFR 50.55a.

1.1 Program Period:

120 month period beginning July 1, 1992

1.2 Applicable ASME Code and Addenda:

1986 Edition

1.3 Program Changes:

The NRC shall be notified of program changes, however the changes do not require prior NRC approval before implementation.

1.4 Program Outline:

- 1.0 Scope
- 2.0 References
- 3.0 Definitions
- 4.0 Valves:
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  - 4.3 Valve List
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- 6.0 Relief Requests Instructions

2.0 REFERENCES

The following documents were used as references in the development of this directive:

Generic Letter 89-04
Generic Letter 89-10
10 CFR 50, Appendix "B"
10 CFR 50.55a
ASME Section XI, IWV and IWP (1986)
ASME OM-6, OM-10 (1988), and OM-1 (1981)
Technical Specifications
Safety Evaluation of the Inservice Testing Program Relief Requests For Pumps and Valves (7-23-93)
NUREG/CP-0123, Proceedings of the Second NRC/ASME Symposium on Pumps and Valve Testing

3.0 DEFINITIONS

Generic Letter 89-10 - This letter from the NRC provides requirements in MOV testing to design basis conditions of temperatures and pressure.

Generic Letter 89-04 - This letter from the NRC provides guidance on developing and enhancing our testing programs.

ASME Section XI - Is the section of ASME Codes and Standard Manual that deal with the in-service testing of nuclear plant components.

ASME IWV Codes - Is the part of the codes dealing with the in-service testing of valves.

ASME IWP Codes - Is the part of the codes dealing with the in-service testing of pumps.

Frequencies - Are defined as the allowable time frame between testing of the components. The intervals are defined in ONS Technical Specifications 4.0

1) Double frequency - 67 days maximum

2) Quarterly (3 months) - 135 days maximum

3) Cold Shutdown (CSD) - Unit below 200 °F and 300 psi.

No testing is required if it has been less than 90 days since the last test was performed.

4) Refueling (RF) - Unit at CSD for the purpose of replacing or rearranging all or a portion of the fuel assemblies or control rods.

NOTE: The unit shall not be taken off line for the purpose of routine testing.

IST Component - This will be a list of equipment (valves and pumps) that are required per ASME Section XI to be tested.

Appendix "B" Component - This will be a list of equipment (valves and pumps) that will be functionally tested, however they are not required be tested per the code. This equipment will be selected by its function and engineering judgement per the description form 10CFR50, Appendix "B".

Appendix "J" Component - This will be equipment that is to be functionally leak tested for containment integrity concerns, per the description from 10CFR50, Appendix "J".

Work Management System (WMS) - This is one the computerized based databases that will be used to maintain ONS equipment designations and justifications for implementation into the plant testing program.

Active Component - A component that must perform a mechanical motion during the course of accomplishing a system safety function.

Passive Component - A component that does not perform a mechanical motion during the accomplishing a system safety function.

Fail-Safe - The valve will be tested to verify it will reposition to its design safe position upon loss of actuator power per IWV-3415.

Setpoint - A pressure relief valve will tested to relieve its pressure at a specified setpoint per IWV-3510.

Leak Test - Valves will be tested to verify that the seat leakage is limited to a specified maximum amount.

Stroke Time -	Stroke time is defined as the time interval from initiation of the actuating signal to the limit switch at the end of the actuating cycle.
Limiting Stroke Time -	This time value is the maximum time allowed for an IST required valve to stroke before becoming immediately inoperable. (To calculate the allowable times refer to Enclosure 13.8.)
Relief Requests -	Is the NRC programmatic method to delineate a component from all or part of the testing requirements.
Justifications -	Are documented reasons why an individual component should only be tested at a particular operating mode, specific frequency, at cold shutdown, or in the Appendix B dataset.

4.0 VALVE PROGRAM

4.1 In-Service Testing (IST) Program;

As required by 10CFR50.55a certain valves that are classified in accordance of NRC Regulatory Guide 1.26 as ISI Class A,B, or C, which corresponds to ASME Class 1, 2, or 3 respectively are included in the ONS IST Program. The following defines the criteria for inclusion of equipment in the IST Program:

a) All Category A valves that fall within the Duke ISI Class A, B, or C boundaries.

b) All Category B and C valves that fall within the Duke ISI Class A, B, or C boundaries and are active in the mitigation of the Design Basis Accidents (Design Basis Accident is defined as those described in FSAR Chapter 15).

c) Valves in systems specifically required by Technical Specifications to be tested per ASME Section XI or required by Technical Specifications for system operability.

In-Service Testing to be performed at Cold Shutdown shall:

a) Be performed during each cold shutdown when the planned length is of sufficient duration to establish the necessary test conditions and to perform the test, and

b) Be performed as to not impact the timely completion of the shutdown related activities and subsequent return to operation. For outages when the planned length is not of sufficient duration to complete all tests, testing will start within 48 hours of reaching cold shutdown conditions.

c) Any testing not completed at one cold shutdown shall be performed at the next available cold shutdown consistent with the above criteria. Completion of the IST is not a prerequisite to return to operation.

Program updates will be done as deemed appropriate by the responsible System Engineer and IST Coordinator. Currently the Oconee Nuclear Site is under the requirements of the ASME Code and Standards , Section XI IWV Codes and Standards, 1986 Version. Every 120 months ONS is mandated to review current testing requirements and upgrade testing to the latest approved version of the code as specified by 10CFR50.55a 12 months prior to the anniversary date. References to Section XI are currently being changed to reflect new ASME Operational and Maintenance Code testing for valves in nuclear power plants. The old "IWV" standards will be replaced by the new standards designated by the "OM" designation as follows:

OM-1 is the current for assessing the operational readiness for pressure relief devices.

OM-8 will become the new standard for assessing the operational readiness for motor operated valves.

OM-10 is the code for assessing the operational readiness of valves and certain pressure relief devices.

OM-13 will become the new standard for assessing the operational readiness for Power Operated Relief Valves.

OM-19 will become the new guidance for assessing the operational readiness for electropneumatic operated valves.

OM-22 will become the new standard for assessing the operational readiness for check valves.

4.1.1 Leak testing of containment isolation valves will be performed in accordance with 10 CFR Appendix "J".

4.1.2 Valve stroke times will be recorded to the nearest second, except for valves which have stroke times of less than one second. For these valves, a time of one second will be recorded.

4.1.3 Stopwatches used to measure stroke times will be calibrated on an annual frequency.

4.1.4 IWV-6230 requires the signature of the person or persons responsible for conducting and analyzing the test. The dated initials of the person or persons responsible for conducting and analyzing the test may be used in place of a signature in the record of the tests. Initials can be used as signatures to meet the intent of the IWV as long as somewhere in the test procedure the initials are identified by a full signature.

4.1.5 Documented stroke times will be to the nearest full second. Time $\leq$.49 secs will be rounded down and time $\geq$.5 will be rounded up.

4.1.6 Deviations from the test procedures on IST components require a relief request or cold justification per section 4.5.

4.2 **Appendix "B" Program:**

The selected valves tested under the jurisdiction of this program provide a function to the safety of nuclear power plant operation, but are not explicitly under the scope of ASME Section XI.

The methods and acceptance criteria used to adequately test the valves should use the criteria as for valves under approved IST ASME Section XI. Deviations from the standard testing procedures will be allowed, if substantiated in writing per the method outlined in Section 4.5 of this directive. Relief Requests do not have to be generated for valves in the Appendix "B" Testing Program.

4.3 **Valve Test List:**

This is the combined list of all valves that are included in the IST and Appendix "B" testing programs.

4.4 **Justifications:**

Justifications are written when testing of the valve can not meet the performed to requirements of the IST ASME Codes and Standards. This can happen due to operational concerns of plant safety during the testing configuration. Justifications to expand the testing interval time of Cold Shutdown mode of operation will need to be documented.

Cold Shutdown Justifications: Are used to document why testing can only be performed during cold shutdown. Enclosure 13.6.1.

Appendix B Justification: Are used to document why testing deviations from code requirements are needed. Enclosure 13.6.2.

4.5 **Modifying Valve Testing Criteria:**

Occasionally after a more intensive review of a system design basis, maintenance, or commitment or industry change, the valve database information in relation to the ONS testing program will need to be changed. In order to provide consistency in updating this information to the appropriate personnel, authorities, and datasets, the following Enclosures should be used:

Enclosure 13.1 - Flow Chart Depicting Testing Program Approval Process
Enclosure 13.2 - Component Information Request Approval Signoff Sheet
Enclosure 13.3 - Valve Testing Program Update Information Request/Approval Form

Enclosure 13.4 - Pump Testing Program Update Information Request/Approval Form
Enclosure 13.5 - Component Deletion from Testing Program Form
Enclosure 13.6.1 - Cold Shutdown Justification Form
Enclosure 13.6.2 - Appendix B Justification Form
Enclosure 13.7 - IST ASME Codes and Standard Relief Request Form
Enclosure 13.8 - Guidelines for Component Inclusion to Valve and Pump Testing Program

4.5.1 **Modifying (Approval) Process:**

NOTE: Enclosure 13.1 is a flow chart representing the process to change IST and Appendix B valve dataset information.

4.5.1.1 The initiator, any Duke Power Employee, can initiate and present to the appropriate System Engineer(SE) a valve to be added/ deleted/ or database information corrected. The individual shall fill out Enclosure 13.2 Section A. (Refer to Enclosure 13.8)

4.5.1.2 The SE will then review the request, consult with the Operations System Contact and confirm that the component meets the requirements of Enclosure 13.8 for implementation into the ONS Testing Program.

The SE then documents in Section B of Enclosure 13.2 the justification for either "not to" or "to" implement this valve into the testing program. If the valve is not to be included into the testing program, then Enclosure 13.2 is no longer processed. A copy of the Enclosure should be sent to the initiator and the original put into the System Engineer files.

If the request is approved by the SE, the request will then go to the Valve and Pump Testing Coordinator(VPC) for approval. The VPC can either approve or not approve the request. If the request is not approved by the VPC, then the justification shall be changed, the original placed in the SE files, and a copy sent back to the initiator.

4.5.1.3 Once the request has been approved by the VPC, the SE will fill out the appropriate Enclosure; Enclosure 13.3 for addition to or change of information , Enclosure 13.5 for deletion from the testing program. The SE will notify the Test Procedure Writing Group and the Test Supervisors of the forthcoming changes to the testing program.

Any additional information may be added under the comments section of Section C of Enclosure 13.2, prior to forwarding the information to the VPC for approval.

4.5.1.4 The VPC will then approve the dataset information for the valve and enter/ delete the information into WMS, other appropriate databases and Relief Request, Cold Shutdown Justifications, and Appendix B Justifications.

4.5.1.5 The SE will then review the WMS information for accuracy. If the information in the WMS is not correct, then the VPC will be notified to correct it.

4.5.1.6 If the dataset information is correct, the VPC, shall then perform the following:

a) Send out updates to all hardcopy owners of the dataset.
b) Send NRC/ Regulatory Compliance hardcopy of updated IST ASME Code and Standard Valve Test List.
c) Places a copy of Enclosure 13.2 and accompanying enclosures into VPC System Files.
d) Sends all original enclosures to the SE.

4.5.1.7 Upon receipt of all original enclosures from the VPC, the SE shall place this information into their files and notify the initiator of the change to the testing program.

The SE shall at this time insure that all appropriate testing procedures for this valve are in compliance with the testing program, notify Performance Test Supervisors, initiate training, check for inclusion into outage scheduling, and checks with the Appendix "J" Testing Coordinator on any necessary procedure changes..

4.6 **Relief Request:**

Relief Requests will be written to document deviations from IWV. Relief Request are necessary to document operational concerns of plant safety during the testing or the valve type prohibits adequate testing. Generic Relief Request for specific valve types/ or test that have already been approved are in the back of this program.

4.7 **Testing required from Remote Locations:**

Valves with remote indications shall be observed at least once every 2 years to verify that valve operation is accurately indicated, per IWV-3300.

Due to our uniqueness valves that have remote operating switches and/or power supplies shall be tested, i.e. the SSF valves. They shall be tested and verified for proper operation and indication from the remote location as good engineering practice. Other valve operation parameters, such as timing do not have to be performed from the remote location during testing.

4.8 Post Modification (Maintenance) Testing (PMT):

All valve repairs shall be reviewed to insure that valve performance characteristics have not changed or degraded. If the valve repair is in question as whether or not it will effect valve performance, the valve performance test should be performed or an engineering evaluation will be performed to determine the effect of the repair.

4.8.1 Valve Stroke Acceptance Criteria:

These three cases describe the events to determine valve operability based on stroke time criteria.

CASE 1 : The valve strokes within its acceptable stroke time. The valve is considered operable.

CASE 2 : The valve doesn't move at all one the first try or exceeds its maximum allowed stroke time. The code immediately refers to this valve as being inoperable. An engineering evaluation needs to be done to determine the cause of the valve failure and system operability.

CASE 3 : The valve fails to meet the acceptance stroke time , but strokes in less time than allowed by the maximum allowed stroke time. The valve per code shall immediately be restroked once to achieve an acceptable stroke time. Per the Oconee valve testing program the valve;

a. If the valve successfully strokes on the second try the valve is considered operable pending the outcome of an evaluation, which is still required to evaluate the failure on the first stroke. A third valve stroke should be required to show consistency in valve operation; possibly with the valve additionally]i.

b. If the valve does not fall within the acceptable range on the second stroke test, then the valve is declared inoperable and an evaluation must be performed prior to stroking the valve again.

c. In the event the valve fails the third valve stroke, the valve will be immediately declared inoperable and an evaluation done.

Examples: Packing Adjustment - This maintenance action will most probably change the stroke time characteristics of the valves performance.

Open or Close Limit Switch Adjustments - This maintenance action can affect valve stroke times, the valves ability not to leak past the seat, indicate proper position indication, and etc.

Torque Switch Adjustments -	This maintenance action could affect the closing force of the valve disc onto the seat, valve stroke time, and seat leakage.
Valve Driver, Valve refurbished, or Valve Changed -	This can change the baseline data for valve operation.

5.0 PUMP PROGRAM

5.1 In-Service Testing (IST) Program;

As required by 10CFR50.55a certain pumps that are classified in accordance of NRC Regulatory Guide 1.26 as ISI Class A,B, or C, which corresponds to ASME Class 1, 2, or 3 respectively are included in the ONS IST Program. The following defines the criteria for inclusion of equipment in the IST Program:

a) Pumps in systems specifically required by Technical Specifications to be tested per ASME Section XI or required by Technical Specifications for system operability.

b) All pumps which fall within the Duke ISI Class A, B, or C boundaries that are provided with an emergency power source and are also active in mitigating the consequences of a FSAR Chapter 15 Design Basis Accident.

In-Service Testing to be performed at Cold Shutdown shall:

a) Be performed during each cold shutdown when the planned length is of sufficient duration to establish the necessary test conditions and to perform the test, and

b) Be performed as to not impact the timely completion of the shutdown related activities and subsequent return to operation. For outages when the planned length is not of sufficient duration to complete all tests, testing will start within 48 hours of reaching cold shutdown conditions.

c) Any testing not completed at one cold shutdown shall be performed at the next available cold shutdown consistent with the above criteria. Completion of the IST is not a prerequisite to return to operation.

Program updates will be done as deemed appropriate by the responsible System Engineer and IST Coordinator. Currently the Oconee Nuclear Site is under the requirements of the ASME Code and Standards , Section XI IWP Codes and Standards, 1986 Version. Every 120 months ONS is mandated to review current testing requirements and upgrade testing to the latest approved version level of the code 12 months prior to the anniversary date. References to Section XI are currently being changed to reflect new ASME Operational and Maintenance Code testing for valves in nuclear power plants. The old "IWP" standards will be replaced by the new standards designated by the "OM" designation as follows:

OM-6 will become the new code for assessing the operational for pumps.

5.1.1 IWP-6240(f) requires the signature of the person or persons responsible for conducting and analyzing the test. The dated initials of the person or persons responsible for conducting and analyzing the test may be used in place of a signature in the record of the tests. Initials shall be used as signatures to meet the intent of the IWP as long as somewhere in the test procedure the initials are identified by a full signature.

5.1.2 Developed head acceptance should be rounded up for conservatism in calculations to the nearest .5 psi, if possible. In most cases the suction gauges used will allow this type of accuracy.

5.1.3 Vibration acceptance should be typically truncated to 2 decimal places for operability determinations. The full four digit display number should still be recorded.

5.2 **Appendix "B" Program:**

The selected pumps tested under the jurisdiction of this program provide a function to the safety of nuclear power plant operation, but are not explicitly under the scope of ASME Codes and Standards.

The methods and acceptance criteria used to adequately test the pumps should use the criteria as specified by the IST program adminstrator. Deviations from the standard testing procedures will be allowed, if substantiated in writing per the method outlined in Section 5.5 of this directive. Relief Requests do not have to be generated for valves in the Appendix "B" Testing Program.

5.3 **Pump Test List:**

This is the combined list of pumps that are included in the IST and Appendix "B" testing programs.

5.4 **Justifications:**

Justifications are written when testing of the pump can not meet the performance requirements of the IST ASME Codes and Standards. This can happen due to operational concerns of plant safety during the testing configuration. Justifications to expand the testing interval time of Cold Shutdown mode of operation and testing alternatives will need to be documented.

Cold Shutdown Justifications: Are used to document why testing can only be performed during cold shutdown. Enclosure 13.6.1.

Appendix B Justification: Are used to document why testing deviations from code requirements are needed. Enclosure 13.6.2

5.5 Modifying Pump Testing Criteria:

Occasionally after review of a pump design basis, maintenance, or regulatory commitments or industry change, the pump database information in relation to the ONS testing program will need to be changed. In order to provide consistency in updating this information to the appropriate personnel, authorities, and datasets, the following Enclosures should be used:

Enclosure 13.1 - Flow Chart Depicting Testing Program Approval Process
Enclosure 13.2 - Component Information Request Approval Signoff Sheet
Enclosure 13.3 - Valve Testing Program Update Information Request/Approval Form
Enclosure 13.4 - Pump Testing Program Update Information Request/Approval Form
Enclosure 13.5 - Component Deletion from Testing Program Form
Enclosure 13.6.1 - Cold Shutdown Justification Form
Enclosure 13.6.2 - Appendix B Justification Form
Enclosure 13.7 - IST ASME Codes and Standard Relief Request Form
Enclosure 13.8 - Guidelines for Component Inclusion to Valve and Pump Testing Program

5.5.1 Modifying (Approval) Process:

NOTE: Enclosure 13.1 is a flow chart representing the process to change IST and Appendix B pump dataset information.

5.5.1.1 The initiator, any Duke Power Employee, can initiate and present to the appropriate System Engineer(SE) a pump to be added/ deleted/ or database information corrected. The individual shall fill out Enclosure 13.2 Section A. (Refer to Enclosure 13.8)

5.5.1.2 The SE will then review the request, consult with the Operations System Contact and confirm that the component meets the requirements of Enclosure 13.8 for implementation into the ONS Testing Program.

The SE then documents in Section B of Enclosure 13.2 the justification for either "not to" or "to" implement this valve into the testing program. If the valve is not to be included into the testing program, then Enclosure 13.2 is no longer processed. A copy of the Enclosure should be sent to the initiator and the original put into the System Engineer files.

If the request is approved by the SE, the request will then go to the Valve and Pump Testing Coordinator(VPC) for approval. The VPC can either approve or not approve the request. If the request is not approved by the VPC, then the justification shall be changed, the original

placed in the SE files, and a copy sent back to the initiator.

5.5.1.3 Once the request has been approved by the VPC, the SE will fill out the appropriate Enclosure; Enclosure 13.4 for addition to or change of information , Enclosure 13.5 for deletion from the testing program. The SE will notify the Test Procedure Writing Group and Test Supervisors of the forthcoming changes to the testing program.

Any additional information may be added under the comments section of Section C of Enclosure 13.2, prior to forwarding the information to the VPC for approval.

5.5.1.4 The VPC will then approve the dataset information for the valve and enter/ delete the information into WMS, other appropriate databases and Relief Request, Cold Shutdown Justifications, and Appendix B Justifications.

5.5.1.5 The SE will then review the WMS information for accuracy. If the information in the WMS is not correct, then the VPC will be notified to correct it.

5.5.1.6 If the dataset information is correct, the VPC, shall then perform the following:

a) Send out updates to all hardcopy owners of the dataset.
b) Send NRC/ Regulatory Compliance hardcopy of updated IST ASME Code and Standard Valve Test List.
c) Places a copy of Enclosure 13.2 and accompanying enclosures into VPC System Files.
d) Sends all original enclosures to the SE.

5.5.1.7 Upon receipt of all original enclosures from the VPC, the SE shall place this information into their files and notify the initiator of the change to the testing program.

The SE shall at this time insure that all appropriate testing procedures for this valve are in compliance with the testing program, notify Performance Test Supervisors, initiate training, check for inclusion into outage scheduling, and checks with the Appendix "J" Testing Coordinator on any necessary procedure changes.

5.6 **Relief Requests:**

Relief Requests will be written to document deviations from IWP. Relief Request are necessary to document operational concerns of plant safety during the testing or the pump type prohibits adequate testing. Generic Relief Request for specific pump types/ or test

that have already been approved are in the back of this program.

5.7 **Testing required from Remote Locations:**

Pumps with remote indications shall be observed at least once every 2 years to verify that pump operation is accurately indicated.

Due to our uniqueness pump that have remote operating switches and/or power supplies shall be tested, i.e. the HPI pumps. They shall be tested and verified for proper pump operation and indication from the remote location as a good engineering practice. Other pump operation parameters, such as vibration, bearing temperatures, pressure and flow do not have to be performed from the remote location during testing.

5.8 **Post Modification (Maintenance) Testing (PMT):**

All pump repairs shall be reviewed to insure that pump performance characteristics have not changed or degraded. If the pump repair is in question as whether or not it will effect pump performance, the pump performance test (i.e. Performance Test) should be performed.

Examples: Packing Adjustment - This maintenance action will most probably change the bearing operating temperature. Running pumps do not have to be performance tested after the packing is readjusted; however adequate verification should be done to insure proper bearing cooling. Non-running pumps will require a performance retest to show operability.

Bearing Replacement - This maintenance could effect the vibration of the pump,

6.0 **Relief Requests Instructions:**

6.1 Purpose: The purpose of a Relief Request is to exclude a component from a particular testing requirement, required by the definitions of ASME IST Section XI Testing. Therefore if the testing on the component can not be done due to plant configuration management, plant safety, or equipment type, Relief from the code can be requested.

Relief Requests once issued by the VPC, must be adhered to. Relief Request for components that should be in the ASME IST Program will be sent to the NRC for approval. The request will be adhered to during the interval we are waiting for their acceptance or denial.

Each Ten Year Interval, when the site testing program is being upgraded to the new testing requirements, all

relief requests will have to be reviewed to insure that their reasons for issuance are still valid.

6.2 Instructions:

Note: The Relief Request Form is found in Enclosure 13.7.

6.2.1 The requester shall discuss with the VPC whether or not processing of the relief request is warranted.

6.2.2 The requester will then fill out Enclosure 13.2 and submit it to the VPC for processing into the Valve and Pump Testing Program.

6.2.3 The VPC will then notify Regulatory Compliance of the request which will be forwarded to the NRC for approval.

7.0 Justifications:

7.1 Cold Shutdown Justifications Instructions:

7.1.1 Purpose: The purpose of the Cold Shutdown Justification form is to document the reason that a component can only be tested at cold shutdown or at refueling outage.

Valid reasons could be plant configuration for testing which would jeopardize the safety of plant operation, access to the component which would be against ALARA, access to the component due to the environmental conditions endangering personnel safety, or that plant configuration for testing would required the plant to be in a mode not suitable for power production. Removing one train for testing or entering a limiting condition of operation is not sufficient basis for not performing the required tests, unless the testing renders systems inoperable for extended periods of time. It is not the intent of IST to cause unwarranted plant shutdowns or to unnecessarily challenge other safety systems. Other factors such as the effect on plant safety and the difficulty of the test should be considered. As stated earlier testing should not interfere with power production.

7.1.2 Instructions:

Note: The Relief Request Form is found in Enclosure 13.6.1.

7.1.2.1 The requester shall discuss with the VPC whether or not processing of the cold shutdown justification is warranted.

7.1.2.2 The requester will then fill out Enclosure 13.2 and submit it to the VPC for processing into the Valve and Pump Testing Program.

7.1.2.3 The VPC will then notify Regulatory Compliance and update the program and datasets.

7.2 **Appendix B Justifications Instructions:**

7.2.1 Purpose: The purpose of the Appendix B Justification form is to document the reason that a component is or is not in the Valve and Pump Testing Program.

Valid reasons could be plant configuration for testing which would jeopardize the safety of plant operation; access to the component which would be against ALARA, access to the component due to the environmental conditions endangering personnel safety, or that plant configuration for testing would required the plant to be in a mode not suitable for power production. Removing one train for testing or entering a limiting condition of operation is not sufficient basis for not performing the required tests, unless the testing renders systems inoperable for extended periods of time. It is not the intent of Appendix B testing program to cause unwarranted plant shutdowns or to unnecessarily challenge other safety systems. Other factors such as the effect on plant safety and the difficulty of the test should be considered. <u>As stated earlier testing should not interfere with power production</u>.

7.2.2 Instructions:

<u>Note</u>: The Relief Request Form is found in Enclosure 13.6.2.

7.2.2.1 The requester shall discuss with the VPC whether or not processing of the Appendix B justification is warranted.

7.2.2.2 The requester will then fill out Enclosure 13.2 and submit it to the VPC for processing into the Valve and Pump Testing Program.

7.2.2.3 The VPC will then notify Regulatory Compliance and update the program and datasets.

8.0 **Valve and Pump Testing Coordinator (VPC) Responsibilities:**

1.0 The VPC position will be filled by a qualified individual knowledgeable of plant system operation, and can insure the site is in compliance by its performance testing and trending methods, inorder to meet regulatory guidelines. The VPC will accomplish this by maintaining consistency among the System Engineers and overall program management.

2.0 The VPC will be responsible for publishing an overall summary in the form of an Annual Summary, on the current status of the site performance monitoring of the valves and pumps tested under the requirements of 10CFR50.55(a) and 10CFR50 Appendix "B".

3.0 The VPC will be responsible for notifying Regulatory Compliance of any changes to the Valve and Pump Testing Program described in this directive, including changes to the datasets information.

4.0 The VPC will be responsible for coordinating and implementing the program renewal per 10CFR50 every 10 years.

9.0 **ENGINEERING RESPONSIBILITIES:**

9.1 Systems - Accountability of dataset information accuracy, insuring code testing requirements are met, reasons for scope or code deviation are documented, provide technical assistance on writing procedural test methods, review trend data and component inclusion into the testing program. Responsible for adding/deleting or deletions of components contained in the active/passive dataset.

9.2 Components - Notification of maintenance that could affect baseline data.

10.0 **VALVE and PUMP Performance Testing Program Attachments:**

10.1 The Valve and Pump Testing Program Attachments will be a reviewed equipment list containing a list of all components that are tested to meet the requirements of 10CFR50.55(a), 10CFR50 Appendix B program. The attachments will also contain reviewed copies of all specific and generic justifications and relief requests that were used to substantiate the current testing criteria.

10.2 Attachments are located in the back of this directive.

11. **External Customers Notification of Changes:**

The VPC will notify all external customers , i.e. Regulatory Compliance Group, whenever changes to the program should occur, by issuing a Minor Modification Request and routing a Minor Modification Review by Section Form 535.

12. **10 year Program Update:**

The Valve and Pump Testing Program will have to be re-evaluated every 10 years for upgrade to the current approved code revision allowed by 10CFR50.55a 12 months prior to the site anniversary date.

The VPC will notify the SEs 18 months prior to the site anniversary date to review their systems and insure all components that are currently in the testing program meet the new code testing standards and are being tested accordingly. Any additions, deletions, reliefs, and justifications shall be reviewed also to insure compliance.

After the comprehensive review has been done and any necessary dataset or procedure changes have been done; the VPC will issue an updated testing program to the site Regulatory Compliance Group for distribution to the NRC for approval. Once approved, a minor modification will be issued to document the current program and this directive will be re-issued with Section 1.1. and 1.2 changed to reflect the new testing standards and any other changes done.

13.0 **ENCLOSURES:**

Enclosure 13.1 - Flow Chart Depicting Testing Program Approval Process

Enclosure 13.2 - Component Information Request Approval Signoff Sheet

Enclosure 13.3 - Valve Testing Program Addition and Change Form

Enclosure 13.4 - Pump Testing Program Addition and Change Form

Enclosure 13.5 - Testing Program Component Deletion Form

Enclosure 13.6.1 -Cold Shutdown Justification Form

Enclosure 13.6.2 -Appendix B Justification Form

Enclosure 13.7 - IST ASME Codes and Standard Relief Request Form

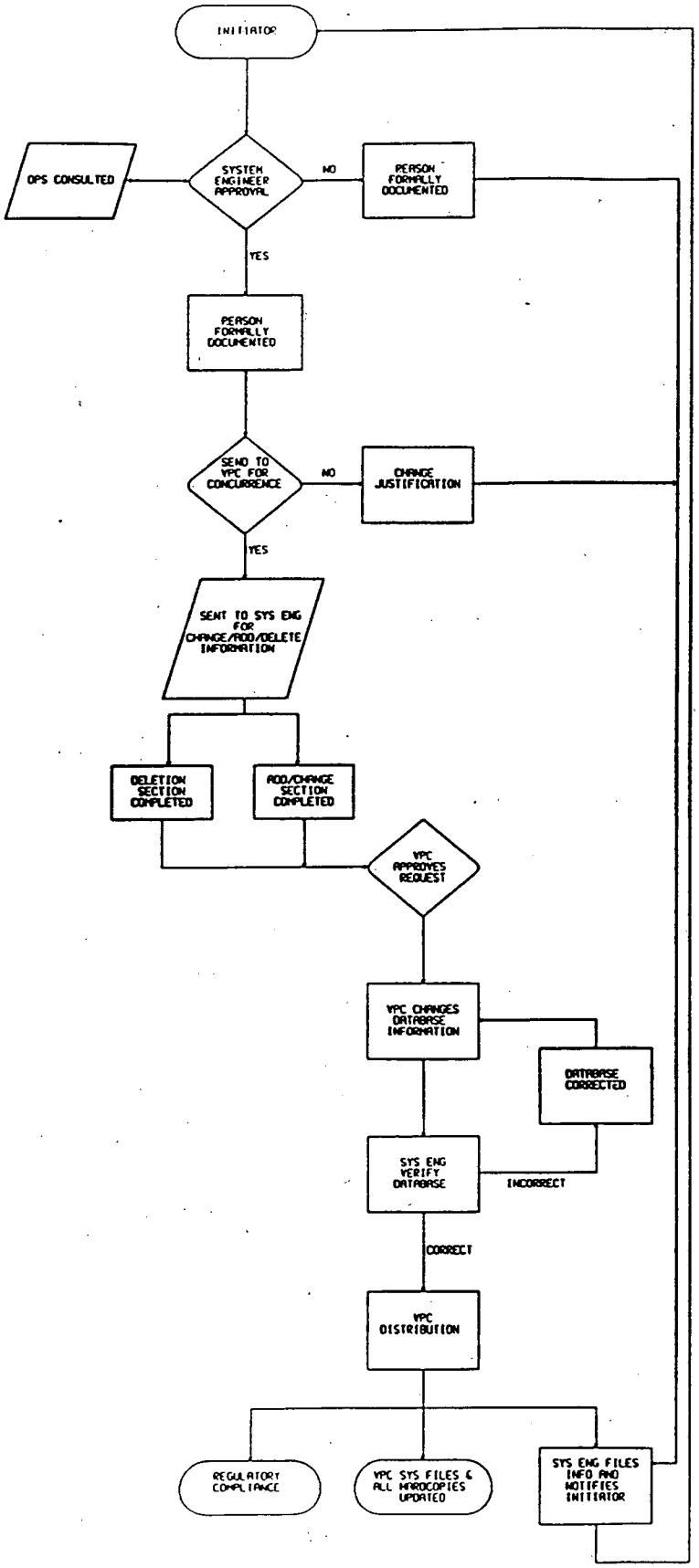
Enclosure 13.8 - Generic Guidance for Component Inclusion Into the Valve and Pump Testing Program

14.0 **ATTACHMENTS:**

Attachment 1 - Valve Generic Relief Requests
Attachment 2 - Valve Specific Relief Requests
Attachment 3 - Valve Cold Shutdown Justifications
Attachment 4 - Pump Generic Relief Requests
Attachment 5 - Pump Specific Relief Requests
Attachment 6 - Pump Cold Shutdown Justifications
Attachment 7 - Appendix "B" Justifications
Attachment 8 - IST Valve List
Attachment 9 - Valve Test List
Attachment 10- Pump IST List
Attachment 11- Pump Test List

Enclosure 13.1

Flow Chart Depicting Testing Program Approval Process



Enclosure 13.2

Component Information Request / Approval Signoff Sheet

SECTION A

Component_____ Flow Diagram_____ Coordinates_____

Component Name - _____

Function - _____

Reason - _____

_____

Initiator - _____ Date - _____

SECTION B

System Engineer Approval - _____ YES _____ NO

WMS Identification ID. - ON _____

Justification - _____

_____

_____

System Engineer - _____ Date - _____
IST Coordinator - _____ Date - _____

SECTION C (Approvals)

Comments : _____

_____

_____

_____

Enclosure 13.3(Valve Change) - _____ Date - _____

Enclosure 13.4(Pump Change) - _____ Date - _____

Enclosure 13.5(Component Deletion) -_____ Date - _____

SECTION G

IST Coordinator:

Approves Section C: _____ Date - _____
Updates Database Info: _____ WMS ____ ALPHA4

System Engineer:

Verifies Database Info: _____ Date - _____

IST Coordinator:

____ Sends out updates to all hardcopies owners of databases.
____ Sends Regulatory Compliance hardcopy of updated IST database.
____ Places in IST Coordinator System files.
____ Sends copy of this Enclosure to System Engineer.

System Engineer:

____ Files in System Files and notify appropriate site groups.
____ Sends copy of this page to Initiator.

Enclosure 13.3

Valve Testing Program Addition and Change Form

Valve Addition and Changes

Station List Category : ____ Appendix "B", ____ Section XI

Valve Category :

____(A) Valves for which seat leakage is limited to a specific maximum in the closed position for fulfillment of their required function.
____(B) Valves for which seat leakage in the closed position is inconsequential for fulfillment of the required function.
____(C) Valves which are self-actuating in the response to some system characteristic, such as pressure (relief valve) or flow direction (check valve) for fulfillment of their required function.
____(D) Valves which are actuated by an energy source capable of only one operation, such as rupture disks or explosively actuated valve

Valve Information:

Flow Diagram/ Coordinates - _____
ISI Class _____ Valve Type _____ Operator Type _____
Duke Class _____ Valve Size _____ Passive Valve (Y / N)
Active Valve Positions (O,C,O/C):
C1 - ___, C2 - ___, C3 - ___, C4 - ___, C5 - ___

Valve Stroke Information (Non-CVs, RVs):

Stroke Test Frequency - _____ ES Channel(s) - _____
Fast Acting - _____ Direction (O,C,O/C) - _____
Max. Stroke Time by System Design - _____
Limited Stroke Time by Enclosure 13.9 - _____
Required Stroke Direction (O,C,O/C) - _____
Failure Position - _____
Procedure No(s). : _____
_____

Valve Leak Rate Information:

Leak Rate Frequency - _____
Penetration Vent - (Y / N) Penetration Drain - (Y / N)

Procedure No(s). : _____
_____

Check Valve Information:

Full Flow Requirement (GPM) - ____ Reverse Leakage Limit (GPM) - ____
Test Method (circle one): Forward/Reverse flow, Disassembly, Acoustical, other - _____
Procedure No(s). : _____
_____

Relief Valve Information:

Setpoint - ____

IST Information:

Related Tech. Specs. - _____
Relief Request No(s). - _____ Attach Enclosure 13.7 _____
Cold Shutdown Justification No. - _____ (Attach Enclosure 13.6.1)

Appendix B Information:

Shutdown Required - (Y / N)
Shutdown Required Position (O,C,O/C) - _____
Accident Required Position (O,C,O/C) - _____
Appendix B Justification Nos. - _____ (Attach Enclosure 13.6.2)
Skid Mounted - (Y / N)
Other Reason for Inclusion: _____
_____
_____

Enclosure 13.4

Pump Testing Program Addition and Change Form

Pump Addition and Changes

Station List Category : _____ Appendix "B", _____ Section XI

Pump Information :

ISI Class _____
Duke Class _____

Pump Manufacturer - _____
Pump Model Nos. - _____
Pump Serial Nos. - _____
Pump Type - _____
Pump BEP(Design Pt.) - _____ gpm
_____ psi

Driver Manufacturer - _____
Driver Model Nos. - _____
Driver Serial Nos. - _____
Driver Size - _____
Driver Type - _____

Drawings (OM, OFD, OEE) - _____
_____

ES Actuation Channels _____

Normal and Emergency Operating
Procedure No(s). : _____
_____

Pump Testing Information :

Accident Required Pump Flow - _____
Delta P required - _____
Full Flow Requirement (GPM) - _____
TAC Sheets - _____

Procedure No(s). : _____
_____

IST Information:

Related Tech. Specs. - _____
Relief Request No(s). - _____ Attach Enclosure 13.7 _____

Appendix B Information:

Shutdown Required - (Y / N)
Shutdown Required Operation(On , Off) - _____
Accident Required Operation(On , Off) _ _____
Appendix B Justification Nos. - _____ (Attach Enclosure 13.6.2)

Other Reason for Inclusion: _____
_____
_____

Enclosure 13.5

Testing Program Component Deletion Form

I. Component for which deletion from Valve and Pump Testing is requested:

(a) Name(s) and Number(s):

(b) Drawing Number/Coordinates:

(c) Function:

(d) Station List Category : ____ Appendix "B", ____ Section XI

(e) ISI Class/Duke Class:

(f) IWV-2000 Valve Category:

II. Basis for requesting deletion:

Prepared By : _____ Date : _____

Reviewed By : _____ Date : _____

Enclosure 13.6.1

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Justification #_____ _____

I. Component for which justification is provided:

(a) Name(s) and Number(s):

Drawing Number/Coordinates:

(b) Function:

(c) ISI Class/Duke Class:

(d) IWV-2000 Valve Category:

II. Justification for Cold Shutdown Testing:

Prepared By : _____ Date : _____

Reviewed By : _____ Date : _____

Enclosure 13.6.2

OCONEE NUCLEAR STATION

Third Ten Year Interval

Appendix B Request # _____

I. Component for which relief is requested:

(a) Name(s) and Number(s):

Drawing Number/Coordinates:

(b) Function:

(c) ISI Class/Duke Class:

(d) IWV-2000 Valve Category:

II. Reference Code requirement which has been determined to be impractical:

III. Basis for requesting relief:

IV. Alternate examination:

Prepared By : _____ Date : _____

Reviewed By : _____ Date : _____

Enclosure 13.7

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standard

Relief Request # _____

I. Component for which relief is requested:

(a) Name(s) and Number(s):

Drawing Number/Coordinates:

(b) Function:

(c) ISI Class/Duke Class:

(d) IWV-2000 Valve Category:

II. Reference Code requirement which has been determined to be impractical:

III. Basis for requesting relief:

IV. Alternate examination:

Prepared By : _____ Date : _____

Reviewed By : _____ Date : _____

Enclosure 13.8

Generic Guidance for Component Inclusion
Into the Valve and Pump Testing Program

1.0 Purpose: The guidelines are written in an effort to ensure the correct components are included in the IST and Appendix "B" programs. They are necessary because a variety of people, with differing opinions, are involved in determining what should be included (applicable) to the programs.

The guidelines are to be used in conjunction with the scope statements of ASME Section XI, Subsection IWP and IWV; and ASME/ANSI OMa-1988 Part 6 and Part 10. If strictly used, they will identify the "minimum" components that should be included in the testing programs. In some cases it is prudent to test components that are not required to be in the testing program. It is recommended that these components be included in a supplemental program (10CFR50 Appendix B Program).

2.0 The pumps/valves, systems, and portions of systems which perform a specific function in shutting down a reactor to the cold shutdown condition, in maintaining the cold shutdown condition, or in mitigating the consequences of an accident can be identified as follows:

2.1 DBA/Cold Shutdown Systems/Components:

Identify pumps/valves, systems, and portion of systems that:

- are taken credit for mitigating Design or non-design Basis Accidents,
- must perform a specific function in shutting down the reactor to the cold shutdown condition (i.e. cold shutdown could not be obtained/maintained without them).

2.2 Support Systems/Components:

Identify support pumps/valves, systems and portions of systems that must perform to ensure items identified in (1) can perform their specific safety function(s).

2.3 Boundary Valves:

Identify valves that isolate the identified systems/portions of systems (see 1 and 2 above) from non-seismic or other systems/portions of systems.

2.4 Active to "Close" Valve Description:

C1 - Containment Isolation
C2 - Accident Mitigation (Design Basis Event)
C3 - Design Event / System Boundary
C4 - Seismic Boundary
C5 - Non - Design Basis Events (Other)

3.0 The above guidelines are acceptable based on the discussions with individuals from other utilities, EG&G, and the NRC. Also, they appear to be what we have been reviewed to in the past by EG&G and the NRC.

4.0 An exception to the above guidelines exists for pumps/valves which are within a subsystem of, and are mounted on the skid with, a skid mounted system/component. These pumps/valves do not need to be included in the IST Programs because they are tested when the entire skid mounted system/component is tested. This exception is based on a 1982 meeting with EG&G at McGuire, Catawba's SER, and discussion with an individual from EG&G.

5.0 Legends:

5.1 Valve and Pump Testing Abbreviations:

CL - Class
CAT - Category
CIV - Containment Isolation Valve
CSD - Cold Shutdown
FS - Fail Safe
LT - Leak Test
MTO - Movement Test Open
MTC - Movement Test Closed
MTC,O - Movement Test Closed and Open
Q - Quarterly
PIV - Pressure Isolation Valve
RF - Refueling Shutdown
RR - Relief Request
ST - Stroke Time
SP - Setpoint
TS - Technical Specification

5.2 Valve Operator Abbreviations:

CV - CONTROL VALVE OPERATORS
EV - ELECTRICAL VALVE OPERATORS
PC - PNEUMATIC CONTROLLERS
PU - PUMPS
RO - ROOT VALVES
SV - SOLENOID VALVES
TP - TRAPS (STEAM AND PUMP)
VA - VALVES
VP - VALVE POSITION TRANSMITTERS
AV - ANGLE VALVE
BF - BUTTERFLY
BL - BALL
CK - CHECK
CV - CONTROL
DL - DELUGE
DP - DIAPHRAGM
GL - GLOBE
GT - GATE

ND - NEEDLE
PG - PLUG
PR - PRESSURE REGULATOR
RD - RUPTURE DISC
RG - REGULATOR
RV - RELIEF
SC - STOP CHECK
SN - SOLENOID
SR - SAFETY RELIEF
ST - STOP
VB - VACUUM BREAKER
VP - VACUUM PRIMING
WC - WAFER CHECK
2W - TWO WAY SOLENOID
3W - THREE WAY SOLENOID
4W - FOUR WAY SOLENOID

5.3 Valve Operator Abbreviation:

AIR	AIR VALVES MAY BE INSTALLED WITH VARIOUS PNEUMATIC OPERATORS
CW	CHAIN WHEEL
EMO	ELECTRIC MOTOR OPERATOR
HW	HAND WHEEL
LEV	LEVER
MAN	MANUAL
PC	PNEUMATIC CYLINDER
PD	PNEUMATIC DIAPHRAGM
SC	SELF CONTAINED OPERATOR
SOL	SOLENOID

6.0 Calculation of Limited Stroke Time (LST) :

6.1 The LST will be calculated for each valve. For valves which stroke time is not a requirement in the design bases, the LST will be the controlling values to determine valve operability. If the LST value exceeds that of the time required by the design bases, then the design bases value will be used. Valves which exceed their LST, but stroke in less time then their design basis can be considered operable as long as an engineering evaluation determine the apparent cause for the increased/decreased stroke time. The LST acceptance values in step 6.2 were derived from past experience and ASME Section XI engineering evaluations/interpretations.

6.2 VALVE STROKE TIME LIMITING VALUE CALCS.

EMO >10 SEC. STROKE TIME — REF RANGE: +/- 15% Ref. Value
LIMITING VALUE: +30% Ref. Value

EMO $\leq$10 SEC. STROKE TIME — REF RANGE: +/- 1 SEC. OR +/- 25% Ref. Value

	LIMITING VALUE: +50% Ref. Value
POV >10 SEC. STROKE TIME	REF RANGE: +/- 25% Ref. Value
	LIMITING VALUE: +50% Ref. Value
POV ≤10 SEC.	REF. RANGE: +/- 50% Ref. Value
	LIMITING VALUE: +100% Ref. Value

7.0 **System Piping Classification Correlation for Oconee Nuclear Site:**

Duke System Piping Classification	(1) Safety Related	NRC Quality Group	Duke QA Condition	ANS (9) Safety Class	(6) Code Design Criteria	Seismic Pressure Boundary Integrity	Seismic Category	Normally Contains Radioactive Material
A	YES	A(2)	1	1(2)	Class 1, ANSI B31.7	YES	SC-1	YES
B	YES	B(2)	1	2(2)	Class 2, ANSI B31.7	YES	SC-1	YES
C	YES	C(2)	1	3(2)	Class 3, ANSI B 31.7	YES	SC-1	YES
D	NO	-	4	NNS(3)	ANSI B31.1.0	YES	SC-11(8)	NO
E	NO	D(4)	2(5)	NNS(3)	ANSI B31.1.0	NO	-	YES
F	YES	B,C	1	2,3	ANSI B31.1.0	YES	SC-1	NO
G	NO	-	-(5)	-	ANSI B31.1.0	NO	-	NO
H	NO	-	-(5)	-	Duke Power Specification	NO	-	NO
H (Duke HVAC Duct Classification)	YES	-	-(7)	-	Duke Power Specification	YES	SC-1	NO

NOTES:

(1) Safety Related as used herein is in accordance with 10CFR50 Appendix A General Design Criteria for Nuclear Power Plants and is applicable to function only; i.e., structures, systems, and components required to function such that the facility can be operated without undue risk to the health and safety of the public are safety related.

(2) Due to the evolution of requirements, Duke Classes A, B, and C for Oconee are similar but not exact to NRC Quality Group and ANS Safety Class definitions used for McQuire and Catawba, refer to Oconee FSAR for specifics.

(3) NNS = Non-Nuclear Safety

(4) Class E piping is equivalent to NRC Quality Group D; i.e., the system is designed to normally carry a radioactive fluid; however, is considered NNS as a component failure would not result in a calculated potential exposure in excess of the limits established by 10 CFR20.

(5) Class E, G, and H piping systems may also be assigned QA Condition 3 and/ or 4 to denote additional requirements for fire protection of safety related components and/ or seismic structural integrity (except pressure boundary) to preclude adverse interactions with safety related structures, systems and components, respectively; refer to Duke Nuclear Guide 1.29.

(6) Code and Standards Applicability: Duke Power Company establishes an "effective code date" in accordance with 10CFR50, par. 50.55a for Oconee Nuclear Site. Due to the numerous code and standards references applicable to each station, not attempt is made to specifically identify these references as they are amended, superseded, or substituted. Duke reviews and complies with all or portions of the latest versions of the above Codes and Standards unless materials and/ or design commitments have progressed to a stage that it is not practical to

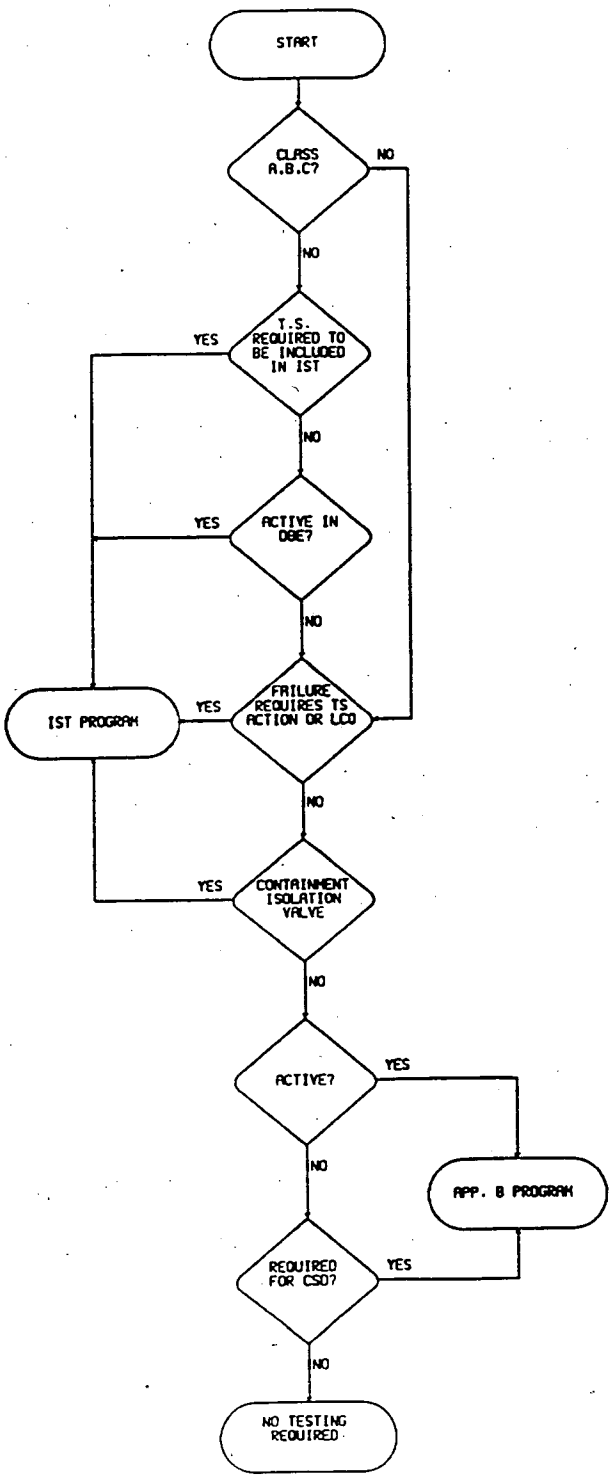
make a change. When only portions of addenda to Codes and Standards are utilized, the appropriate engineering review of the entire agenda assures that the overall intent of the Code Standard is still maintained. These codes and standards are identified in the Oconee Piping Installation Specification OS-243.00-00-00-0001.

(7) HVAC Duct Systems may be constructed of either sheet metal of piping materials depending upon the design function and requirements. Non-Safety Related HVAC may be assigned QA Condition 4, SC-11 Support Restraints to preclude adverse interactions with safety related structures, systems, and components. Refer to Duke Nuclear Guide 1.29.

(8) Class D for piping systems is used when pressure boundary protection is required. Seismic Category II hangers may be use on Class E, G, or H piping systems when pressure boundary integrity is not required. See Duke Guide 1.29.

(9) ANSI N18.2, 1973 with 1975 addenda.

8.0 The following is a chart to be used as general guidance for the determinations to whether or not a component is required to be included into this testing program.



OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

ATTACHMENT #1

VALVE GENERIC RELIEF REQUESTS

GNR-VLV-01	ALL CATEGORY A VALVES
GNR-VLV-02	FAST ACTING VALVES
GNR-VLV-03	FAIL-SAFE VALVES
GNR-VLV-04	ALL VALVES (Corrective Actions)
GNR-VLV-05	NORMALLY CLOSED SWING AND TILTING DISC VALVES
GNR-VLV-06	ALL VALVES (Stroke Testing Cold Shutdown Valves)
GNR-VLV-07	CONTAINMENT ISOLATION VALVES
GNR-VLV-08	VALVES REQUIRED FOR COLD SHUTDOWN
GNR-VLV-09	POWER OPERATED VALVES
GNR-VLV-10	ALL PRESSURE RELIEF DEVICES (Acceptance Criteria)
GNR-VLV-11	ALL PRESSURE RELIEF DEVICES (Alternative Test Methods)

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-01

1.0 Relief Request #: GNR-VLV-01

2.0 Category Type: All Category A Valves

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWV-3427 Valve Leak Rate Test, Section (b).

6.0 Bases for Relief:

This paragraph is directed toward evaluating the trend of a valve's leak rate over a period of time. However, based on past test results, consistent trends in valve leak rates have not been observed, making it impossible to predict a particular valve's leak rate.

Twenty-eight valves were chosen at random for leak rate trending. Three of these tests involved valves which were six inch diameter or larger.

Of the twenty-eight, fifteen had a single test decrease from the previous test; three had two consecutive leak rates which decreased from the previous test; three had three consecutive leak rates which either remained the same or decreased from the previous test. These valves had no maintenance performed on them during this period.

Of the twenty-eight, one failed after a previous decrease to less than 0.3% of allowed leak rate limit; two failed on the second test where the first test had a leak rate of less than 1.6% of allowed leak rate; three exhibited an increase in leak rate over the previous test for each test performed and failed on the last test. In neither case had

the margin been reduced by more than 36.2% on any previous test prior to failure. One failed on the second test where the first test showed a leak rate of greater than 64% of allowed leak rate limit.

In addition, performing maintenance on a valve is no guarantee the valve will have a lower leakage rate. On numerous occasions, valves had to have maintenance performed four or more times before the leak rate was measured to be significantly lower than the initial test which identified the problem. Replacing valves with new ones likewise does not guarantee an acceptable leak rate.

7.0 Alternate Testing: None proposed.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-02

1.0 Relief Request #: GNR-VLV-02

2.0 Category Type: Fast Acting Valves

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWV-3413 (b), IWV-3417

6.0 Bases for Relief: Power operated valves with stroke times of less than 2 seconds (i.e., "Fast Acting Valves") cannot show any recordable increase in stroke time without requiring corrective action, i.e. a valve stroking in 1.49 seconds (recorded as 1 sec.) could not increase to 1.51 seconds (recorded as 2 sec.) per IWV-3417(a). For such fast acting valves, errors introduced in timing contribute significantly to failure to meet acceptance criteria.

7.0 Alternate Testing: Specific valves with normal stroke times less than 2 second (primarily solenoid valves) will be defined and identified as "fast acting valves" and will be considered acceptable if the measured stroke time (rounded to the nearest second) remains at 2 seconds or less. Corrective action will be required when a "fast acting valve" stroke time is 3 seconds or greater.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-03

1.0 Relief Request #: GNR-VLV-03

2.0 Category Type: Fail-Safe Valves

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement:

IWV-3415: "When practical, valves with fail-safe actuators shall be tested by observing the operation of the valves upon loss of actuator power."

6.0 Basis for Relief:

Testing by loss of actuator power is not practical. First, loss of actuator power generally involves maintenance action to interrupt power, which must subsequently be restored and verified. This greatly increases the manpower requirements for testing and increases possibility for human error in returning component to service. Second, by IWV-3200, a subsequent post-maintenance test is required to verify return to acceptable operation. Third, some components, especially pneumatic valves, have two modes of "loss of actuator power": they can lose pneumatic power by loss of instrument air or they can lose electrical power to control solenoids. Therefore, to test all modes of failure at least three tests would be required on some valves.

The net result is a significant increase in manpower and time to perform the tests, an increase in radiation exposure for valves in radiation areas, and an increase in the possibility of improper return to service.

7.0 Alternate Testing:

Fail safe valves will be tested using normal controls. Where both normal controls and engineered safeguard (ESG) control switches exist, the ESG switches will be used. The action of the switch is the same as if the actuator power is removed. Fail/Safe valves installed have pneumatic or mechical devices to fail the valve in the safe direction. Response to I.E. Notice 88-14 and recent analysis has shown all valves installed to fail in the safe direction.

7.0 Alternate Testing:

Fail safe valves will be tested using normal controls. Where both normal controls and engineered safeguard (ESG) control switches exist, the ESG switches will be used. The action of the switch is the same as if the actuator power is removed. Fail/Safe valves installed have pneumatic or mechical devices to fail the valve in the safe direction. Response to I.E. Notice 88-14 and recent analysis has shown all valves installed to fail in the safe direction and/or mechanical means have been provided and incorporated into procedures to reposition the valve.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-04

1.0 Relief Request #: GNR-VLV-04

2.0 Category Type: **All Valves**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: Corrective Action prior to startup. IWV-3417(b) "when corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before startup."

6.0 Basis for Relief: Existing Technical Specifications give limiting conditions for operation (LCO) including requirements for startup. If the failed component is not required to be operable in order to satisfy the appropriate LCO, there should be no additional startup penalty just due to above requirements.

7.0 Alternate Testing: None required. Components which are out of service shall not be required to be operable by IWV. Appropriate Tech. Spec. LCOs must be met, however.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-05

1.0 Relief Request #: GNR-VLV-05

2.0 Category Type: **Normally Closed Swing and Tilting Disc Valves**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWV-3522 (b) for Swing or Tilting Disk Valves, if the test is made by use of fluid flow through the valve, the pressure differential for equivalent flow shall be no greater than that observed during the pre-operational test.

6.0 Basis for Relief: Preoperational Pressure Differential Data does not exist. Instrumentation taps to measure differential pressure would require numerous modifications, one or two pressure taps per valve. 10 CFR 50.55 does not require modifications of existing plants to meet code requirements.

7.0 Alternate Testing: Flow will be observed to insure disk movement without regard to valve differential pressure.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-06

1.0 Relief Request #: GNR-VLV-06

2.0 Category Type: **All Valves**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWV-3412, IWV-3522 all valves which are stroke tested during cold shutdown are required to be exercised if 3 months have passed since last shutdown exercise.

6.0 Bases for Relief: N/A

7.0 Alternate Testing: When the unit is taken to cold shutdown for a short outage which will not allow for exercise testing of all valves; testing will start as soon as reasonably possible and in no case later than 48 hours after achieving cold shutdown. All valves which require special conditions during start-up will be tested. Any valve not tested due to time availability will be tested early during the next cold shutdown.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-07

1.0 Relief Request #: GNR-VLV-07

2.0 Category Type: Containment Isolation Valves (CIV)

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWV-3200, all valves which are to be subsequently tested, following such maintenance which could affect its performance, prior to returning it to service.

6.0 Bases for Relief: Adjusting a packing leak on a CIV in a pressurized system will have a minimal effect on total Reactor Building leakage. It is not practical to remove a pressurized safety system from service, depressurize, vent, drain, and preform a local leak rate test to verify that tightening the valve's packing has not increased its leak rate. For safety, ALARA, and cost considerations CIV packing leaks will be reduced to a minimum level without performing a post maintenance leak rate test. Exercising the valve or stroke testing where code requires it, will demonstrate its operability.

7.0 Alternate Testing:

When valve packing is adjusted to reduce a leak the valve will be observed to verify the leak has been reduced and exercised (Partial or Full) tested prior to returning the valve to service. The leakage rate for type "C" valves will be determined by testing at the next refueling outage. Valve(s) which cannot be type "C" tested and are in penetrations which are challenged during a type "A" will be tested at the next scheduled type "A" test. No special type "A" will be performed.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-08

1.0 Relief Request #: GNR-VLV-08

2.0 Category Type: **Valves Required For Cold Shutdown**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWV-1100, include valves which are required to perform a specific function in shutting down the reactor to the cold shutdown condition in the in-service testing program.

6.0 Basis for Relief: It is implicit within the Oconee licensing basis that operation of the LPI system in the normal decay heat removal mode and operation of other systems solely required to bring a Unit from hot shutdown to cold shutdown is not required to mitigate the consequences of a Design Basis Accident. Operability and detection of degradation affecting operation is assured each time the Unit is shutdown to the cold shutdown condition. In the event inoperability or degradation is discovered during shutdown to the cold shutdown condition the Design Basis of ONS is such that decay heat may be removed using other means for an extended period of time until repairs can be affected. Therefore, testing of these valves in accordance with IWV provides no commensurate increase in plant safety.

7.0 Alternate Testing:

Valves which are required to perform a specific function in shutting down a reactor to the cold shutdown condition, but are not required to mitigate the consequences of a Design Basis Accidents, are tested in accordance with the ONS 10 CFR 50 Appendix B testing program.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-09

1.0 Relief Request #: GNR-VLV-09

2.0 Category Type: Power Operated Valves

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: Compare power-operated valve stroke times to previous stroke times as required by IWV-3417(a).

6.0 Basis for Relief: As described in NRC Generic Letter No. 89-04, comparing stroke times to a reference value is an acceptable alternative to comparing with the previous stroke time. Comparing to a reference value will not allow stroke times to gradually increase without requiring corrective action.

7.0 Alternate Testing: Power-operated valve stroke times will be compared to reference stroke times. A reference stroke time will be established for each power-operated valve when it is known to be operating acceptably. This relief uses the acceptance criteria of OM-10 (1988).

If the stroke time of a power-operated valve is not within the ranges specified below, its test will be immediately repeated; if within the restoke range limits or immediately declared inoperable if outside those limits, per the acceptance criteria of OMa-1988 Section 4.2.1.9. In either of the above cases an evaluation will be done prior to returning the valve to service

- For electric-motor-operated valves with a reference stroke time greater than 10 sec, the stroke time will be compared to a +/-15% change from the reference stroke time.

- For other power-operated valves with a reference stroke time greater than 10 sec, the stroke time will be compared to a +/-25% change from the reference value.

- For electric-motor-operated valves with a reference stroke time less than or equal to 10 sec, the stroke time will be compared to a +/-25% or +/-1 sec change from the reference value, which ever is greater.

- For other power-operated valves with a reference stroke time less than or equal to 10 sec, the stroke time will be compared to a +/-50% change from the reference value.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-10

1.0 Relief Request #: GNR-VLV-10

2.0 Category Type: **All Pressure Relief Devices**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: OM-1 - 1981, 1.3.3.1.5(a) and 1.3.4.1.5(a), Valves Not Meeting Acceptance Criteria. For valves which fail the test....., additional valves shall be set pressure tested on the basis of two additional valves to be tested for each valve failure up to the total number of valves of the same type and manufacture.

6.0 Basis for Relief: Relief Device application should also be taken into account when doing additional testing inorder to detect any common mode failure of the type and manufacturer of the valve, i.e. raw water corrosive service, vibration, etc..

7.0 Alternate Testing: Valves Not Meeting Acceptance Criteria. For valves which fail the test....., additional valves shall be set pressure tested on the basis of two additional valves to be tested for each valve failure up to the total number of valves of the same type, manufacture **and APPLICATION if the cause of the failure is directly related to the application.**

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-VLV-11

1.0 Relief Request #: GNR-VLV-11

2.0 Category Type: **All Pressure Relief Devices**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: OM-1 - 1981, 8.3, Alternative Test Media. Pressure relief devices may be subjected to set pressure tests and seat tightness tests using a test media (fluid and Temperature) other than that for which they are designed, provided the testing complies with 8.3.1, 8.3.2, and 8.3.3.

6.0 Basis for Relief: In many cases, relief valve manufacturer's supply charts and graphs that relate setpoints at ambient temperature conditions to setpoints at operating temperature conditions. This "cold differential setpressure" information is supplied on a model or type specific basis and has proven to be accurate over a nember of years of experience. The manufacturer's recommendations, derived from a broader experience base, are more accurate than a single correlation test conducted on valves at Duke Power.

7.0 Alternate Testing: For valves with manufacturer published "cold set pressures" (which allow setting the valve at ambient conditions as opposed to operating conditions), we will continue to use the manufacture's data in lieu of performing the correlation required by paragraph 8.3.

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

ATTACHMENT #2

VALVE SPECIFIC RELIEF REQUESTS

RR-VLV-01	RC SEAL RETURN LINE CHECK VALVE
RR-VLV-02	LETDOWN LINE TO LPI SUCTION CHECK VALVE
RR-VLV-04	HPI PUMP EMERGENCY SUPPLY CHECK
RR-VLV-05	HPI PUMP DISCHARGE CHECK
RR-VLV-06	RC LOOP "A1" OR "A2" INJECTION STOP CHECK
RR-VLV-07	RC LOOP "B1" OR "B2" INJECTION STOP CHECK
RR-VLV-08	HPI LOOP "B" CHECK VALVE
RR-VLV-09	HPI LOOP "A" CHECK VALVE
RR-VLV-10	CORE FLOOD TANK "A" AND "B" OUTLET CHECK
RR-VLV-11	"A" OR "B" RBSP SUCTION CHECK
RR-VLV-12	"A" OR "B" RBSP DISCHARGE CHECK
RR-VLV-13	"A" OR "B" RBS LINE REACTOR BLDG. ISOL. CHECK
RR-VLV-14	QUENCH TANK RECIRCULATION PENETRATION CHECK
RR-VLV-15	HPI MINIMUM RECIRCULATION STOP CHECKS
RR-VLV-16	SUPPLY HEADER PENETRATION ISOLATION CHECK. CRD COOLING PENETRATION OUTSIDE OR INSIDE CHECK
RR-VLV-17	LPI HEADER "A" AND "B" CHECK VALVES
RR-VLV-18	DW TO RCP SEAL VENT
RR-VLV-19	SEAL SUPPLY TO RC PUMP A1, A2, B1, OR B2
RR-VLV-21	LPI COOLER "A" AND "B" OUTLET TO HPI PUMP SUCTION CHECK

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

ATTACHMENT #2

VALVE SPECIFIC RELIEF REQUESTS

RR-VLV-22	MDEFWP" SUCTION FROM HOTWELL CHECK
RR-VLV-23	EMERGENCY FEEDWATER PUMP TURBINE AUXILIARY STEAM SUPPLY CHECK
RR-VLV-24	(REACTOR VESSEL) EIGHT INTERNAL CHECK (VENT) VALVES (ALL THREE UNITS)
RR-VLV-25	CORE FLOOD TANKS (CFT) "A" AND "B" INLET CHECKS
RR-VLV-26	NORMAL FEEDWATEER TO EMERGENCY CHECKS
RR-VLV-28	NORMAL AND EMERGENCY SUPPLY CHECK VALVES TO UNIT 1 HPI PUMP MOTOR BEARINGS
RR-VLV-29	LPSW "A" LINE TO TURBINE BUILDING HEADER
RR-VLV-30	CORE FLOOD TANKS (CFTs) "A" AND "B" INLET CHECKS
RR-VLV-31	MAIN & AUX. STEAM SUPPLY CHECKS TO TDEFWPs
RR-VLV-32	LDST OUTLET CHECK VALVE

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-01

I. Component for which relief is requested:

(a) Name(s) and Number(s): RC Seal Return Line Check Valve.

1HP-189
2HP-189
3HP-189

Drawing Number/Coordinates: OFD-101A-1.2/F6
OFD-101A-2.2/F5
OFD-101A-3.2/F5

(b) Function: These valves open to pass flow from HPI Pump minimum recirculation to the suction of the LPI Pumps during LPI to HPI "Piggyback" operation.

(c) ISI Class/Duke Class: C/C

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: No flow instrumentation exists to monitor flow through these valves.

IV. Alternate examination: These valves will be disassembled at refueling. The positions on check valve disassembly in NRC Generic Letter 89-04 will be followed.

Prepared By: _____ Date: 12-6-93

Reviewed By: _____ Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-02

I. Component for which relief is requested:

(a) Name(s) and Number(s): Letdown Line to LPI Suction Check Valve.

1HP-364
2HP-364
3HP-364

Drawing Number/Coordinates: OFD-101A-1.2/F7
OFD-101A-2.2/F7
OFD-101A-3.2/F8

(b) Function: These valves open to pass flow from HPI Pump minimum recirculation to the suction of the LPI Pumps during LPI to HPI "Piggyback" operation.

(c) ISI Class/Duke Class: C/C

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: No flow instrumentation exists to monitor flow through these valves.

IV. Alternate examination: These valves will be disassembled at refueling. The positions on check valve disassembly in NRC Generic Letter 89-04 will be followed.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standard

Request # RR-VLV-4

I. Component for which relief is requested:

(a) Name(s) and Number(s): HPI Pump Emergency Supply Check

1HP-101, 102
2HP-101, 102
3HP-101, 102

Drawing Number/Coordinates: OFD-101A-1.3/J-3, E-3
OFD-101A-2.3/J-3, E-3
OFD-101A-3.3/J-2, E-2

(b) Function: Normally prevent backflow from HPI pump suction header to BWST. In an emergency, open to provide flow from BWST to HPI pumps, close to preclude diversion of flow from HPI suction header.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: A/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3200 Valve Replacement, Repair, and Maintenance and IWV-3520 Tests for Check Valves.

III. Basis for requesting relief:

Quarterly HPI pump tests utilize suction from the letdown storage tank. These valves are located in piping which contains highly borated water from the BWST. Stroking these valves open would cause injection of highly borated water into the RCS, necessitating extensive cleanup. Late in core life, injecting BWST water (>1800 ppm boron) would cause a rapid power transient and consequent reactor trip. Full stroking these valves open at cold shutdown could prevent reactor startup due to a relatively high boron concentration. In addition, full-stroke exercising these valves at power or cold shutdown could cause overpressurization of the RCS.

Full flow testing will normally be performed at the beginning of a refueling outage such that any problems discovered during testing can be corrected during the outage. To perform a full flow post-maintenance retest at the end of a refueling outage would require reconfiguring the system to the full flow lineup after assuring system integrity and adequate system venting. Achieving these conditions at the end of a refueling outage in order to perform a post-maintenance retest would lengthen the outage schedule.

. Alternate examination:

These valves will be full flow tested each refueling outage during a full flow system test. This test insures adequate venting of the RCS to prevent overpressurization and also insures adequate management oversight since operating the HPI system at full flow conditions is an infrequently performed evolution.

When full flow testing has been performed during a refueling outage and maintenance that could affect valve performance parameters is subsequently performed, Position 2 of Generic Letter 89-04 will be utilized in lieu of a full flow retest. A partial stroke test will be performed on Unit start-up.

Reverse flow testing will be performed quarterly and partial flow testing will be performed at cold shutdown.

Prepared By: _____ Date: 12.6.93

Reviewed By: _____ Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standard

Request # RR-VLV-5

I. Component for which relief is requested:

(a) Name(s) and Number(s): HPI Pump Discharge Check

1HP-105, 109, 113
2HP-105, 109, 113
3HP-105, 109, 113

Drawing Number/Coordinates: OFD-101A-1.3/J-10, G-10, D-10
OFD-101A-2.3/J-10, G-10, D-10
OFD-101A-3.3/J-10, G-10, D-10

(b) Function: Valves open to pass flow from HPI pumps A, B and C. Valves close to prevent diversion of flow through an idle pump.

(c) ISI Class/Duke Class: B/B

(d) ※IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

※IWV-3200 Valve Replacement, Repair, and Maintenance and ※IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: Full-stroke exercising these valves during power operation or cold shutdown could cause overpressurization of the RCS.

Full flow testing will normally be performed at the beginning of a refueling outage such that any problems discovered during testing can be corrected during the outage. To perform a full flow post-maintenance retest at the end of a refueling outage would require reconfiguring the system to the full flow lineup after assuring system integrity and adequate system venting. Achieving these conditions at the end of a refueling outage in order to perform a post-maintenance retest would lengthen the outage schedule.

IV. Alternate examination: These valves will be full flow tested each refueling outage during a full flow system test. This test insures adequate venting of the RCS to prevent overpressurization and also insures adequate management oversight since operating the HPI system at full flow conditions is an infrequently performed evolution.

When full flow testing has been performed during a refueling outage and maintenance that could affect valve performance parameters is subsequently performed, Position 2 of Generic Letter 89-04 will be utilized in lieu of a full flow retest. A partial stroke test will be performed on Unit start-up.

Partial flow testing and reverse flow testing will be performed quarterly.

Prepared By: Leland VanStrom Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standard

Request # RR-VLV-6

I. Component for which relief is requested:

(a) Name(s) and Number(s): RC Loop "A1" or "A2" Injection Stop Check.

1HP-126, 127
2HP-126, 127
3HP-126, 127

Drawing Number/Coordinates: OFD-101A-1.4/J-13, J-13
OFD-101A-2.4/J-13, J-13
OFD-101A-3.4/J-12, J-12

(b) Function: These valves are open during normal operation. They are in the normal makeup flow path. In an emergency they must open or remain open. The HPI system injects into the RCS through these valves.

(c) ISI Class/Duke Class: A/A

(d) ※IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

※IWV-3200 Valve Replacement, Repair, and Maintenance and ※IWV-3520 Tests for Check Valves.

III. Basis for requesting relief:

These valves cannot be full-stroke exercised at power or during cold shutdown due to the possibility of RCS overpressurization.

These valves cannot be partial flow tested at power due to the lack of flow instrumentation on each cold leg injection line. Measuring flow would require closing one stop check valve (i.e. HP-126) while measuring flow total header flow to determine flow through the other valve (i.e. HP-127). Closing these stop check valves would require personnel entries at power which presents a safety hazard because of high radiation levels and proximity to high energy systems.

Full flow testing will normally be performed at the beginning of a refueling outage such that any problems discovered during testing can be corrected during the outage. To perform a full flow post-maintenance retest at the end of a refueling outage would require reconfiguring the system to the full flow lineup after assuring system integrity and adequate system venting. Achieving these conditions at the end of a refueling outage in order to perform a post-maintenance retest would lengthen the outage schedule.

V. Alternate examination:

These valves will be full flow tested each refueling outage during a full flow system test. This test insures adequate venting of the RCS to prevent overpressurization and also insures adequate management oversight since operating the HPI system at full flow conditions is an infrequently performed evolution.

When full flow testing has been performed during a refueling outage and maintenance that could affect valve performance parameters is subsequently performed, Position 2 of Generic Letter 89-04 will be utilized in lieu of a full flow retest. A partial stroke test will be performed on Unit start-up.

Partial flow testing will be performed at cold shutdown.

Prepared By: Delaney Hawthorne Date: 12-6-93

Reviewed By: A Rupkaus Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standard

Request # RR-VLV-7

I. Component for which relief is requested:

(a) Name(s) and Number(s): RC Loop "B1" or "B2" Injection Stop Check.

1HP-152, 153
2HP-152, 153
3HP-152, 153

Drawing Number/Coordinates: OFD-101A-1.4/D-14, D-13
OFD-101A-2.4/D-13, E-13
OFD-101A-3.4/D-13, E-13

(b) Function: These valves are closed during normal operation preventing backflow from the RCS. In an emergency they open.

(c) ISI Class/Duke Class: A/A

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3200 Valve Replacement, Repair, and Maintenance and *IWV-3520 Tests for Check Valves.

III. Basis for requesting relief:

These valves cannot be full-stroke exercised at power or during cold shutdown due to the possibility of RCS overpressurization.

These valves cannot be partial flow tested at power due to the lack of flow instrumentation on each cold leg injection line. Measuring flow would require closing one stop check valve (i.e. HP-152) while measuring flow total header flow to determine flow through the other valve (i.e. HP-153). Closing these stop check valves would require personnel entries at power which presents a safety hazard because of high radiation levels and proximity to high energy systems. In addition, partial stroking these valves at power would thermally shock the emergency header injection nozzles.

Full flow testing will normally be performed at the beginning of a refueling outage such that any problems discovered during testing can be corrected during the outage. To perform a full flow post-maintenance retest at the end of a refueling outage would require reconfiguring the system to the full flow lineup after assuring system integrity and adequate system venting. Achieving these conditions at the end of a refueling outage in order to perform a post-maintenance retest would lengthen the outage schedule.

IV. Alternate examination:

These valves will be full flow tested each refueling outage during a full flow system test. This test insures adequate venting of the RCS to prevent overpressurization and also insures adequate management oversight since operating the HPI system at full flow conditions is an infrequently performed evolution.

When full flow testing has been performed during a refueling outage and maintenance that could affect valve performance parameters is subsequently performed, Position 2 of Generic Letter 89-04 will be utilized in lieu of a full flow retest. A partial stroke test will be performed on Unit start-up.

Partial flow testing will be performed at cold shutdown.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Request # RR-VLV-8

I. Component for which relief is requested:

(a) Name(s) and Number(s): HPI Loop "B" Check Valve.

1HP-188
2HP-188
3HP-188

Drawing Number/Coordinates: OFD-101A-1.4/D-11
OFD-101A-2.4/D-11
OFD-101A-3.4/D-10

(b) Function: These valves are closed during normal operation. In an emergency they open. They are in emergency injection flow paths.

(c) ISI Class/Duke Class: B/B & BC

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3200 Valve Replacement, Repair, and Maintenance and *IWV-3520 Tests for Check Valves.

III. Basis for requesting relief:

Exercising these normally closed valves at power would thermally stress injection nozzles by injecting water from the LDST (~110°F) into the unprecooled nozzles which are at RCS cold leg temperature (~560°F). Injection through the "B" HPI loop with RCS temperature >250°F is classified as an "Allowable Operating Transient Cycle" (AOTC) and is limited to prevent exceeding the design limits of the nozzles. Full flow testing these valves at cold shutdown could overpressurize the RCS.

Full flow testing will normally be performed at the beginning of a refueling outage such that any problems discovered during testing can be corrected during the outage. To perform a full flow post-maintenance retest at the end of a refueling outage would require reconfiguring the system to the full flow lineup after assuring system integrity and adequate system venting. Achieving these conditions at the end of a refueling outage in order to perform a post-maintenance retest would lengthen the outage schedule.

IV. Alternate examination:

These valves will be full flow tested each refueling outage during a full flow system test. This test insures adequate venting of the RCS to prevent overpressurization and also insures adequate management oversight since operating the HPI system at full flow conditions is an infrequently performed evolution.

When full flow testing has been performed during a refueling outage and maintenance that could affect valve performance parameters is subsequently performed, Position 2 of Generic Letter 89-04 will be utilized in lieu of a full flow retest. A partial stroke test will be performed on Unit start-up.

Partial flow testing will be performed at cold shutdown.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standard

Request # RR-VLV-9

I. Component for which relief is requested:

(a) Name(s) and Number(s): HPI Loop "A" Check Valve.

1HP-194
2HP-194
3HP-194

Drawing Number/Coordinates: OFD-101A-1.4/J-10
OFD-101A-2.4/J-10
OFD-101A-3.4/J-8

(b) Function: These valves are open during normal operation. They are in normal injection flow paths. These flow paths are also emergency injection flow paths. Therefore, in an emergency these valves must open or remain open.

(c) ISI Class/Duke Class: B/B & BC

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3200 Valve Replacement, Repair, and Maintenance and IWV-3520 Tests for Check Valves.

III. Basis for requesting relief:

These valves cannot be full-stroke exercised at power or at cold shutdown due to the possibility of RCS overpressurization.

Full flow testing will normally be performed at the beginning of a refueling outage such that any problems discovered during testing can be corrected during the outage. To perform a full flow post-maintenance retest at the end of a refueling outage would require reconfiguring the system to the full flow lineup after assuring system integrity and adequate system venting. Achieving these conditions at the end of a refueling outage in order to perform a post-maintenance retest would lengthen the outage schedule.

IV. Alternate examination:

These valves will be full flow tested each refueling outage during a full flow system test. This test insures adequate venting of the RCS to prevent overpressurization and also insures adequate management oversight since operating the HPI system at full flow conditions is an infrequently performed evolution.

When full flow testing has been performed during a refueling outage and maintenance that could affect valve performance parameters is subsequently performed, Position 2 of Generic Letter 89-04 will be utilized in lieu of a full flow retest. A partial stroke test will be performed on Unit start-up.

Partial flow testing will be performed quarterly.

Prepared By: Leland Hasthorne Date: 12-6-93

Reviewed By: H Tufkowski Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-10

I. Component for which relief is requested:

(a) Name(s) and Number(s): Core Flood Tank "A" and "B" Outlet Check

1CF-11, 13
2CF-11, 13
3CF-11, 13

Drawing Number/Coordinates: OFD-102A-1.3/E-10, E-6
OFD-102A-2.3/D-10, D-6
OFD-102A-3.3/E-10, E-6

(b) Function: These valves normally prevent backflow from RCS to core flood tanks. In an emergency they open to permit flow from core flood tanks to the Reactor Coolant System.

(c) ISI Class/Duke Class: A/A

(d) IWV-2000 Valve Category: A/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3200 Valve Replacement, Repair, and Maintenance

Relief is requested from requirement for post-maintenance full-flow testing.

IWV-3411 Test Frequency
IWV-3521 Test Frequency

Relief is requested from exercise test frequency of 3 months or at cold shutdown.

IWV-3417 Corrective Action
IWV-3523 Corrective Action

Relief is requested from requirement to full-flow test prior to returning valve to service following corrective action.

IWV-3424 Seat Leakage Measurement

Relief is requested from requirements of test methodology stipulated in IWV-3424(a) and IWV-3424(b).

IWV-3427 Corrective Action

Relief is requested from requirements of double-frequency testing as stated in IWV-3427(b).

IWV-3522 Exercising Procedure

Relief is requested from exercising procedure requirement to pass full accident flow through the valve.

III. Basis for requesting relief:

Relief from IWV-3200 requirement for post-maintenance testing is requested on the following basis. Any maintenance required on these valves would be scheduled after the full flow test because the valve cannot be removed from the system for maintenance until after the core flood tanks are drained (low-point maintenance). Full flow testing is concurrent with draining of the tanks, and therefore precedes valve removal. Revising the outage schedule to provide for valve maintenance prior to full-flow testing would create a significant hardship on outage management and would adversely affect shutdown risk as explained below.

The maintenance on the valve must be performed during the defueled maintenance window. To fill the CF Tanks after defueled maintenance window and perform the full flow test before fuel is reloaded would take roughly 30 hours of critical path outage time. Additionally, during that phase of the outage there is no available space to mix water for the CF Tank fill. There is also no piping system available to refill the tanks. Realignment of the piping necessary to refill the tanks would require extensive procedure revisions and many Block Tagout revisions.

Performing the test just prior to fuel movement as required by the above scenario would cloud the water in the vessel and limit the ability to properly verify fuel assembly locations. This increases the risk of a fuel handling error during the refueling process.

Relief from IWV-3411 and IWV-3521 is requested because these valves cannot be exercised at power or cold shutdown. These valves cannot be subjected to greater than RCS pressure during power operation. They cannot be full-stroke exercised during cold shutdown due to the possibility of over pressurization and hydraulic shock to the reactor coolant system.

Relief from the retest requirement following corrective action (IWV-3417 and IWV-3523) is requested on the same basis as stated above for IWV-3200. Corrective action as intended in this context would necessarily require disassembly for these valves. Such corrective action will be scheduled during the defueled maintenance window of each respective refueling outage.

Relief from IWV-3424(a) is requested on the basis of contamination risk and exposure concern. This method has been employed in the past with poor results. We were not

confident in the accuracy of the methodology, and we had incidents involving spills and personnel contamination. The alternate methodology described below has been in place for several years with acceptable results. The method is based upon a computer code which has been validated by hand calculation to assure that the results are reliable and conservative. Therefore, the methodology will provide an adequate level of safety. Conversion to new methodology will require resources to make procedure changes which are not justified by a compensatory increase in level of safety.

Relief from IWV-3424(b) is requested because alternate methodology currently in place (see alternative testing discussed below) will produce equivalent results with no reduction in level of safety. Existing test methodology has been in place for several years with acceptable results. Conversion to new methodology will require resources to acquire additional test apparatus and to make procedure changes which are not justified by a compensatory increase in level of safety.

Relief from IWV-3427(b) requirement for double-frequency testing is requested on the following basis. Double-frequency testing of these valves would require testing at conditions other than cold shutdown or refueling outage. This would result in unnecessary risk to personnel due to exposure to high-energy piping inside containment. Personnel exposure to high-radiation would also result. Moreover, our current practice (described below) is more conservative than the code requirement, therefore making this requirement inappropriate.

Relief from IWV-3522 requirement for full flow testing is requested on the following basis. It is understood that full flow testing as described in Generic Letter 89-04 is taken to mean full accident flow rate. Compliance with this requirement would introduce the potential for personnel injury, contamination of personnel and equipment, and potential equipment damage due to water spray. The tanks discharge into the fuel transfer canal through an open, defueled vessel. Establishing full accident flow rate through these valves could create flow velocities sufficient to force water over the walls of the fuel transfer canal, which is unacceptable. No alternate flow path is available. Testing with the vessel head in place is not feasible because a) fuel assemblies could be damaged if test was performed prior to

defueling, and b) replacement of vessel head after defueling would have an unacceptable impact on the outage schedule and require additional resources without a compensating increase in level of safety.

IV. Alternate examination: As an alternative to post-maintenance retesting required by IWV-3200, IWV-3417, and IWV-3523, all maintenance which can affect the performance of the valve will be performed during refueling. The valves will be exercised by hand following disassembly, prior to returning the valves to service. While not the preferred method, disassembly is recognized by Generic Letter 89-04 as an acceptable alternate to full flow testing. In some respects, disassembly can be the most effective method of advance detection of deterioration. For example, it can detect wear, corrosion, or other mechanical damage that flow testing may not detect. Therefore, this method will assure an acceptable level of safety. A partial stroke test will be performed during unit startup following disassembly.

In lieu of exercise test frequency required by IWV-3411 and IWV-3521 the valves will be exercised at each refueling outage. Partial stroke testing will be performed at cold shutdown.

As an alternative to seat leakage measurement methods prescribed by IWV-3424, we will apply pressure downstream of each valve and measure pressure-rise in a fixed volume upstream of the valves. Leakage rate will be determined by comparison of measured pressure rise versus time to a calculated pressure rise versus time based upon an assumed leakage rate. Calculated pressure rise is based upon a computer model which has been validated by hand calculation to assure accurate and conservative results. Therefore, use of this method will assure an acceptable level of safety.

Valves for which leakage rates exceed the criteria of IWV-3427(b) will receive an evaluation by Engineering and Operations Departments prior to returning the valve to service. If this evaluation determines the leakage to be unacceptable, valves will be repaired or replaced prior to returning unit to service.

In lieu of exercise test procedure required by IWV-3522, testing will be performed at a lower than accident pressure and flow condition and the data analyzed to verify that the valves will pass the required flow under accident conditions. Test method utilizes nitrogen overpressure on the Core Flood Tanks, which are filled to normal Technical Specification level with outlet block valves closed. Outlet valves are opened while tank level and pressure data are recorded versus time. This data is used to calculate flow rate

through the check valves. Pressure drops in the system are also calculated and used to determine the flow coefficient (Cv) of the check valves. This Cv is then compared to the accident required Cv. A calculated Cv higher than the accident required Cv indicates that the valve was exercised to its accident required position. Qualification of methodology is provided by independent review of calculation in accordance with owner's Quality Assurance Program.

Prepared By: R. L. Dahlke Date: 11-30-93

Reviewed By: H Lupkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Request # RR-VLV-11

I. Component for which relief is requested:

(a) Name(s) and Number(s): "A" or "B" RBSP Suction Check.

1BS-5, 6
2BS-5, 6
3BS-5, 6

Drawing Number/Coordinates: OFD-102A-1.1/E-8, C-10
OFD-102A-2.1/E-8, C-10
OFD-102A-3.1/F-8, C-9

(b) Function: Loop A and Loop B BWST suction line check valves.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: These valves cannot be full-stroke exercised because the present piping size configuration prevents recirculation flow from equaling design spray flow. Normal recirculation flow is approximately 1250 gpm and full flow for this system is 1500 gpm.

IV. Alternate examination: These valves will be partial-stroked tested quarterly. These valves will also be disassembled at refueling. The positions on check valve disassembly in the NRC Generic Letter 89-04 will be followed. Disassembly will begin as the current check valves are replaced. This will be completed on the following schedule:

Unit 1 End of Cycle 16
Unit 2 End of Cycle 15
Unit 3 End of Cycle 15

The present check valves will not be disassembled because this would require cutting the valve out of the line and rewelding in back in place. The new valves will be flanged to facilitate removal and inspection.

Prepared By: J. Marc Bayless Date: 11/30/93

Reviewed By: H Lufkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST AMSE Codes and Standards

Request # RR-VLV-12

I. Component for which relief is requested:

(a) Name(s) and Number(s): "A" or "B" RBS Pump Discharge Check.

1BS-11, 16
2BS-11, 16
3BS-11, 16

Drawing Number/Coordinates: OFD-103A-1.1/J-6, E-6
OFD-103A-2.1/J-6, E-6
OFD-103A-3.1/J-6, E-6

(b) Function: Loop A and Loop B pump discharge check valves.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: These valves cannot be full-stroke exercised because the present piping size configuration prevents recirculation flow from equaling design spray flow. Normal recirculation flow is approximately 1250 gpm and full flow for this system is 1500 gpm.

IV. Alternate examination: These valves will be partial-stroked tested quarterly. These valves will also be disassembled at refueling. The positions on check valve disassembly in the NRC Generic Letter 89-04 will be followed. Disassembly will begin as the current check valves are replaced. This will be completed on the following schedule:

Unit 1 End of Cycle 15
Unit 2 End of Cycle 14
Unit 3 End of Cycle 14

The present check valves will not be disassembled because this would require cutting the valve out of the line and rewelding in back in place. The new valves will be flanged to facilitate removal and inspection.

Prepared By: J. Marc Boyles Date: 11/30/93

Reviewed By: H Rutledge Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-13

I. Component for which relief is requested:

(a) Name(s) and Number(s): "A" or "B" RBS Line Reactor Bldg. Isol. Check.

1BS-14, 19
2BS-14, 19
3BS-14, 19

Drawing Number/Coordinates: OFD-103A-1.1/J-10, E-10
OFD-103A-2.1/J-10, E-10
OFD-103A-3.1/J-10, E-10

(b) Function: Open to allow RB spray flow to header.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: These valves cannot be full-stroke exercised because of the pipe size including the hook-up point, and the volume of air available. Due to the redundancy with RB coolers and the two independent spray trains, and since these valves are not subjected to liquid or a corrosive atmosphere, frequent testing is not necessary.

IV. Alternate examination: These valves will be sample disassembled at refueling. The positions on check valve disassembly in NRC Generic Letter 89-04 will be followed.

These valves stroked will be partial stroked with air at refueling.

Prepared By: D. Marc Boyle Date: 11/30/93

Reviewed By: H Lufkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-14

I. Component for which relief is requested:

(a) Name(s) and Number(s): Quench Tank Recirculation Penetration Check.

1CS-11, 12
2CS-11, 12
3CS-11, 12

Drawing Number/Coordinates: OFD-107A-1.1/J-2, J-5
OFD-107A-2.1/J-2, J-5
OFD-107A-3.1/J-3, J-5

(b) Function: Quench tank recirculation line penetration check valves.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: A/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: These check valves can be shown to open by normal periodic recirculation of the quench tank. However, their emergency function is to close on reversal of pressure, and this can only be shown by a leak rate test. Due to the extensive draining and venting of the line which is required and the consequent waste generation and radiation dose, leak rate testing can only be performed at refueling outages.

IV. Alternate examination: These valves are pneumatically tested at each refueling outage.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: H L Floyd Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-15

I. Component for which relief is requested:

(a) Name(s) and Number(s): HPI Pump Minimum Recirculation Stop Checks

1HP-248, 250, 252
2HP-248, 250, 252
3HP-248, 250, 252

Drawing Number/Coordinates: OFD-101A-1.3/L-10, I-9, E-9
OFD-101A-2.3/L-10, I-9, E-9
OFD-101A-3.3/H-9, I-9, F-8

(b) Function: These stop check valves open to pass HPI Pump minimum recirculation flow.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: B/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: No flow instrumentation exists to measure pump recirculation flow.

IV. Alternate examination: These valves will be sample disassembled at refueling. The positions on check valve disassembly in NRC Generic Letter 89-04 will be followed.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: H Lufkowski Date: 12-6-93

pressurization and hydraulic shock to the reactor coolant system.

Relief from the retest requirement following corrective action (IWV-3417 and IWV-3523) is requested on the same basis as stated above for IWV-3200. Corrective action as intended in this context would necessarily require disassembly of the valves, as the condition of the valve internals would need to be ascertained. Such corrective action will be scheduled during the defueled maintenance window of each respective refueling outage.

Relief from IWV-3424(a) is requested on the basis of contamination risk and exposure concern. This method has been employed in the past with poor results. We were not confident in the accuracy of the methodology, and we had incidents involving spills and personnel contamination. The alternate methodology described below has been in place for several years with acceptable results. The method is based upon a computer code which has been validated by hand calculation to assure that the results are reliable and conservative. Therefore, the methodology will provide an adequate level of safety. Conversion to new methodology will require resources to make procedure changes which are not justified by a compensatory increase in level of safety.

Relief from IWV-3424(b) is requested because alternate methodology currently in place (see alternative testing discussed below) will produce equivalent results with no reduction in level of safety. Existing test methodology has been in place for several years with acceptable results. Conversion to new methodology will require resources to acquire additional test apparatus and to make procedure changes which are not justified by a compensatory increase in level of safety.

Relief from IWV-3427(b) requirement for double-frequency testing is requested on the following basis. Double-frequency testing of these valves would require testing at conditions other than cold shutdown or refueling outage. This would result in unnecessary risk to personnel due to exposure to high-energy piping inside containment. Personnel exposure to high-radiation would also result. Moreover, our current practice (described below) is more conservative than the code requirement, therefore making this requirement inappropriate.

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-16

I. Component for which relief is requested:

(a) Name(s) and Number(s): Supply Header Penetration Isolation Check. CRD Cooling Penetration Outside or Inside Check.

1CC-20, 24, 76, 77
2CC-20, 24, 76, 77
3CC-20, 24, 76, 77

Drawing Number/Coordinates: OFD-144A-1.2/D-4, D-2,
OFD-144A-1.3/H-6, H-7
OFD-144A-2.2/D-3, D-1,
OFD-144A-2.3/H-6, H-8
OFD-144A-3.2/D-3, D-2,
OFD-144A-3.3/H-5, H-7

(b) Function: Component cooling lines to RC pumps, letdown coolers, and control rod drive service structure penetration isolation valves.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: A/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: Exercise testing these valves at power would isolate cooling from respective components. Testing at each cold shutdown would result in extensive waste generation.

In order to demonstrate closure of these normally open valves, leak rate testing must be performed and this is done at refueling outages.

IV. Alternate examination: These valves are verified closed by leak rate testing during refueling outages.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-17

I. Component for which relief is requested:

(a) Name(s) and Number(s): LPI Header "A" and "B" Check Valves

1CF-12, 14
2CF-12, 14
3CF-12, 14

Drawing Number/Coordinates: OFD-102A-1.3/D-9, D-7
OFD-102A-2.3/D-10, D-6
OFD-102A-3.3/D-9, D-7

(b) Function: These valves normally prevent backflow from RCS to LPI/CF Systems. In an emergency they open to permit flow from core flood tanks or LPI to the Reactor Coolant System.

(c) ISI Class/Duke Class: A/A

(d) IWV-2000 Valve Category: A/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3200 Valve Replacement, Repair, and Maintenance

Relief is requested from requirement for post-maintenance full-flow testing.

IWV-3411 Test Frequency
IWV-3521 Test Frequency

Relief is requested from exercise test frequency of 3 months or at cold shutdown.

IWV-3417 Corrective Action
IWV-3523 Corrective Action

Relief is requested from requirement to full-flow test prior to returning valve to service following corrective action.

IWV-3424 Seat Leakage Measurement

Relief is requested from requirements of test methodology stipulated in IWV-3424(a) and IWV-3424(b).

IWV-3427 Corrective Action

Relief is requested from requirements of double-frequency testing as stated in IWV-3427(b).

IWV-3522 Exercising Procedure

Relief is requested from exercising procedure requirement to pass full accident flow through the valve.

III. Basis for requesting relief:

Relief from IWV-3200 requirement for post-maintenance testing is requested on the following basis. These valves cannot be isolated from the RCS. Therefore, disassembly of these valves for maintenance must be performed when the reactor is defueled and the refueling canal drained. (This is called the "defueled maintenance window" or "low point maintenance window".) Operability testing of these valves is scheduled immediately following defueling and just prior to draining the canal for maintenance. Since the operability test requires draining of the core flood tanks, there will be no water source for testing after the completion of maintenance.

Revising the outage schedule to provide for valve maintenance prior to full-flow testing would require either a) isolating the core flood tanks with CF-1 and CF-2 while draining the canal and performing maintenance, or b) draining the core flood tanks prior to the defueled maintenance window. Option a) is a safety risk to maintenance personnel, since the tanks would have only single isolation. Also, it does not allow for maintenance of CF-1 and CF-2, if required. Option b) creates an outage scheduling burden in that the core flood tanks would have to be refilled in order to perform the operability test. During that phase of the outage there is no available space to mix water for the CF Tank fill. There is also no piping system available to refill the tanks. Realignment of the piping necessary to refill the tanks would require extensive procedure revisions and many Block Tagout revisions. Furthermore, any problems discovered during the operbility test would require a second draining of the refueling canal for repairs. These hardships are not offset by a compensating increase in the level of safety. In fact, both of the above options would adversely affect shutdown risk, as follows. The water in the canal will be clouded by the operability test. The sequences described above result in reduced time allowed for this cloudiness to clear up prior to refueling. This would make it harder to identify fuel assembly locations correctly, increasing the risk of a fuel handling accident.

Relief from IWV-3411 and IWV-3521 is requested because these valves cannot be exercised at power or cold shutdown. These valves cannot be subjected to greater than RCS pressure during power operation. They cannot be full-stroke exercised (implying full accident flow rate) during cold shutdown due to the possibility of over

Relief from IWV-3522 requirement for full flow testing is requested on the following basis. It is understood that full flow testing as described in Generic Letter 89-04 is taken to mean full accident flow rate. Compliance with this requirement would introduce the potential for personnel injury, contamination of personnel and equipment, and potential equipment damage due to water spray. The tanks discharge into the fuel transfer canal through an open, defueled vessel. Establishing full accident flow rate through these valves could create flow velocities sufficient to force water over the walls of the fuel transfer canal, which is unacceptable. No alternate flow path is available. Testing with the vessel head in place is not feasible because a) fuel assemblies could be damaged if test was performed prior to defueling, b) there is no reservoir of sufficient volume into which to drain the water other than the pressurizer, and there is no way to isolate the steam generators, and c) replacement of vessel head after defueling would have an unacceptable impact on the outage schedule and require additional resources without a compensating increase in level of safety.

IV. Alternate examination: As an alternative to post-maintenance retesting required by IWV-3200, IWV-3417, and IWV-3523, all maintenance which can affect the performance of the valve will be performed during refueling. The valves will be exercised by hand following disassembly, prior to returning the valves to service. While not the preferred method, disassembly is recognized by Generic Letter 89-04 as an acceptable alternate to full flow testing. In some respects, disassembly can be the most effective method of advance detection of deterioration. For example, it can detect wear, corrosion, or other mechanical damage that flow testing may not detect. Therefore, this method will assure an acceptable level of safety. A partial stroke test will be performed during unit startup following disassembly.

In lieu of exercise test frequency required by IWV-3411 and IWV-3521 the valves will be exercised at each refueling outage. Partial stroke testing will be performed at cold shutdown.

As an alternative to seat leakage measurement methods prescribed by IWV-3424, we will apply pressure downstream of each valve and measure pressure-rise in a fixed volume upstream of the valves. Leakage rate will be determined by comparison of measured pressure rise versus time to a calculated pressure rise versus time based upon an assumed leakage rate. Calculated pressure rise is based upon a computer model which has been validated by hand calculation to

assure accurate and conservative results. Therefore, use of this method will assure an acceptable level of safety.

Valves for which leakage rates exceed the criteria of IWV-3427(b) will receive an evaluation by Engineering and Operations Departments prior to returning the valve to service. If this evaluation determines the leakage to be unacceptable, valves will be repaired or replaced prior to returning unit to service.

In lieu of exercise test procedure required by IWV-3522, testing will be performed at a lower than accident pressure and flow condition and the data analyzed to verify that the valves will pass the required flow under accident conditions. Test method utilizes nitrogen overpressure on the Core Flood Tanks, which are filled to normal Technical Specification level with outlet block valves closed. Outlet valves are opened while tank level and pressure data are recorded versus time. This data is used to calculate flow rate through the check valves. Pressure drops in the system are also calculated and used to determine the flow coefficient (Cv) of the check valves. This Cv is then compared to the accident required Cv. A calculated Cv higher than the accident required Cv indicates that the valve was exercised to its accident required position. Qualification of methodology is provided by independent review of calculation in accordance with owner's Quality Assurance Program.

Prepared By: R. L. Oakley Date: 11-30-93

Reviewed By: A Lufkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

IST ASME Codes and Standard

Third Ten Year Interval

Relief Request # RR-VLV-18

I. Component for which relief is requested:

(a) Name(s) and Number(s): DW to RCP Seal Vent.

1DW-155, 156

Drawing Number/Coordinates: OFD-106E-1.1/E-3, E-4

(b) Function: Demineralized water line to the third seals of the reactor coolant pumps, building penetration isolation valves.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: A/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: Stroking valves closed can only be done by leak rate test; therefore, verifying these valves closed at power or cold shutdown would require excessive manpower, cause excessive exposure and generate excessive liquid waste.

IV. Alternate examination: These valves are verified closed by leak rate testing during refueling outages.

Prepared By : _____ Date 11-30-93

Reviewed By : _____ Date 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-19

I. Component for which relief is requested:

(a) Name(s) and Number(s): Seal Supply to RC Pump A1, A2, B1, or B2.

1HP-144, 145, 146, 147, 390, 454, 457, 393
2HP-144, 145, 146, 147, 454, 286, 389, 390
3HP-144, 145, 146, 147, 390, 454, 285, 457

Drawing Number/Coordinates: OFD-101A-1.4/G-13, F-13, H-13, I-12, E-10, G-10, H-10, I-10
OFD-101A-2.4/F-12, G-12, H-12, I-12, F-10, H-10, I-10, G-10
OFD-101A-3.4/H-13, I-13, G-13, F-13, I-11, H-11, F-11, G-11

(b) Function: RB Isolation of High Pressure Injection to Reactor Coolant Pump Seals.

(c) ISI Class/Duke Class: B/B & BC

(d) IWV-2000 Valve Category: A/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves

III. Basis for requesting relief: Stroking valves closed can only be done by leak rate test; therefore, verifying these valves closed at power or cold shutdown would require excessive manpower, cause excessive exposure and generate excessive liquid waste.

IV. Alternate examination: These valves are verified closed by leak rate testing during refueling outages.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-21

I. Component for which relief is requested:

(a) Name(s) and Number(s): LPI Cooler "A" and "B" Outlet to HPI Pump Suction Check

1LP-55,57
2LP-55, 57
3LP-55, 57

Drawing Number/Coordinates: OFD-101A-1.3/K-3, C-3
OFD-101A-2.3/K-3, C-3
OFD-101A-3.3/K-3, D-1

(b) Function: In an emergency these valves open to supply flow from the emergency sump to the HPI System via the LPI System.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3200 Valve Replacement, Repair, and Maintenance

Relief is requested from requirement to full-stroke test following maintenance which could affect operability of the valve.

IWV-3521 Test Frequency

Relief is requested from requirement to exercise these valves at cold shutdown.

III. Basis for requesting relief: These are bolted bonnet swing check valves with body hung disks. The hinge pins do not penetrate the body, and are not accessible from outside of the valve body. Therefore, any maintenance which could affect valve performance would require disassembly of the valve. This maintenance would be performed during the defueled maintenance period of the refueling outage. Performing full flow retests at the end of a refueling outage would require reconfiguring the system to the full flow lineup after ensuring system integrity and adequate venting. These steps cannot be performed without severe impact to the outage schedule. Such impact is not justified by a compensatory increase in level of safety.

Exercising these valves at power would inject highly borated water from the BWST into the RCS, possibly causing a shutdown. Full stroke exercising of these valves requires operation of the HPI system at full flow conditions, and if performed at power or during cold shutdown could cause RCS over pressurization.

IV. Alternate examination: The valves will be manually exercised prior to returning the valves to service following maintenance requiring disassembly. This is a recognized alternative to full-flow testing as provided in Generic Letter 89-04.

These valves will be full flow tested each refueling outage during a full flow HPI system test. This test ensures adequate venting of the RCS to prevent overpressurization and also ensures adequate management oversight since operating the HPI system at full flow conditions is an infrequently performed evolution.

Prepared By: R. L. Oakley Date: 11-30-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-22

I. Component for which relief is requested:

(a) Name(s) and Number(s): MDEFWPs Suction From Hotwell Check.

1C-850, 852
2C-850, 852
3C-850, 852

Drawing Number/Coordinates: OFD-121A-1.8/D-4, E-4
OFD-121A-2.8/D-4, C-4
OFD-121A-3.8/E-4, D-4

(b) Function: These valves connect the suction of the motor driven Emergency Feedwater Pump to the Hotwell when the Upper Surge Tank (UST) is isolated.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves

III. Basis for requesting relief: When vacuum is pulled in the condenser, there is not adequate NPSH to run the MDEFW Pumps with suction aligned to the hotwell. Testing with vacuum pulled and taking suction off the hotwell could result in damage to the MDEFW Pumps.

IV. Alternate examination: These valves will be full stroke exercised at refueling and at cold shutdown when condenser vacuum is broken.

Prepared By: David P. Harland Date: 12/6/93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-23

I. Component for which relief is requested:

(a) Name(s) and Number(s): Emergency Feedwater Pump Turbine Auxiliary Steam Supply Check.

1AS-39
2AS-39
3AS-39

Drawing Number/Coordinates: OFD-122A-1.4/H-6
OFD-122A-2.4/H-6
OFD-122A-3.4/H-6

(b) Function: These valves open when steam is supplied from the auxiliary steam header to the EFWPT. These valves are required to close or remain closed when steam is supplied from the main steam header(s).

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: Due to system constraints, there is no means to verify these valves close upon cessation or reversal of flow.

IV. Alternate examination: These valves will be disassembled at refueling. The positions on check valve disassembly in NRC Generic Letter 89-04 will be followed.

These valves will be full-stroked open quarterly.

Prepared By: David P. Garland Date: 12-6-93

Reviewed By: H. Falkenberg Date: 12-6-93

OCONEE NUCLEAR STATION

IST ASME Codes and Standards

Third Ten Year Interval

Relief Request # RR-VLV-24

I. Component for which relief is requested:

(a) Name(s) and Number(s): (Reactor Vessel) Eight Internal Check (Vent) Valves (All Three Units)

Drawing Number/Coordinates: No OFD Drawings Assigned.

(b) Function: These valves allow flow out a cold leg in event of a rupture.

(c) ISI Class/Duke Class:

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: These valves are only accessible when the reactor head is removed.

IV. Alternate examination: These valves will be exercise tested in accordance with FSAR , Section 4.5.4.2.6, using maintenance procedure MP/0/A/1200/099 "Valve - Reactor Internal Vent - Exercise Test" during refueling outages.

Prepared By : _____ Date: 11-30-93

Reviewed By : _____ Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-25

I. Component for which relief is requested:

(a) Name(s) and Number(s): Core Flood Tanks (CFTs) "A" and "B" Inlet Checks.

1CF-42, 44
2CF-42, 44
3CF-42, 44

Drawing Number/Coordinates: OFD-127B-1.2/G-11, J-11
OFD-127B-2.2/G-11, J-11
OFD-127B-3.2/G-11, J-11

(b) Function: These valves normally open to allow make-up to the CFTs and close to isolate the CFTs. In an emergency they close or remain closed to isolate containment.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: A/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3411 Test Frequency for Category A Valves
IWV-3521 Test Frequency for Check Valves

Relief is requested from requirement to cycle these valves once every three months.

III. Basis for requesting relief: Stroking these valves closed can only be done by leak rate test. The only available pressurization path is inside the Reactor Building. Making a Reactor Building entry at power exposes personnel to excessive risk to their personal safety as well as potentially excessive radiation exposure. Therefore, verifying these valves are closed at power or cold shutdown is not feasible.

IV. Alternate examination: These valves are verified closed by leak rate testing during refueling outages.

Prepared By: R. L. Oakley Date: 12-2-93

Reviewed By: A Lekouras Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-26

I. Component for which relief is requested:

(a) Name(s) and Number(s): Normal Feedwater To Emergency Feedwater Checks.

1FDW-39, 432
2FDW-39, 432
3FDW-39, 432

Drawing Number/Coordinates: OFD-121D-1.1/J-10, E-10
OFD-121D-2.1/J-10, E-10
OFD-121D-3.1/J-10, E-10

(b) Function: These valves open to allow the normal feedwater pumps to feed the steam generators through the emergency header. During an emergency they close or remain closed to preclude a diversion of emergency feedwater.

(c) ISI Class/Duke Class: B & C/F

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief: Due to system constraints, there is no means to verify these valves close upon cessation or reversal of flow.

IV. Alternate examination: These valves will be sample disassembled at refueling. The positions on check valve disassembly in NRC Generic Letter 89-04 will be followed.

Prepared By: David P. Garland Date: 12-6-93

Reviewed By: H Hopkins Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-28

I. Component for which relief is requested:

(a) Name(s) and Number(s): Normal and Emergency Supply Check Valves to U1 HPI Pump Motor Bearings

1 LPS-148
1 LPS-151
2 LPS-503
3 LPS-148
3 LPS-503

Drawing Number/Coordinates: OFD-124B-1.1 (L-4)
OFD-124B-1.1 (F-3)
OFD-124B-2.1 (G-3)
OFD-124B-3.1 (L-4)
OFD-124B-3.1 (F-3)

(b) Function:

Check valves passing flow and preventing backflow from alternate cooling water supplies to HPI Pump Motor Bearing Cooling Coils. In certain accident scenarios power to the LPSW Pumps is presumed lost and 1,3 LPS-148 would prevent loss of the alternate flow of cooling water back into the LPSW header. In other scenarios, the non-seismic HPSW piping is presumed lost and 1 LPS-151, 2,3 LPS-503 would prevent backflow into the piping presumed lost.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief:

These check valves are quarterly tested in the open position by normal periodic testing of the Aux Service Water pump and the HPI Pump Motor Bearing cooling. However, one of their emergency functions is to close on reversal of pressure, and this is not practical to test because of piping configuration.

IV. Alternate examination:

These valves are dissasembled at each refueling outage to assure closure (the other emergency function).

Prepared By: Gene W. Baldwin Date: 2 December 93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standard

Relief Request # RR-VLV-29

I. Component for which relief is requested:

(a) Name(s) and Number(s): LPSW "A" line to Turbine Building header.

1LPSW-139

Drawing Number/Coordinates: Flow Diagram OFD-124A-1.1/C-8
Piping Drawing O-400B/G-5

(b) Function: Isolates Units 1 and 2 Turbine Building (non-seismic) LPSW Loads from the "A" LPSW (seismic) header. Isolation required to assure adequate flow to required LPSW loads in the case of a LOCA/LOOP event in concurrence with a seismic event.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: B

II. Reference Code requirement which has been determined to be impractical:

IWV-3412 Exercising Procedure

III. Basis for requesting relief:

This valve is a single isolation forming the Seismic/non-Seismic boundary between the LPSW Header and both Unit 1 and Unit 2 Turbine Building non-Seismic loads.

Loads Include:

Main Turbine Oil Tank Coolers
Alterrex (Generator exciter) Coolers
Chiller "A" and "B" for Control Room Cooling
Battery Room HVAC
Main Vacuum Pumps A, B, C
Moisture Separator Reheater Drain pump cooling.
Various Air Handling Units
Seal Water to Polishing Demineralizer Air Compressor
Make-up water for reaction tank supplying Demineralized and Drinking water.
Continuous Vacuum Priming Pumps

During the stroke test these loads would be without any cooling. The most "time" critical items during operation are the Main Turbine Oil Tank Coolers, the Alterrex Coolers and slightly later the Chillers used for Control Room Cooling. In the case of the Main Turbine Oil Tank Coolers and the Alterrex, it has been evaluated that equipment damage would occur if the valve failed to reopen. Without reestablishing this cooling the main turbine and alterrex could not be shutdown before bearing failure would occur.

Several testing configurations were explored in addition to stroking the valve on-line as discussed above.

The alternative of a bypass line has been considered and rejected as unfeasible. The pipe routing and Support/ Restraint configuration for such a bypass is restrictive due to existing space constraints. A two unit outage (both Units 1 & 2) would be required for installation of the tie-ins for the bypass. Approximate replacement power costs for 14 days at $226,400. /unit/day is $6,339,200. This cost is in addition to the costs of piping, valves, design and installation labor.

The alternative of relocation of the Seismic/ non-Seismic boundary was also evaluated. The piping changes would only slightly be more feasible physically to install and economically than the bypass.

IV. Alternate examination:

This valve will be manually partial stroked during a refueling outages on either unit 1 or unit 2. The valve will be full stroked exercised during concurrent Unit 1 and Unit 2 cold shutdowns.

Reviewed by System Engineer/Date: for K M Thomas / 12-6-93

Reveiwed by VPC/ Date: A Hopkins / 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-30

I. Component for which relief is requested:

(a) Name(s) and Number(s): Core Flood Tanks (CFTs) "A" and "B" Inlet Checks.

1N-129, 131
2N-129, 131
3N-129, 131

Drawing Number/Coordinates: OFD-127B-1.2/J-7, G-7
OFD-127B-2.2/J-7, G-7
OFD-127B-3.2/J-7, G-7

(b) Function:

These valves normally open to allow make-up to the CFTs and close to isolate the CFTs. In an emergency they close or remain closed to isolate containment.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: A/C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief:

Stroking these valves closed can only be done by leak rate test; therefore, verifying these valves are closed at power or cold shutdown would require excessive manpower, cause excessive exposure and generate excessive liquid waste.

IV. Alternate examination:

These valves are verified closed by leak rate testing during refueling outages.

Prepared By: R. L. Sakles Date: 12-6-93

Reviewed By: J. Reflows Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-VLV-31

I. Component for which relief is requested:

(a) Name(s) and Number(s):

1AS-1 MAIN STEAM SUPPLY CHECK
2AS-1 MAIN STEAM SUPPLY CHECK
3AS-1 MAIN STEAM SUPPLY CHECK
1MS-25, 34 MAIN STEAM LINE A/B TO AUX STEAM CHECK
2MS-25, 34 MAIN STEAM LINE A/B TO AUX STEAM CHECK
3MS-25, 34 MAIN STEAM LINE A/B TO AUX STEAM CHECK

Drawing Number/Coordinates:
OFD-128A-1.1/H-7
OFD-128A-2.1/H-7
OFD-128A-3.1/H-7
OFD-121D-1.1/J-10, E-10
OFD-121D-2.1/J-10, E-10
OFD-121D-3.1/J-10, E-10

(b) Function: These valves open to allow a Main Steam supply to the Auxiliary Steam Header.

(c) ISI Class/Duke Class: None/G

(d) IWV-2000 Valve Category: C

II. Reference Code requirement which has been determined to be impractical:

IWV-3520 Tests for Check Valves.

III. Basis for requesting relief:

These are not ASME Code Class 1, 2, or 3 valves and therefore do not fall under the scope of ASME Section XI, Subsection IWV.

Due to system constraints, there is no means to pass accident flow rates in order to verify open full stroke.

IV. Alternate examination:

These valves are partial stroked through normal plant operation while each individual unit carries the Auxiliary Steam Header. These valves will be sample disassembled at refueling. The positions on check valve disassembly in NRC Generic Letter 89-04 will be followed.

Prepared By: David P. Harland Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

ATTACHMENT #3

VALVE COLD SHUTDOWN JUSTIFICATIONS

CSD-VLV-01	SSF AUXILIARY SERVICE WATER TO "A" OTSG
CSD-VLV-02	RC MAKEUP PUMP TO RCP SEALS
CSD-VLV-03	LETDOWN ISOLATION
CSD-VLV-04	RCP SEAL RETURN BLOCK VALVES
CSD-VLV-05	RC LOOP "A" INJECTION
CSD-VLV-06	RC RETURN BLOCK VALVES
CSD-VLV-07	"B" OR "A" LPI HEADER CHECK
CSD-VLV-08	POST-LOCA BORON DILUTION VALVES
CSD-VLV-09	LOOP "A" OR "B" VENT; LOOP "A" OR "B" VENT BLOCK, REACTOR VESSEL HEAD VENT; REACTOR VESSEL HEAD VENT BLOCK
CSD-VLV-10	OTSG STARTUP CONTROL, OTSG NORMAL STARTUP HEADER BLOCK
CSD-VLV-11	TURBINE STOP VALVE
CSD-VLV-12	CC SUPPLY AND RETURN PENETRATION OUTSIDE BLOCK
CSD-VLV-14	RC MAKEUP PUMP TO RCP SEALS BLOCK
CSD-VLV-15	LETDOWN TO SPENT FUEL VENT
CSD-VLV-16	SG INLET BLOCK ON EMERGENCY HEADER
CSD-VLV-17	RCP COOLERS SUPPLY AND DISCHARGE
CSD-VLV-19	TURBINE DRIVEN EMERGENCY FEEDWATER PUMP DISCHARGE CHECKS, EMERGENCY FEEDWATER TO ONCE THROUGH STEAM GENERATOR (OTSG) "A" OR "B", STEAM GENERATORS EMERGENCY HEADER CHECK, OTSG EMERGENCY HEADER CHECK VALVE

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

ATTACHMENT #3

VALVE COLD SHUTDOWN JUSTIFICATIONS

CSD-VLV-21	STEAM HEADER "A" OR "B" TURBINE BYPASS
CSD-VLV-22	"A" LPI PUMP DISCHARGE
CSD-VLV-23	"A" OR "B" OTSG MAIN FLOW CONTROL VALVE
CSD-VLV-24	MDEFWPs SUCTION FROM UST
CSD-VLV-25	MAIN STEAM TO FDW TURBINE: "A" OR "B" AND CSAE's
CSD-VLV-26	MAIN STEAM LINE TO SSRH A1 & A2 OR B1 & B2
CSD-VLV-27	"B" OR "A" INJECTION BYPASS
CSD-VLV-28	LDST OUTLET CHECK VALVE
CSD-VLV-29	HPI PUMP RECIRCULATION BLOCK
CSD-VLV-30	MDEFWPs SUCTION FROM UST CHECK
CSD-VLV-31	BWST OUTLET ISOLATION VALVE
CSD-VLV-34	UNIT 3 MAIN TURBINE OIL COOLER SUPPLY
CSD-VLV-36	HOTWELL NORMAL AND EMERGENCY MAKE-UP CONTROL VALVES

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-01

I. Component for which justification is provided:

(a) Name(s) and Number(s): SSF Auxiliary Service Water to "A" OTSG

SSF-1CCW-269
SSF-2CCW-269
SSF-3CCW-269

Drawing Number/Coordinates: OFD-121D-1.1/G-13
OFD-121D-2.1/G-13
OFD-121D-3.1/G-13

(b) Function:

In an SSF emergency these valves can be throttled open from SSF Control Room to allow Auxiliary Feedwater from several sources to feed the "A" Steam Generator.

(c) ISI Class/Duke Class: C/B

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Technical Specifications would be violated if the unit is above 250 degrees F, by not having emergency feedwater train separation, during the exercising this valve. Failure of these valves during Exercise Testing at Power Operation would result in Auxiliary Feedwater Injection being distributed to both the "A" and "B" Steam Generators. These valves are inaccessible radiation area during normal power operations.

Prepared By: _____ Date: 12-6-93

Reviewed By: _____ Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-02

I. Component for which justification is provided:

(a) Name(s) and Number(s): RC Makeup Pump to RCP Seals

SSF-1HP-399, 400, 401, 402
SSF-2HP-399, 400, 401, 402
SSF-3HP-399, 400, 401, 402

Drawing Number/Coordinates: OFD-101A-1.5/G-14, H-14, F-14, F-14
OFD-101A-2.5/H-13, G-13, F-13, F-13
OFD-101A-3.5/H-13, G-14, F-14, F-14

(b) Function: In an SSF Emergency these valves open to allow flow from the RC Makeup System to the RC Pump Seal Supply.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: C

II. Justification for Cold Shutdown Testing:

Any exercise testing of these valves at Power Operation would result in injecting Spent Fuel Pool Water into the RC Pump Seals. This could result in Power Transients, Uncontrolled Reactivity Changes, Reactor Trips or Extensive Cleanup Requirements, particularly near the end of cycle.

Prepared By: H Lefkowitz Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-03

I. Component for which justification is provided:

(a) Name(s) and Number(s): Letdown Isolation

1HP-5
2HP-5
3HP-5

Drawing Number/Coordinates: OFD-101A-1.1/K-8
OFD-101A-2.1/K-8
OFD-101A-3.1/K-8

(b) Function: Provides penetration isolation for the letdown coolers

(c) ISI Class/Duke Class: B/C

(d) IWV-2000 Valve Category: A

II. Justification for Cold Shutdown Testing:

Exercising these valves at power operation would cause the loss of volume and chemistry control.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CDS-VLV-04

I. Component for which justification is provided:

(a) Name(s) and Number(s): RCP Seal Return Block Valves

1HP-21
2HP-21
3HP-21

1HP-20
2HP-20
3HP-20

Drawing Number/Coordinates: OFD-101A-1.1/E-7
OFD-101A-2.1/E-8
OFD-101A-3.1/E-8

OFD-101A-1.1/F-6
OFD-101A-2.1/E-6
OFD-101A-3.1/E-6

(b) Function: Penetration isolation for the RCP seal return lines.

(c) ISI Class/Duke Class: B/C

(d) IWV-2000 Valve Category: A

II. Justification for Cold Shutdown Testing:

These valves are containment isolation valves in a non-redundant flow path. Failure of the valves during testing could result in the loss of the RCP seal water return system. This could cause the loss of RCP seals and the release of reactor coolant into the Reactor Building. Damage to RCP seals would require a reactor shutdown.

Prepared By: _____ Date: 12-6-93

Reviewed By: _____ Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CDS-VLV-05

I. Component for which justification is provided:

(a) Name(s) and Number(s): RC Loop "A" Injection

1HP-26
2HP-26
3HP-26

Drawing Number/Coordinates: OFD-101A-1.4/I-7
OFD-101A-2.4/J-7
OFD-101A-3.4/J-6

(b) Function: In an emergency these valves open for HPI pump "A" flow.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Valve alignments necessary to perform this stroke test would remove the warming flow from the reactor coolant system normal makeup flow nozzles. This would increase the number of thermal stress cycles induced into the makeup nozzles, which are very restrictive over plant life. Failure of these valves during exercise testing at power operation would result in the loss of primary pressurizer level control, and possible reactor trip.

Prepared By: [signature] Date: 12-6-93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten-Year Interval

Cold Shutdown Justification # CSD-VLV-06

I. Component for which justification is provided:

(a) Name(s) and Number(s): RC Return Block Valves

1LP-1, 2
2LP-1, 2
3LP-1, 2

Drawing Number/Coordinates: OFD-102A-1.1/H-2, H-2
OFD-102A-2.1/H-2, H-2
OFD-102A-3.1/H-2, H-3

(b) Function: Decay heat removal line isolation valves.

(c) ISI Class/Duke Class: A/A or B

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

These valves are redundant pressure boundary isolation valves for the RCS. They open to permit flow from RCS decay heat drop line through LPI system for cooling, and back into RCS. They are designed to perform this function at pressures below 350 psig, and interlocks are provided to prevent their opening at pressures higher than 400 psig for LP-1 and 450 psig for LP-2. Opening either of these valves at power would therefore require defeating this interlock.

Even if interlocks were defeated, LP-1 cannot be opened at power. The motor operators on these valves are not adequately sized to open the valves against the full RCS pressure differential (practical differential presssure capability limit is about 600-650 psid). Any attempt to do so could result in damage to the motor operators, since the protective torque switches are bypassed on the opening stroke. There is also risk of damage to LP-2 for the same reason, since there is no way to be certain that LP-1 has not leaked by enough to pressurize the upstream side of LP-2.

Prepared By: R. L. Oakley Date: 11-30-93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten-Year Interval

Cold Shutdown Justification # CSD-VLV-07

I. Component for which justification is provided:

(a) Name(s) and Number(s): "B" or "A" LPI Header Check

1LP-47, 48
2LP-47, 48
3LP-47, 48

Drawing Number/Coordinates: OFD-102A-1.2/E-14, K-14
OFD-102A-2.2/E-14, K-14
OFD-102A-3.2/E-14, K-14

(b) Function: Loop A and B header penetration isolation check valves.

(c) ISI Class/Duke Class: A/A

(d) IWV-2000 Valve Category: A/C

II. Justification for Cold Shutdown Testing:

These valves open to permit flow from LPI system into RCS. During plant operation, aligning LPI pumps' suction headers to the RCS would result in overpressurization of LPI system. When taking suction from the BWST, the discharge pressure of the LPI pumps is insufficient to pass flow into the RCS through these valves. No alternate pressure source or flow path exists through which flow can be passed through these valves at power.

Prepared By: R. L. Oakley Date: 11-30-93

Reviewed By: H. Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten-Year Interval

Cold Shutdown Justification # CSD-VLV-08

I. Component for which justification is provided:

(a) Name(s) and Number(s): Post-LOCA Boron Dilution Valves

1LP-103, 104
2LP-103, 104
3LP-103, 104

Drawing Number/Coordinates: OFD-102A-1.1/H-2, G-2
OFD-102A-2.1/G-2, F-2
OFD-102A-3.1/G-2, G-2

(b) Function: Post-LOCA boron dilution isolation valves.

(c) ISI Class/Duke Class: A/A

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

These valves are redundant pressure boundary isolation valves for the RCS. They open to permit flow from RCS decay heat drop line into the RB emergency sump. They are designed to perform this function at pressures below 400 psig.

LP-103 cannot be opened at power, since the motor operator is not designed to handle full RCS differential pressure. (Practical limitation on opening differential pressure for these valves is 1000-1300 psid.) Attempting to open LP-103 at power would result in damage to the motor operators, since the protective torque switches are bypassed on the opening stroke. There is also risk of damage to LP-104 for the same reason, since there is no way to be certain that LP-103 has not leaked by enough to pressurize the upstream side of LP-104.

Prepared By: R. L. Dakley Date: 11-30-93

Reviewed By: A Lofton Date: 12-6-93

OCONEE NUCLEAR STATION

IST ASME Codes and Standard

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-09

I. Component for which relief is requested:

(a) Name(s) and Number(s): Loop "A" or "B" Vent; Loop "A" or "B" Vent Block, Reactor Vessel Head Vent; Reactor Vessel head Vent Block.

1RC-155, 156, 157, 158, 159, 160
2RC-155, 156, 157, 158, 159, 160
3RC-155, 156, 157, 158, 159, 160

Drawing Number/Coordinates:

OFD-100A-1.1/J-4, J-4, I-11, I-11, I-9, I-9
OFD-100A-2.1/J-4, J-4, I-11, I-11, I-9, I-9
OFD-100A-3.1/J-4, J-4, I-11, I-11, I-9, I-9

(b) Function:

To vent non-compressible gases from the reactor coolant system.

(c) ISI Class/Duke Class: B/BC

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Failure of these valves during exercise testing at power operation would constitute a small break LOCA. In addition, stroking these valves at hot shutdown would release reactor coolant to reactor building ventilation system creating airborne contaminants. This would cause unjustified contamination, personnel exposure and radwaste.

Prepared By : _____ Date : 11-30-93

Reviewed By : _____ Date : 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-010

I. Component for which justification is provided:

(a) Name(s) and Number(s): OTSG Startup Control,
OTSG Normal Startup Header Block

1FDW-33, 35, 42, 44
2FDW-33, 35, 42, 44
3FDW-33, 35, 42, 44

Drawing Number/Coordinates: OFD-121B-1.3/J-6, L-7, E-6, F-7
OFD-121B-2.3/J-5, K-7, E-5, F-7
OFD-121B-3.3/J-6, K-7, E-6, F-7

(b) Function: Steam generator startup block, startup control, and normal startup header valves.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

These valves are normally open to allow feedwater flow to continue through the startup line. Closing one of the valves would result in a feedwater flow rate transient which could cause a reactor trip.

Prepared By: R. Scott Manning Date: 11-30-93

Reviewed By: H. Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-11

I. Component for which justification is provided:

(a) Name(s) and Number(s): Turbine Stop Valve.

1MS-102, 103, 104, 105
2MS-102, 103, 104, 105
3MS-102, 103, 104, 105

Drawing Number/Coordinates: OFD-122B-1.1/J-3, J-4, J-4, J-5
OFD-122B-2.1/J-3, J-4, J-4, J-5
OFD-122B-3.1/J-3, J-4, J-4, J-5

(b) Function: Turbine stop valves.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Exercising these valves at full power results in a water hammer effect which is considered to be a cause of steam generator tube leaks and additional stress is placed on the Steam Generators from the upsets in steam flow. Stroke testing these valves at power operation requires a power reduction to ~ 86 %, which is undesirable due to the increased risk of xenon transients during power maneuvering.

These valves are partial-stroked quarterly, and full-stroked and timed at cold shutdown.

Prepared By: David P. Harland Date: 12-6-93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-12

I. Component for which justification is provided:

(a) Name(s) and Number(s): CC Supply and Return Penetration Outside Block.

1CC-8
2CC-8
3CC-8

1CC-7
2CC-7
3CC-7

Drawing Number/Coordinates:

OFD-144A-1.2/D-14
OFD-144A-2.2/D-13
OFD-144A-3.2/D-13

OFD-144A-1.2/D-12
OFD-144A-2.2/D-12
OFD-144A-3.2/D-12

(b) Function:

Component cooling system return line penetration isolation.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: A

II. Justification for Cold Shutdown Testing:

Exercising these valves during power operation would remove cooling water to the control rod drive mechanism and to the reactor coolant pumps, resulting in damage to thermal barriers and pump seal failure. In addition, closing these valves would cause over heating of the letdown fluid which could cause isolation of the letdown flow which could cause loss of pressurizer level control and/or damage to the purification demineralizers.

Prepared By: Leland Hawthorn Date: 12-6-93

Reviewed By: A Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-14

I. Component for which justification is provided:

(a) Name(s) and Number(s): RC Makeup Pump to RCP Seals Block.

SSF-1HP-398
SSF-2HP-398
SSF-3HP-398

Drawing Number/Coordinates: OFD-101A-1.5/F-11
OFD-101A-2.5/F-12
OFD-101A-3.5/F-12

(b) Function:

These valves normally prevent Spent Fuel Pool Flow from the RC Makeup System to the RC Pump Seals. In an SSF emergency, they open on command from the SSF to allow the RC Makeup System to supply RC Pump Seal Supply.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Failure of these valves to close during Exercise Testing at Power Operation would result in injecting Spent Fuel Pool Water into the RC Pump Seals at the next running of the RC Makeup Pump. This valve is inaccessible during power operation due to the local radiation fields in the reactor building. Seat leakage could result in power transients, uncontrolled reactivity changes, reactor trips or extensive cleanup requirements, particularly near the end of the cycle.

Prepared By: _____ Date: 12-6-93

Reviewed By: _____ Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-15

I. Component for which justification is provided:

(a) Name(s) and Number(s): Letdown to Spent Fuel Vent.

SSF-1HP-426
SSF-2HP-426
SSF-3HP-426

Drawing Number/Coordinates:

OFD-101A-1.5/J-10
OFD-101A-2.5/K-9
OFD-101A-3.5/K-9

(b) Function:

These valves normally prevent flow from the Pressurizer to the Spent Fuel Pool. In an SSF emergency, they allow Letdown Control of the Pressurizer Level.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: A

II. Justification for Cold Shutdown Testing:

This valve is located in an inaccesible area of the reactor building during power operation due to high radiation levels. Failure of this valve to close during exercise testing at power operation would limit our safety factor of having two containment isolation valves as required by Technical Specification 3.6. The next time HP-428 is exercised would then result in a small loss of reactor coolant to the Spent Fuel Pool .

Prepared By: _____ Date: 12-6-93

Reviewed By: _____ Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-16

I. Component for which justification is provided:

(a) Name(s) and Number(s): SG Inlet Block On Emergency Header.

SSF-1FDW-347
SSF-2FDW-347
SSF-3FDW-347

Drawing Number/Coordinates:

OFD-121D-1.1/D-13
OFD-121D-2.1/D-13
OFD-121D-3.1/D-13

(b) Function:

In an SSF emergency, these valve can be throttled from SSF to control the Auxiliary Feedwater flow to the "B" Steam Generator to bring and maintain the unit in hot shutdown.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

This valve is inaccessible during power operation due to high radiation. Failure of these valves during Exercise Testing at Power Operation would result in blocking Auxiliary Feedwater from the "B" Steam Generator.

Prepared By: H Lefkowitz Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-17

I. Component for which justification is provided:

(a) Name(s) and Number(s): RCP Coolers Supply and Discharge.

1LPSW-6
2LPSW-6
3LPSW-6

1LPSW-15
2LPSW-15
3LPSW-15

Drawing Number/Coordinates: OFD-124B-1.4/L-4
OFD-124B-2.4/L-2
OFD-124B-3.4/L-4

OFD-124B-1.4/G-14
OFD-124B-2.4/G-14
OFD-124B-3.4/G-14

(b) Function: Reactor coolant pump motor and motor bearing cooler isolation valves.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

These valves isolate flow to the reactor coolant pump motor coolers. Closure of these valves during power operation would result in overheating of and consequent damage to the reactor coolant pumps.

Prepared By: H Lufkowski Date: 12-6-93

Reviewed By: H Lufkowski Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-19

I. Component for which justification is provided:

(a) Name(s) and Number(s): Turbine Driven Emergency Feedwater Pump Discharge Checks,

Emergency Feedwater to Once Through Steam Generator (OTSG) "A" or "B",

Steam Generators Emergency Header Check,

OTSG Emergency header Check Valve

1FDW-311, 312
2FDW-311, 312
3FDW-311, 312

1FDW-317, 318, 373, 383
2FDW-317, 318, 373, 383
3FDW-317, 318, 373, 383

1FDW-345, 346, 442
2FDW-345, 346, 442
3FDW-345, 346, 442

1FDW-232, 233
2FDW-232, 233
3FDW-232, 233

Drawing Number/Coordinates:

OFD-121D-1.1/J-6, E-6
OFD-121D-2.1/J-6, E-7
OFD-121D-3.1/I-6, E-6

OFD-121D-1.1/K-10, D-10, K-7, D-7
OFD-121D-2.1/K-10, D-10, K-7, D-7
OFD-121D-3.1/K-10, D-10, K-7, D-7

OFD-121D-1.1/K-13, D-12, D-11
OFD-121D-2.1/K-13, D-12, D-11
OFD-121D-3.1/K-13, D-12, D-11

OFD-121D-1.1/K-13, D-13
OFD-121D-2.1/K-13, D-13
OFD-121D-3.1/K-13, D-13

(b) Function:

FDW-311, 312 open to allow the TDEFDW pump to feed the steam generators. They close to preclude diversion of flow when the TDEFDW pump is not running and MDEFDW pumps are running.

FDW-317, 318, 373, 383 are normally closed preventing backflow from the feedwater line to the emergency feedwater pump. In an emergency they open to allow flow from the emergency feedwater pump to the normal and emergency feedwater nozzles.

FDW-345, 346, 442 are normally closed preventing backflow from the feedwater line to the Emergency feedwater pump. In an emergency they open to allow flow from the Emergency feedwater pump to the emergency feedwater nozzles.

FDW-232, 233 are normally closed check valves open to supply emergency feedwater to the steam generators.

(c) ISI Class/Duke Class: C/F, C/F, B/F, B/F

(d) IWV-2000 Valve Category: C

II. Justification for Cold Shutdown Testing:

Emergency feedwater pumps must supply water to the steam generators in order to test these valves. The emergency feedwater pumps supply unheated condensate to the steam generators. Therefore, exercising these valves at power would create undue thermal stresses on the steam generator tubes, nozzles, and put the plant in a feedwater transient.

Prepared By: David P. Harland Date: 12-6-93

Reviewed By: H. Flaherty Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-21

I. Component for which justification is provided:

(a) Name(s) and Number(s): Steam Header "A" or "B" Turbine Bypass,

1MS-17, 26
2MS-17, 26
3MS-17, 26

Drawing Number/Coordinates: OFD-122A-1.2/I-5, D-5
OFD-122A-2.2/I-4, D-4
OFD-122A-3.2/I-4, D-4

(b) Function: Main Steam Bypass Valves

(c) ISI Class/Duke Class: B/F or -/G

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

These valves' torque switches are set up based on a differential pressure of 400 PSID. Stroke exercising these valves at power would introduce a 900 PSID differential pressure across them. Imposing this differential pressure on the valve would inhibit a full stroke closed based on the torque setting and damage the operator on the open stroke due to the torque switch being bypassed on open. In the event of a turbine trip, exercising these valves will eliminate our bypass capability.

Prepared By: David P. Harland Date: 12-6-93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-22

I. Component for which justification is provided:

(a) Name(s) and Number(s): "A" LPI Pump Discharge.

1LP-31
2LP-31
3LP-31

Drawing Number/Coordinates: OFD-102A-1.2/K-5
OFD-102A-2.2/K-5
OFD-102A-3.2/K-5

(b) Function: Prevent back flow to the "A" Low Pressure Injection Pump.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: C

II. Justification for Cold Shutdown Testing:

To test the "A" Low Pressure Injection (LPI) Header at power, it must be recirculated to the BWST. The flow rate which can be obtained under test conditions is approximately 1000 GPM. Since there is no direct, external indication of valve position, there is no means for determining if the valves are full-stroke exercised at this flow rate.

This valve is partial-stroked quarterly and full-stroked at cold shutdown.

Prepared By: R. L. Oakley Date: 11-30-93

Reviewed By: A. Fulbourn Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-23

I. Component for which justification is provided:

(a) Name(s) and Number(s): "A" or "B" OTSG Main Flow Control Valve.

1FDW-32, 41
2FDW-32, 41
3FDW-32, 41

Drawing Number/Coordinates: OFD-121B-1.3/J-7, D-7
OFD-121B-2.3/J-6, D-5
OFD-121B-3.3/J-7, D-7

(b) Function: These valves are the main control valves to the steam generators.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Exercising these valves at power would disrupt the feedwater flow and steam generator level causing a plant transient and possibly a reactor trip.

Prepared By: R. Scott Manning Date: 12-1-93

Reviewed By: H. Lefler Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-24

I. Component for which justification is provided:

(a) Name(s) and Number(s): MDEFWPs Suction from UST.

1C-573
2C-573
3C-573

Drawing Number/Coordinates: OFD-121A-1.8/E-7
OFD-121A-2.8/D-6
OFD-121D-3.8/E-7

(b) Function: These valves are normally locked open to provide suction to the Motor Driven Emergency (MDEFDW) pumps from the Upper Surge Tank (UST). In an emergency following breaking vacuum they can be closed to align the MDEFDW pump suction to the Hotwell.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Stroking these valves at Power Operation would require removing both trains of the MDEFDW system from services.

Prepared By: David P. Harland Date: 12-6-93

Reviewed By: H. Hefner Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-25

I. Component for which justification is provided:

(a) Name(s) and Number(s): Main Steam to FDW Turbine: "A" or "B" and CSAE's

1MS-35, 36
2MS-35, 36
3MS-35, 36

Drawing Number/Coordinates: OFD-122A-1.3/L-3, F-2
OFD-122A-2.3/L-2, F-2
OFD-122A-3.3/L-2, F-2

(b) Function: Following an event these valves will be closed to isolate the Main Steam Line.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Exercising these valves at power operation could cause a swing of Main Feedwater flow and possible Reactor runback or trip.

Prepared By: David P. Harland Date: 12-6-93

Reviewed By: H Lyflowers Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-26

I. Component for which justification is provided:

(a) Name(s) and Number(s): Main steam line to SSRH A1 & A2 or B1 & B2

1MS-76, 79
2MS-76, 79
3MS-76, 79

Drawing Number/Coordinates:

OFD-122A-1.1/C-10, I-10
OFD-122A-2.1/I-10, C-10
OFD-122A-3.1/I-10, C-10

(b) Function:

Following an event these valves will be closed to isolate the main steam line.

(c) ISI Class/Duke Class: B/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Exercising these valves at power operation isolates the second stage reheater allowing lower temperature, higher moisture content steam to the Low Pressure Turbines. Unit response would be a loss of power generation, a secondary transient and increased thermal differences across the low pressure turbines inlet steam possibly beyond the manufacturer recommendations.

Prepared By: David P. Harland Date: 12-6-93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-27

I. Component for which justification is provided:

(a) Name(s) and Number(s): "B" or "A" Injection Bypass

1HP-409, 410
2HP-409, 410
3HP-409, 410

Drawing Number/Coordinates: OFD-101A-1.4/D-7, H-7
OFD-101A-2.4/E-8, F-8
OFD-101A-3.4/E-8, H-7

(b) Function: In an emergency, open for HPI flow through Cross-Connect to B and A Loops respectively. (Bypass for HP-27 and HP-26).

(c) ISI Class/Duke Class: B/B & BC

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Failure of these valves during exercise testing at power operation would result in the loss of primary pressurizer level control and possibly a reactor trip. The exercising of HP-409 would also cause a thermal transient (AOTC #22A) on the B Loop. The isolation necessary to perform this valve stroke test will remove seal supply flow/cooling to the RCPs, which would cause a thermal transient on the RCP seal.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-28

I. Component for which justification is provided:

(a) Name(s) and Number(s): LDST Outlet Check Valve.

1HP-97
2HP-97
3HP-97

Drawing Number/Coordinates: OFD-101A-1.2/D-12
OFD-101A-2.2/D-12
OFD-101A-3.2/D-12

(b) Function: These valves are open during normal operation. They prevent backflow from HPI pump suction to the Letdown Storage Tank (LDST) during LPI to HPI "Piggyback" operation.

(c) ISI Class/Duke Class: C/C

(d) IWV-2000 Valve Category: A/C

II. Justification for Cold Shutdown Testing:

These valves close during LPI to HPI "Piggyback" operation to prevent filling the LDST. "Piggyback" alignment to HPI can only be made during cold shutdowns and refueling outages due to the possibility of RCS overpressurization.

Prepared By: Leland Hawthorne Date: 12-6-93

Reviewed By: H Lefler Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-29

I. Component for which justification is provided:

(a) Name(s) and Number(s): HPI Pump Recirculation Block.

1HP-247, 249, 251
2HP-247, 249, 251
3HP-247, 249, 251

Drawing Number/Coordinates: OFD-101A-1.3/K-10,H-9,D-9
OFD-101A-2.3/K-10,H-9,D-9
OFD-101A-3.3/K-9,H-9,D-8

(b) Function: Isolates HPI pump minimum recirculation lines during HPI "piggyback" operation if LDST inlet to LPI pump suction flow path is inoperable.

(c) ISI Class/Duke Class: B/B

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Exercising these valves during power operation would remove minimum flow protection from the HPI pumps. Pump damage could occur if an idle pump started without adequate discharge flow or on loss of discharge flow to a running pump.

Prepared By: _____ Date: 12-6-93

Reviewed By: _____ Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-30

I. Component for which justification is provided:

(a) Name(s) and Number(s): MDEFWPs Suction From UST Check

1C-572
2C-572
3C-572

Drawing Number/Coordinates: OFD-121A-1.8/E7
OFD-121A-2.8/E6
OFD-121A-3.8/E7

(b) Function: These valves open to allow the motor driven emergency feedwater pumps to take suction from the Upper Surge Tank.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: C

II. Justification for Cold Shutdown Testing:

MDEFWPs have to be operated simultaneously in order to full stroke these valves. Both MDEFWPs should not be taken out of service for testing during unit operation. These valves are partial stroked quarterly.

Prepared By: David P. Harland Date: 12-6-93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-31

I. Component for which justification is provided:

(a) Name(s) and Number(s): BWST Outlet Isolation Valve

1LP-28
2LP-28
3LP-28

Drawing Number/Coordinates: OFD-102A-1.1/H10
OFD-102A-2.1/H10
OFD-102A-3.1/H10

(b) Function: Normally locked open. In the event LP-21 or LP-22 fail to close when required or the BWST is damaged, LP-28 would be closed to prevent leakage back to the BWST.

(c) ISI Class/Duke Class: B/C

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Closing these valves at power would isolate the suction of LPI, RBS and HPI systems from their emergency source of borated water during power operation making each system inoperable.

Prepared By: R. L. Oakley Date: 11-30-93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-34

I. Component for which justification is provided:

(a) Name(s) and Number(s): Unit 3 Main Turbine Oil Cooler Supply

3LPSW-45

Drawing Number/Coordinates: OFD-124A-3.1/E10

(b) Function:

Isolates main turbine oil tank cooling water supply line from LPSW header.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Closure of this valve at power would interrupt cooling water to main turbine oil tank. This would increase turbine oil temperature which could lead to high vibrations, manual turbine trip and turbine damage.

Prepared By: _____ Date: 12-6-93

Reviewed By: _____ Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

Cold Shutdown Justification # CSD-VLV-36

I. Component for which justification is provided:

(a) Name(s) and Number(s): Hotwell Normal and Emergency Make-up Control Valves

1C-176, 187, 192
2C-176, 187, 192
3C-176, 187, 192

Drawing Number/Coordinates: OFD-121A-1.8/I7, G7, J7
OFD-121A-2.8/I7, G7, J7
OFD-121A-3.8/I7, G7, J7

(b) Function:

Controls minimum level of Hotwell through make-up from the Upper Surge Tank under normal and emergency conditions.

(c) ISI Class/Duke Class: C/F

(d) IWV-2000 Valve Category: B

II. Justification for Cold Shutdown Testing:

Testing of these valves requires isolating the valve and removing the automatic level control system from service. Since hotwell level control cannot be manually operated, a temporary modification would be necessary to quarterly test each hotwell level control valve. These valves will only be tested during cold shutdown because any level control system problem during power operation would likely lead to a unit trip. A modification is scheduled which will incorporate manual control into the level control system of these valves, thereby reducing the chance of control problems and allowing quarterly testing.

Prepared By: R. Scott Manning Date: 12-1-93

Reviewed By: [signature] Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

ATTACHMENT #4

PUMP GENERIC RELIEF REQUESTS

GNR-PMP-01	ALL PUMPS - (Pumps in operation at the start of a test)
GNR-PMP-02	ALL CENTRIFUGAL AND POSITIVE DISPLACEMENT PUMPS
GNR-PMP-03	FLOW RATE MEASUREMENT
GNR-PMP-04	ALL PUMPS TESTED WITH ADEQUATE INSTRUMENTATION
GNR-PMP-05	PUMP VIBRATION MEASUREMENT
GNR-PMP-06	PUMP BEARING TEMPERATURE MEASUREMENT

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-PMP-01
OCONEE NUCLEAR STATION

1.0 Relief Request #: GNR-PMP-01

2.0 Category Type: **All Pumps** (which are in operation on a routine basis at the time the test is started)

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWP-3300 (Table IWP-3100-1), Inlet Pressure (Pi)

6.0 Bases for Relief: Several Systems are normally in operation with one or more pumps running. Taking inlet pressure prior to pump startup would require an additional swap-over to another pump. This (1) increases time required for the test,(2) causes additional wear and tear on the pumps, (3) on some systems could require additional Radiation dose during valve line up prior to swap-over and (4) presents additional opportunity for human error during swap-over which might damage system components.

7.0 Alternate Testing: Inlet pressure will be taken prior to start-up of any standby pumps. Since in most systems standby and operating pumps are alternated periodically, all pumps will be checked at one time or another. Also, on systems where the inlet piping is common, the operational pump will affect the inlet pressure of the standby pump so that operating pressure on one pump would be the same as pre-start pressure on the standby pump.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-PMP-02

1.0 Relief Request #: GNR-PMP-02

2.0 Category Type: **All Centrifugal and Positive Displacement Pumps**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWP-3100 (Table IWP-3100-1) requires differential pressure to be measured .

6.0 Bases for Relief: For these positive displacement pumps, suction pressure is independent of discharge pressure. Therefore, using differential pressure as the acceptance criteria could mask a degraded pump or indicate degradation on a good pump.

7.0 Alternate Testing: For positive displacement pumps, where suction pressure is independent of discharge pressure, acceptance criteria will be applied to the discharge pressure measurement.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-PMP-03

1.0 Relief Request #: GNR-PMP-03

2.0 Category Type: **Flow Rate Measurement**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWP-4110 (Table IWP-4110-1), IWP-4120; flow rate acceptable instrument accuracy of ±2% of full scale; full-scale range of each instrument shall be three times the reference value or less.

6.0 Bases for Relief: During normal plant operation, LPI pumps can be run only in recirculation mode to the BWST. The "A" pump can only be tested using a line-up which contains a 3 inch cross section of pipe. This restricts flow to a range from 1150 to 1550 gpm. At this low flow, the installed flow instrumentation lacks the required accuracy and range requirements.

7.0 Alternate Testing: During normal operation the "A" LPI pumps will be tested in recirculation mode at a reduced flow. During cold shutdowns (or quarterly in the event of frequent shutdowns) the "A" pump will be tested at a higher flow such that IWP-4110 and IWP-4120 can be met.

OCONEE NUCLEAR STATION

Third Ten Year Interval
IST ASME Codes and Standards

Generic Relief Request # GNR-PMP-04

1.0 Relief Request #: GNR-PMP-04

2.0 Category Type: **All Pumps Tested with Adequate Instrumentation**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWP-3300 (Table IWP-3100-1), Pressure Drop (ΔP) and Flow Rate (Q)

6.0 Bases for Relief: Data scatter from process flucuations and instrument readability combined with code allowable instrument error can result in pumps being placed on double frequency or declared inoperable in situations where true pump degradation has not occurred due to the upper acceptance limits defined by Table IWP-3100-1. For example:

ΔP_{ref}=100 psid
$\Delta P_{acceptable}$= 93 to 102 psid
(per Table IWP-3100-2)

Differential Pressure Gauge:

Full Scale Range = 300 psid
(per IWP-4120)
Accuracy = ±2% of full scale
(per Table IWP-4110-1)

Acceptable Gauge Tolerance
= ±2%*300 psid
= ±6 psid
Thus:

Instrument error allowed by code when applied to ΔP_{ref} could be 94 to 106 psid, which exceeds $\Delta P_{acceptable}$ by 4 psid on the upper end.

The high limits allowed in Table IWP-3100-2 are more restrictive than the instrument calibration limits.

Based on the situation address above, per IWP-3210 Oconee Nuclear Station specifies the following acceptance in lieu of those specified in Table IWP-3100-2.

Range for ΔP will, at our discretion, be as follows: 0.93 to 1.07 ΔP_{ref} for acceptable range; 0.90 to 0.93 ΔP_{ref} for Low Alert, and 1.07 to 1.10 ΔP_{ref} for High Alert; < 0.90 ΔP_{ref} for Low Required Action, and > 1.10 ΔP_{ref} for High Required Action.

Range for Q will, at our discretion, be as follows: 0.94 to 1.06 Q_{ref} for acceptable range; 0.90 to 0.94 Q_{ref} for Low Alert, and 1.06 to 1.10 Q_{ref} for High Alert; < 0.90 Q_{ref} for Low Required Action, and > 1.10 Q_{ref} for High Required Action.

Safety significance for this deviation from code is insignificant. The requested deviation code is for the upper ranges only. Pumps do not improve over time, thus the increase in acceptable upper limits is justified. Enhanced vibration analysis including spectral analysis to identify pump problems is being used at multiple points. Enhanced vibration analysis techniques further justify relaxed hydraulic limits.

7.0 Alternate Testing: N/A

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Generic Relief Request # GNR-PMP-05

1.0 Relief Request #: GNR-PMP-05

2.0 Category Type: **Pump Vibration Measurement**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWP-4110 requires the accuracy of vibration amplitude measurements to be +/- 5% of full scale and IWP-4120 requires the full-scale range of vibration instrumentation to be three times the reference value or less.

6.0 Bases for Relief: Experience has shown that measuring vibration as required by IWP is not the most effective way to determine the mechanical condition of a pump. In order to better determine the mechanical condition of pumps, multiple vibration displacement measurements will be obtained/ evaluated and supplemented with velocity measurements. Also, spectral analysis will be used to evaluate vibration data when necessary. In order to facilitate this testing, digital vibration instrumentation will be used.

IWP does not provide adequate guidance or requirements for performing enhanced vibration monitoring, nor does it provide the ability to use state-of-the-art digital vibration instrumentation that is required for enhanced monitoring.

7.0 Alternate Testing: In lieu of the vibration instrument accuracy requirements of IWP-4110, the loop accuracy of vibration instruments will be +/- 6.56% of

reading for velocity and +/- 7.37% of reading for displacement. This accuracy is the best that can be reasonably obtained from state-of-the-art instrumentation that must be used to perform the enhanced testing. In the interium, when the procedural acceptance values are calculated, 2.37% will be reduced from the allowable acceptance criteria, until such time we can insure our instrumentaion can be qualified to the accuracy requirements of IWP. By the late first quarter early second quarter of 1994, Duke Power Co. will have installed and qualified a new laser calibration system in our standards laboratory. The calibration precision of new vibration test equipment will insure us to be within the allowable +/- 5% tolerance requirements allowed by IWP-4100, IWP-4500 and OM-6 Section 4.6 .

In lieu of the range requirements imposed on vibration instrumentation by IWP-4120, there will be no vibration instrumentation range requirement (digital vibration instrumentation is auto-ranging). It is not necessary to have a range requirement because the accuracy stated above and the readability of a digital gauge are not dependent upon instrument range.

In addition to vibration requirements of IWP-4510 which state that at least one peak-to-peak displacement amplitude be measured, peak-to-peak displacement and peak velocity will be measured at multiple points as defined per the test procedure. Multiple point measurements provide enhanced evaluation of overall machine condition. Acceptance criteria will be based on displacement as defined in Table IWP-3100-2. Although velocity vibration data will not have any acceptance criteria, the Accountable Systems Engineer will review the data during the final procedure review. For high speed pumps, vibration velocity provides a better indication of machine mechanical condition.

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Generic Relief Request # GNR-PMP-06

1.0 Relief Request #: GNR-PMP-06

2.0 Category Type: **Pump Bearing Temperature Measurement**

3.0 Revision #: 21

4.0 Revision Date: November 1993

5.0 Test Requirement: IWP-3500 subsection (b) states that when bearing temperatures are required, the quantities specified in Table IWP-3100-1 shall be measured or observed and recorded following bearing temperature stabilization.

6.0 Bases for Relief: In IWP-3500 subsection (a), the quantities specified in Table IWP-3100-1 are measured after at least 5 minutes operation under conditions as stable as the system permits. Past test results indicate that a 5 minute run time is adequate, if hydraulic conditions of the system do not change throughout the test, for the stabilization of the quantities in Table IWP-3100-1, with the exception of bearing temperatures. Therefore, with the exception of bearing temperatures, the same test results are achieved when recording the quantities after 5 minutes or after bearing temperatures have stabilized. Recording the quantities following bearing temperature stabilization will lengthen the test and can result in increased radiation exposure to test personnel.

7.0 Alternate Testing: The quantities specified in Table IWP-3100-1, with the exception of bearing temperatures, will be taken after at least 5 minutes under

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ATTACHMENT #5

PUMP SPECIFIC RELIEF REQUESTS

RR-PMP-01	SSF REACTOR COOLANT MAKEUP PUMP
RR-PMP-02	LOW PRESSURE INJECTION PUMPS 1A, 2A, 3A
RR-PMP-03	RC BLEED TRANSFER PUMPS
RR-PMP-04	CONCENTRATED BORIC ACID TRANSFER PUMPS

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Relief Request # RR-PMP-01

I. Component for which relief is requested:

(a) Name(s) and Number(s): Standby Shutdown Facility Reactor Coolant Makeup Pumps

1HPIPU0005
2HPIPU0005
3HPIPU0005

Drawing Number/Coordinates:

OFD 101A-1.5/E-7
OFD 101A-2.5/E-7
OFD 101A-3.5/E-7

(b) Function: These pumps provide emergency reactor coolant pump seal cooling, reactor coolant inventory makeup and pressurizer level control in the event normal high preassure injection pumps are lost.

(c) ISI Class/Duke Class: B

II. Reference Code requirement which has been determined to be impractical:

IWP-4110 requires the accuracy of vibration amplitude measurements to be +/- 5% of full scale and IWP-4120 requires the full-scale range of vibration instrumentation to be three times the reference value or less.

III. Basis for requesting relief:

The SSF RC Makeup Pumps are located in each Unit's reactor building and, thus, inaccessible for local pump vibration monitoring during quarterly pump testing. An IRD vibration monitor panel is installed in the SSF control room with velometers on the pumps in the horizontal and vertical directions. The velometers that are installed have an accuracy of ± 10 %. The interface panel is equipped with a 0-15 mil gauge that provides an overall vibration level. The

baseline vibration for these pumps are typically 0.1 to 2 mils. To improve readability of the interface panel, the signal is being output to a CSI 2110 Digital Vibration Analyzer which has autoranging capability. The CSI 2110 Digital Vibration Analyzer also provides the ability to perform spectral analysis to aid in the determination of the cause of vibrations. The analyzer has an accuracy of ± 3 % and an integration error of ± 3 %. The combined loop accuracy for the vibration monitoring system used is ± 10.86 % (root sum of the squares methodology) of reading. A station modification request has been issued to upgrade the existing instrumentation to improve the accuracy.

IV. Alternate examination:

Continue to perform test as noted above until plant instrumentation is upgraded by approved modification ON-12913, 22913, and 32913 on Units 1, 2 and 3 respectively. These modifications will begin at the start of the next Unit 3 refeuling outage, U3EOC14 and continue on a unit basis until all 3 units have been completed in 1994. The replacement probes are Wilcoxon transducer model # 793R Accelerometers, rated for a 3 to 1000 Hertz with an accuracy of ±5% frequency and sensistivity. These probes will be connected via existing coaxial cable to SSF Control Room. In the control room by a CSI 2110 Digital Vibration Analyzer hand held monitor (as described above), will be providing the readout during the quaterly testing. In addition, procedures have been permanantly changed to take complete local vibration analysis at refueling outages or whenever maintenance has been done on the RCMUP. The combined loop accuracy for the vibration monitoring system will be ± 7.37% (root sum of the squares methodology) of reading. This is an acceptable value to provide indication of pump degradation between refueling outages due to the low number (<7 hours) of run time. Per GNR-PMP-08, the hand held will be able to have an accuracy of ≤ ±5% in the first quarter of 1994.

Prepared By: H Falkowski Date: 12-6-93

Reviewed By: H Falkowski Date: 12-6-93

OCONEE NUCLEAR STATION

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IST ASME Codes and Standards

Relief Request # RR-PMP-02

I. Component for which relief is requested:

(a) Name(s) and Number(s): Low Pressure Injection Pumps 1A, 2A, and 3A

1LPIPU0001
2LPIPU0001
3LPIPU0001

Drawing Number/Coordinates: OFD 102A-1.2/K-4
OFD 102A-2.2/K-4
OFD 102A-3.2/K-4

(b) Function: These pumps provide emergency core cooling flow in the event of a large break LOCA. For small break LOCA's they provide NPSH for the HPI pumps in piggyback alignment. They also provide long term post-accident sump recirculation cooling. They are used for normal system cooldown in the decay heat removal alignment. Lastly, they are used for filling and draining the Fuel Transfer Canal during refueling outages.

(c) ISI Class/Duke Class: B/B

II. Reference Code requirement which has been determined to be impractical:

IWP-3100 Inservice Test Procedure (Table IWP-3100-1)

Measure pump inlet pressure before pump startup and during test.

IWP-3210 Allowable Ranges of Inservice Test Quantities

Differential pressure and flow rate ranges per Table IWP-3100-2.

IWP-4110 Quality (Table IWP-4110-1)

Flow rate and vibration amplitude accuracies per Table IWP-4110-1.

IWP-4120 Range

Full-scale range of each instrument shall be three times the reference value or less.

III. Basis for requesting relief:

Relief is requested from the requirement to take inlet pressure readings prior to starting the pumps for the following reason. These pumps may be in service during plant outages at the same time that the test is required to be performed. Measuring inlet pressure prior to pump startup would require stopping and restarting the pump. This increases the duration and complexity of the test, adds wear and tear on the pump, and could result in additional radiation dose to test personnel. These disadvantages are not offset by a compensating increase in the level of safety or validity of test results.

Relief is requested from Table IWP-3100-2 limits on ranges for flow rate and differential pressure because the high limits are more restrictive than the calibration limits on our flow instrumentation at the required reference flow rate. During normal plant operation, LPI pumps can be run only in recirculation mode to the BWST. The "A" pump can only be tested using a line-up which contains a 3 inch cross section of pipe. This restricts flow to a range from 1150 to 1550 gpm. At this low flow, the installed flow instrumentation lacks the required accuracy. Consequently, the differential pressure readings fluctuate accordingly. Other flow alignments are physically possible, but prohibited by our Technical Specifications due to the necessity of having both trains of the system inoperable simultaneously.

Relief is requested from instrument accuracy requirements of Table IWP-4110-1 on the following basis:

Flow alignment restrictions discussed above prohibit us from achieving the +/- 2% accuracy requirement for flow rate.

Vibration monitoring is performed with digital equipment which has a stated accuracy of 7.37% of reading. Full scale is not defined for digital instrumentation. The instrument is auto-ranging, and range is therefore variable. Consequently, the 5% of full scale requirement has no meaning for the equipment we use.

Relief is requested from the range requirement of IWP-4120 on the following basis.

The existing flow gages, with 0-6000 gpm ranges, were selected for flow measurement in the normal system alignment, in which expected flow rate is 3000 gpm. In

the restricted alignment discussed above, the gage is over-ranged. Plant modifications have been issued to install a second gage for each pump with a range of 0-2000 gpm. These are expected to be in place by the end of 1993.

We are currently performing enhanced vibration monitoring utilizing digital vibration instrumentation. Digital vibration instrumentation, however, has a variable range, and therefore no defined full scale. IWP does not provide adequate guidance for utilization of state-of-the-art digital vibration instrumentation.

IV. Alternate examination:

Two sets of reference values will be defined for these pumps. One set will apply to the recirculation alignment test and another for the normal system alignment test performed at cold shutdown.

During normal operation the "A" LPI pumps will be tested in recirculation mode at a reduced flow. Suction pressure readings will be taken prior to starting the pumps. Flow gages meeting range requirements of IWP-4120 will be installed as soon as practicable. Accuracy of flow instrumentation will be per our existing calibration standards.

During cold shutdowns (or quarterly in the event of frequent shutdowns) the "A" pump will be tested at a higher flow such that existing flow gages will meet IWP range and accuracy requirements. Suction pressure will be read with the pumps running.

Range for differential pressure will, at our discretion, be as follows:

Acceptable Range:	0.93 to 1.07 times reference value
Low Alert Range:	0.90 to 0.93 times reference value
High Alert Range:	1.07 to 1.10 times reference value
Low Required Action:	< 0.90 times reference value
High Required Action:	> 1.10 times reference value

Range for flow will, at our discretion, be as follows:

Acceptable Range:	0.94 to 1.06 times reference value
Low Alert Range:	0.90 to 0.94 times reference value
High Alert Range:	1.06 to 1.10 times reference value
Low Required Action:	< 0.90 times reference value
High Required Action:	> 1.10 times reference value

In lieu of the vibration instrument accuracy requirements of IWP-4110, the loop accuracy of vibration instruments will be +/- 6.56% of reading for velocity and +/- 7.37% of reading for displacement. This accuracy is the best that can be

reasonably obtained from state-of-the-art instrumentation that must be used to perform the enhanced testing. (The requirements of IWP allow vibration inaccuracies of greater than +/- 15% of reading.)

In lieu of the range requirements imposed on vibration instrumentation by IWP-4120, there will be no vibration instrumentation range requirement (digital vibration instrumentation is auto-ranging). It is not necessary to have a range requirement because the accuracy stated above and the readability of a digital gage are not dependent upon instrument range.

In addition to the vibration requirements of IWP-4510, peak-to-peak displacement and peak velocity will be measured at multiple points as defined per the test procedure. Multiple point measurements provide enhanced evaluation of overall machine condition. Acceptance criteria will be based on displacement as defined in Table IWP-3100-2 with a 2.37% adjustment made to allow for the instrument inaccuracy. Velocity vibration data will have no acceptance criteria applied procedurally, but will be reviewed by the Accountable Systems Engineer during the final procedure review.

Prepared By: R. L. Oakley Date: 12-6-93

Reviewed By: H. Hoffman Date: 12-6-93

OCONEE NUCLEAR STATION

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IST ASME Codes and Standards

Relief Request # RR-PMP-03

I. Component for which relief is requested:

(a) Name(s) and Number(s): RC Bleed Transfer Pumps

1CS PU0003,4
2CS PU0003,4
3CS PU0003,4

Drawing Number/Coordinates:

OFD 106A-1.1/D-8,G-8
OFD 106A-2.1/D-8,G-8
OFD 106A-3.1/D-7,G-7

(b) Function: These pumps provide makeup to the LDST. When boration of the RCS is required, these pumps can take suction from the Concentrated Boric Acid Storage Tank.

(c) ISI Class/Duke Class: None/E

II. Reference Code requirement which has been determined to be impractical:

IWP-3300 (Table IWP-3100-1), IWP-4230 (Table IWP-4110-1) Suction pressure measurement.

III. Basis for requesting relief:

These are non-code class pumps and therefore do not fall within the scope of ASME Section XI, Subsection IWP.

Suction pressure instrumentation does not exist for these pumps and station modifications would be required for installation of gauges.

IV. Alternate examination:

RC Bleed Transfer Pump suction pressure will be calculated using the appropriate Bleed Hold Up Tank level.

Prepared By: Leland Lawhorne Date: 12-6-93

Reviewed By: A Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

Third Ten Year Interval

IST ASME Codes and Standards

Relief Request # RR-PMP-04

I. Component for which relief is requested:

(a) Name(s) and Number(s): Concentrated Boric Acid Transfer Pumps

1CS PU0005
2CS PU0005
3CS PU0005,6

Drawing Number/Coordinates:

OFD 106A-1.2/F-8
OFD 106A-2.2/F-8
OFD 106A-3.2/E-8,D-8

(b) Function: These pumps provide Concentrated Boric Acid to the LDST when boration of the RCS is required.

(c) ISI Class/Duke Class: None/E

II. Reference Code requirement which has been determined to be impractical:

IWP-3300 (Table IWP-3100-1) Lube Oil Level.

III. Basis for requesting relief:

These pumps are non-Code Class pumps and therefore do not fall under the scope of ASME Section XI, Subsection IWP.

This pump is a diaphragm pump with oil being the pumping medium as well as the lubricant. No indication exists to verify lube oil level without partial disassembly of the pump.

IV. Alternate examination:

Lube oil level is checked during maintenance at least semi-annually.

Prepared By: Leland Hartsoe Date: 12-6-93

Reviewed By: H Lefkowitz Date: 12-6-93

OCONEE NUCLEAR STATION

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IST ASME Codes and Standards

ATTACHMENT #6

PUMP COLD SHUTDOWN JUSTIFICATIONS

"NONE"

Oconee Nuclear Station

Attachment #8

IST Valve List

IST Revision: 21

Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
1AS-1	OFD-128A-1.1	H7	CK	8.00		C		O	/	RF	None	31		
2AS-1	OFD-128A-2.1	H6	CK	8.00		C		O	/	RF	None	31		
3AS-1	OFD-128A-3.1	G6	CK	8.00		C		O	/	RF	None	31		
1AS-39	OFD-122A-1.4	H6	CK	4.00		C		O/C	/	QTR	None	23		
2AS-39	OFD-122A-2.4	H6	CK	4.00		C		O/C	/	QTR	None	23		
3AS-39	OFD-122A-3.4	H6	CK	6.00		C		O/C	/	QTR	None	23		
1BA-171	OFD-137A-1.2	H8	BL	2.00	MAN	A	Y	C	/	None	RF			Reverse Direction Leak Test
2BA-171	OFD-137A-2.2	G8	BL	2.00	MAN	A	Y	C	/	None	RF			Reverse Direction Leak Test
3BA-171	OFD-137A-3.2	G8	BL	2.00	MAN	A	Y	C	/	None	RF			Reverse Direction Leak Test
1BA-172	OFD-137A-1.2	H9	BL	2.00	MAN	A	Y	C	/	None	RF			Reverse Direction Leak Test
2BA-172	OFD-137A-2.2	G9	BL	2.00	MAN	A	Y	C	/	None	RF			Reverse Direction Leak Test
3BA-172	OFD-137A-3.2	G9	BL	2.00	MAN	A	Y	C	/	None	RF			Reverse Direction Leak Test
1BS-1	OFD-103A-1.1	J8	GL	8.00	EMO	B		O	/	QTR	None			
2BS-1	OFD-103A-2.1	J8	GL	8.00	EMO	B		O	/	QTR	None			
3BS-1	OFD-103A-3.1	J8	GL	8.00	EMO	B		O	/	QTR	None			
1BS-2	OFD-103A-1.1	E8	GL	8.00	EMO	B		O	/	QTR	None			
2BS-2	OFD-103A-2.1	E8	GL	8.00	EMO	B		O	/	QTR	None			
3BS-2	OFD-103A-3.1	E8	GL	8.00	EMO	B		O	/	QTR	None			
1BS-5	OFD-102A-1.1	E8	CK	10.00		C		O	/	QTR	None	11		
2BS-5	OFD-102A-2.1	E8	CK	10.00		C		O	/	QTR	None	11		
3BS-5	OFD-102A-3.1	F8	CK	10.00		C		O	/	QTR	None	11		
1BS-6	OFD-102A-1.1	C10	CK	10.00		C		O	/	QTR	None	11		
2BS-6	OFD-102A-2.1	C10	CK	10.00		C		O	/	QTR	None	11		
3BS-6	OFD-102A-3.1	C9	CK	10.00		C		O	/	QTR	None	11		
1BS-11	OFD-103A-1.1	J6	CK	8.00		C		O	/	QTR	None	12		
2BS-11	OFD-103A-2.1	J6	CK	8.00		C		O	/	QTR	None	12		
3BS-11	OFD-103A-3.1	J6	CK	8.00		C		O	/	QTR	None	12		
1BS-14	OFD-103A-1.1	J10	CK	8.00		C		O	/	RF	None	13		
2BS-14	OFD-103A-2.1	J10	CK	8.00		C		O	/	RF	None	13		
3BS-14	OFD-103A-3.1	J10	CK	8.00		C		O	/	RF	None	13		
1BS-16	OFD-103A-1.1	E6	CK	8.00		C		O	/	QTR	None	12		
2BS-16	OFD-103A-2.1	E6	CK	8.00		C		O	/	QTR	None	12		
3BS-16	OFD-103A-3.1	E6	CK	8.00		C		O	/	QTR	None	12		

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
1BS-19	OFD-103A-1.1	E10	CK	8.00		C		O	/	RF	None	13		
2BS-19	OFD-103A-2.1	E10	CK	8.00		C		O	/	RF	None	13		
3BS-19	OFD-103A-3.1	E10	CK	8.00		C		O	/	RF	None	13		
1C-176	OFD-121A-1.8	I7	BF	12.00	AOV	B		C	C/C	S/D	None		36	
2C-176	OFD-121A-2.8	I7	BF	12.00	AOV	B		C	C/C	S/D	None		36	
3C-176	OFD-121A-3.8	I7	BL	10.00	AOV	B		C	C/C	S/D	None		36	
1C-187	OFD-121A-1.8	G7	BF	12.00	AOV	B		C	C/C	S/D	None		36	
2C-187	OFD-121A-2.8	G7	BF	12.00	AOV	B		C	C/C	S/D	None		36	
3C-187	OFD-121A-3.8	G7	BL	10.00	AOV	B		C	C/C	S/D	None		36	
1C-192	OFD-121A-1.8	J7	GL	2.00	AOV	B		C	C/C	S/D	None		36	
2C-192	OFD-121A-2.8	J7	GL	2.00	AOV	B		C	C/C	S/D	None		36	
3C-192	OFD-121A-3.8	J7	GL	2.00	AOV	B		C	C/C	S/D	None		36	
1C-391	OFD-121A-1.8	J11	GT	8.00	EMO	B		O	/	QTR	None			
2C-391	OFD-121A-2.8	J11	GT	8.00	EMO	B		O	/	QTR	None			
3C-391	OFD-121A-3.8	J11	GT	8.00	EMO	B		O	/	QTR	None			
1C-572	OFD-121A-1.8	E7	CK	10.00		C		O	/	Q/SD	None		30	
2C-572	OFD-121A-2.8	E6	CK	10.00		C		O	/	Q/SD	None		30	
3C-572	OFD-121A-3.8	E7	CK	10.00		C		O	/	Q/SD	None		30	
1C-573	OFD-121A-1.8	E7	GT	12.00	MAN	B		C	/	S/D	None		24	
2C-573	OFD-121A-2.8	D6	GT	12.00	MAN	B		C	/	S/D	None		24	
3C-573	OFD-121A-3.8	D7	GT	12.00	MAN	B		C	/	S/D	None		24	
1C-850	OFD-121A-1.8	D4	CK	4.00		C		O	/	RF	None	22		
2C-850	OFD-121A-2.8	D4	CK	4.00		C		O	/	RF	None	22		
3C-850	OFD-121A-3.8	D4	CK	4.00		C		O	/	RF	None	22		
1C-852	OFD-121A-1.8	C4	CK	4.00		C		O	/	RF	None	22		
2C-852	OFD-121A-2.8	C4	CK	4.00		C		O	/	RF	None	22		
3C-852	OFD-121A-3.8	C4	CK	4.00		C		O	/	RF	None	22		
1CA-27	OFD-127B-1.2	G7	GL	0.50	MAN	A		C	/	QTR	RF			
2CA-27	OFD-127B-2.2	G7	GT	0.50	MAN	A		C	/	QTR	RF			
3CA-27	OFD-127B-3.2	G7	GL	0.50	MAN	A		C	/	QTR	RF			
1CA-29	OFD-127B-1.2	J7	GL	0.75	MAN	A		C	/	QTR	RF			
2CA-29	OFD-127B-2.2	J7	GT	0.50	MAN	A		C	/	QTR	RF			
3CA-29	OFD-127B-3.2	J7	GL	0.50	MAN	A		C	/	QTR	RF			

IST Revision: 21

Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
1CC-7	OFD-144A-1.2	D13	BF	8.00	EMO	A		C	/	S/D	RF		12	Reverse Direction Leak Test
2CC-7	OFD-144A-2.2	D11	BF	8.00	EMO	A		C	/	S/D	RF		12	Reverse Direction Leak Test
3CC-7	OFD-144A-3.2	D11	BF	8.00	EMO	A		C	/	S/D	RF		12	Reverse Direction Leak Test
1CC-8	OFD-144A-1.2	D13	BF	8.00	PST	A		C	C/O	S/D	RF		12	
2CC-8	OFD-144A-2.2	D13	BF	8.00	PST	A		C	C/O	S/D	RF		12	
3CC-8	OFD-144A-3.2	D13	BF	8.00	AOV	A		C	C/O	S/D	RF		12	
1CC-20	OFD-144A-1.2	D4	CK	6.00		A/C		C	/	RF	RF	16		
2CC-20	OFD-144A-2.2	D3	CK	6.00		A/C		C	/	RF	RF	16		
3CC-20	OFD-144A-3.2	D3	CK	6.00		A/C		C	/	RF	RF	16		
1CC-24	OFD-144A-1.2	D2	CK	6.00		A/C		C	/	RF	RF	16		
2CC-24	OFD-144A-2.2	D1	CK	6.00		A/C		C	/	RF	RF	16		
3CC-24	OFD-144A-3.2	D1	CK	6.00		A/C		C	/	RF	RF	16		
1CC-28	OFD-144A-1.2	J9	RV	.75X1		C		O/C	/					
2CC-28	OFD-144A-2.2	L7	RV	.75X1		C		O/C	/					
3CC-28	OFD-144A-3.2	L7	RV	0.75		C		O/C	/					
1CC-32	OFD-144A-1.2	I9	RV	.75X1		C		O/C	/					
2CC-32	OFD-144A-2.2	K7	RV	.75X1		C		O/C	/					
3CC-32	OFD-144A-3.2	K7	RV	0.75		C		O/C	/					
1CC-36	OFD-144A-1.2	H9	RV	.75X1		C		O/C	/					
2CC-36	OFD-144A-2.2	J7	RV	.75X1		C		O/C	/					
3CC-36	OFD-144A-3.2	J7	RV	0.75		C		O/C	/					
1CC-40	OFD-144A-1.2	G9	RV	.75X1		C		O/C	/					
2CC-40	OFD-144A-2.2	H7	RV	.75X1		C		O/C	/					
3CC-40	OFD-144A-3.2	H7	RV	0.75		C		O/C	/					
1CC-76	OFD-144A-1.3	H6	CK	2.50		A/C		C	/	RF	RF	16		
2CC-76	OFD-144A-2.3	H6	CK	3.00		A/C		C	/	RF	RF	16		
3CC-76	OFD-144A-3.3	H6	CK	3.00		A/C		C	/	RF	RF	16		
1CC-77	OFD-144A-1.3	H7	CK	2.50		A/C		C	/	RF	RF	16		
2CC-77	OFD-144A-2.3	H7	CK	3.00		A/C		C	/	RF	RF	16		
3CC-77	OFD-144A-3.3	H7	CK	3.00		A/C		C	/	RF	RF	16		
1CCW-1	OFD-133A-1.2	I2	BF	12.00	EMO	B		O	/	QTR	None			
1CCW-2	OFD-133A-1.2	I4	BF	12.00	EMO	B		O	/	QTR	None			
1CCW-3	OFD-133A-1.2	I6	BF	12.00	EMO	B		O	/	QTR	None			

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
1CCW-4	OFD-133A-1.2	I7	BF	12.00	EMO	B		O	/	QTR	None			
1CCW-5	OFD-133A-1.2	I9	BF	12.00	EMO	B		O	/	QTR	None			
1CCW-6	OFD-133A-1.2	I11	BF	12.00	EMO	B		O	/	QTR	None			
2CCW-7	OFD-133A-2.2	D2	BF	30.00	EMO	B		O	/	QTR	None			
CCW-8	OFD-133A-3.2	B1	BF	48.00	EMO	B		O/C	/	QTR	None			
CCW-9	OFD-133A-3.2	D2	BF	48.00	EMO	B		O	/	QTR	None			
1CCW-10	OFD-133A-1.1	J2	BF	96.00	EMO	B		O/C	/	QTR	None			
2CCW-10	OFD-133A-2.1	J2	BF	96.00	EMO	B		O/C	/	QTR	None			
3CCW-10	OFD-133A-3.1	J2	BF	96.00	EMO	B		O/C	/	QTR	None			
1CCW-11	OFD-133A-1.1	J5	BF	96.00	EMO	B		O/C	/	QTR	None			
2CCW-11	OFD-133A-2.1	J5	BF	96.00	EMO	B		O/C	/	QTR	None			
3CCW-11	OFD-133A-3.1	J5	BF	96.00	EMO	B		O/C	/	QTR	None			
1CCW-12	OFD-133A-1.1	J7	BF	96.00	EMO	B		O/C	/	QTR	None			
2CCW-12	OFD-133A-2.1	J7	BF	96.00	EMO	B		O/C	/	QTR	None			
3CCW-12	OFD-133A-3.1	J7	BF	96.00	EMO	B		O/C	/	QTR	None			
1CCW-13	OFD-133A-1.1	J10	BF	96.00	EMO	B		O/C	/	QTR	None			
2CCW-13	OFD-133A-2.1	J10	BF	96.00	EMO	B		O/C	/	QTR	None			
3CCW-13	OFD-133A-3.1	J10	BF	96.00	EMO	B		O/C	/	QTR	None			
3CCW-93	OFD-133A-3.2	D2	BF	30.00	EMO	B		O	/	QTR	None			
CCW-267	OFD-133A-2.5	J10	GL	10.00	MAN	B		O/C	/	QTR	None			
1CCW-268-SSF	OFD-133A-2.5	I13	GL	6.00	EMO	B		O/C	/	QTR	None			
2CCW-268-SSF	OFD-133A-2.5	I12	GL	6.00	EMO	B		O/C	/	QTR	None			
3CCW-268-SSF	OFD-133A-2.5	I11	GL	6.00	EMO	B		O/C	/	QTR	None			
1CCW-269-SSF	OFD-121D-1.1	G13	GT	6.00	EMO	B		O/C	/	S/D	None		1	
2CCW-269-SSF	OFD-121D-2.1	G13	GT	6.00	EMO	B		O/C	/	S/D	None		1	
3CCW-269-SSF	OFD-121D-3.1	G13	GT	6.00	EMO	B		O/C	/	S/D	None		1	
CCW-271-SSF	OFD-133A-2.5	I5	CK	3.00		C		O	/	QTR	None			
CCW-274-SSF	OFD-133A-2.5	J5	CK	3.00		C		O	/	QTR	None			
CCW-284-SSF	OFD-133A-2.5	H5	CK	6.00		C		O	/	QTR	None			
CCW-286-SSF	OFD-133A-2.5	H8	GT	6.00	MAN	B		C	/	QTR	None			
1CCW-287-SSF	OFD-133A-2.5	H13	GT	6.00	EMO	B		O	/	QTR	None			
2CCW-287-SSF	OFD-133A-2.5	H12	GT	6.00	EMO	B		O	/	QTR	None			
3CCW-287-SSF	OFD-133A-2.5	H11	GT	6.00	EMO	B		O	/	QTR	None			

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
CCW-289-SSF	OFD-133A-2.5	K8			CK	C		O	/	QTR	None			
1CCW-304	OFD-133A-1.2	J14	CK	2.00		C		C	/	QTR	None			
2CCW-304	OFD-133A-2.2	K14	CK	1.00		C		C	/	QTR	None			
3CCW-304	OFD-133A-3.2	K14	CK	2.00		C		C	/	QTR	None			
CCW-382	OFD-133A-2.5	L4	BL	1.00	MAN	B		O	/	QTR	None			
CCW-383	OFD-133A-2.5	J12	GT	1.00	MAN	B		O	/	QTR	None			
CCW-384	OFD-133A-2.5	F10	GT	6.00	MAN	B		O	/	QTR	None			
1CF-3	OFD-102A-1.3	G9	GL	1.00	EMO	A		C	/	QTR	RF			
2CF-3	OFD-102A-2.3	G10	GL	1.00	EMO	A		C	/	QTR	RF			
3CF-3	OFD-102A-3.3	G9	GL	1.00	EMO	A		C	/	QTR	RF			
1CF-4	OFD-102A-1.3	G5	GL	1.00	EMO	A		C	/	QTR	RF			
2CF-4	OFD-102A-2.3	G4	GL	1.00	EMO	A		C	/	QTR	RF			
3CF-4	OFD-102A-3.3	G5	GL	1.00	EMO	A		C	/	QTR	RF			
1CF-7	OFD-102A-1.3	G4	GL	1.00	MAN	A	Y	C	/	None	RF			
2CF-7	OFD-102A-2.3	F3	GL	1.00	MAN	A	Y	C	/	None	RF			
3CF-7	OFD-102A-3.3	G4	GL	1.00	MAN	A	Y	C	/	None	RF			
1CF-11	OFD-102A-1.3	E10	CK	14.00		A/C		O/C	/	S/RF	S/D	10		
2CF-11	OFD-102A-2.3	D10	CK	14.00		A/C		O/C	/	S/RF	S/D	10		
3CF-11	OFD-102A-3.3	E10	CK	14.00		A/C		O/C	/	S/RF	S/D	10		
1CF-12	OFD-102A-1.3	D9	CK	14.00		A/C		O/C	/	S/RF	S/D	17		
2CF-12	OFD-102A-2.3	D10	CK	14.00		A/C		O/C	/	S/RF	S/D	17		
3CF-12	OFD-102A-3.3	D9	CK	14.00		A/C		O/C	/	S/RF	S/D	17		
1CF-13	OFD-102A-1.3	E6	CK	14.00		A/C		O/C	/	S/RF	S/D	10		
2CF-13	OFD-102A-2.3	D6	CK	14.00		A/C		O/C	/	S/RF	S/D	10		
3CF-13	OFD-102A-3.3	E6	CK	14.00		A/C		O/C	/	S/RF	S/D	10		
1CF-14	OFD-102A-1.3	D7	CK	14.00		A/C		O/C	/	S/RF	S/D	17		
2CF-14	OFD-102A-2.3	D6	CK	14.00		A/C		O/C	/	S/RF	S/D	17		
3CF-14	OFD-102A-3.3	D7	CK	14.00		A/C		O/C	/	S/RF	S/D	17		
1CF-15	OFD-102A-1.3	J10	RV	1.00		C		O/C	/					
2CF-15	OFD-102A-2.3	H10	RV	1		C		O/C	/					
3CF-15	OFD-102A-3.3	I10	RV	1		C		O/C	/					
1CF-17	OFD-102A-1.3	I6	RV	1.00		C		O/C	/					
2CF-17	OFD-102A-2.3	H6	RV	1		C		O/C	/					

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
3CF-17	OFD-102A-3.3	I6	RV	1		C		O/C	/					
1CF-19	OFD-102A-1.3	G4	GL	1.00	MAN	A		C	/	QTR	RF			
2CF-19	OFD-102A-2.3	G3	GL	1.00	MAN	A		C	/	QTR	RF			
3CF-19	OFD-102A-3.3	G4	GL	1.00	MAN	A		C	/	QTR	RF			
1CF-42	OFD-127B-1.2	G11	CK	0.50		A/C		C	/	RF	RF	25		
2CF-42	OFD-127B-2.2	G11	CK	1.00		A/C		C	/	RF	RF	25		
3CF-42	OFD-127B-3.2	G11	CK	1.00		A/C		C	/	RF	RF	25		
1CF-44	OFD-127B-1.2	J11	CK	1.00		A/C		C	/	RF	RF	25		
2CF-44	OFD-127B-2.2	J11	CK	1.00		A/C		C	/	RF	RF	25		
3CF-44	OFD-127B-3.2	J11	CK	1.00		A/C		C	/	RF	RF	25		
1CS-5	OFD-107A-1.2	D5	DP	4.00	EMO	A		C	/	QTR	RF			Reverse Direction Leak Test
2CS-5	OFD-107A-2.2	D5	DP	4.00	EMO	A		C	/	QTR	RF			Reverse Direction Leak Test
3CS-5	OFD-107A-3.2	D5	DP	4.00	EMO	A		C	/	QTR	RF			Reverse Direction Leak Test
1CS-6	OFD-107A-1.2	D8	DP	2.00	AOV	A		C	C/C	QTR	RF			
2CS-6	OFD-107A-2.2	D8	DP	2.00	AOV	A		C	C/C	QTR	RF			
3CS-6	OFD-107A-3.2	D8	DP	2.00	AOV	A		C	C/C	QTR	RF			
1CS-11	OFD-107A-1.1	J2	CK	1.50		A/C		C	/	RF	RF	14		
2CS-11	OFD-107A-2.1	J2	CK	2.00		A/C		C	/	RF	RF	14		
3CS-11	OFD-107A-3.1	J3	CK	2.00		A/C		C	/	RF	RF	14		
1CS-12	OFD-107A-1.1	J5	CK	1.50		A/C		C	/	RF	RF	14		
2CS-12	OFD-107A-2.1	J5	CK	1.50		A/C		C	/	RF	RF	14		
3CS-12	OFD-107A-3.1	J5	CK	1.50		A/C		C	/	RF	RF	14		
DA-6	OFD-137D-1.1	F4	RV	0.75		C		O/C	/					
DA-11	OFD-137D-1.1	F7	RV	0.75		C		O/C	/					
DA-16	OFD-137D-1.2	F4	RV	0.75		C		O/C	/					
DA-21	OFD-137D-1.2	F7	RV	0.75		C		O/C	/					
1DW-59	OFD-106E-1.1	H2	DP	4.00	MAN	A	Y	C	/	None	RF			
2DW-59	OFD-106E-2.1	H3	DP	4.00	MAN	A	Y	C	/	None	RF			
3DW-59	OFD-106E-3.1	H2	DP	4.00	MAN	A	Y	C	/	None	RF			
1DW-60	OFD-106E-1.1	H3	DP	4.00	MAN	A	Y	C	/	None	RF			
2DW-60	OFD-106E-2.1	H4	DP	4.00	MAN	A	Y	C	/	None	RF			
3DW-60	OFD-106E-3.1	H4	DP	4.00	MAN	A	Y	C	/	None	RF			
1DW-155	OFD-106E-1.1	E3	CK	0.75		A/C		C	/	RF	RF	18		

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
1DW-156	OFD-106E-1.1	E4	CK	0.50		A/C		C	/	RF	RF	18		
1FDW-32	OFD-121B-1.3	J7	GL	16.00	PST	B		C	/	S/D	None		23	
2FDW-32	OFD-121B-2.3	J6	GL	16.00	PST	B		C	/	S/D	None		23	
3FDW-32	OFD-121B-3.3	J7	GL	16.00	PST	B		C	/	S/D	None		23	
1FDW-33	OFD-121B-1.3	J6	GT	6.00	EMO	B		C	/	S/D	None		10	
2FDW-33	OFD-121B-2.3	K5	GT	6.00	EMO	B		C	/	S/D	None		10	
3FDW-33	OFD-121B-3.3	K6	GT	6.00	EMO	B		C	/	S/D	None		10	
1FDW-35	OFD-121B-1.3	L7	GL	6.00	AOV	B		C	/	S/D	None		10	
2FDW-35	OFD-121B-2.3	K6	GL	6.00	AOV	B		C	/	S/D	None		10	
3FDW-35	OFD-121B-3.3	K7	GL	6.00	PST	B		C	/	S/D	None		10	
1FDW-39	OFD-121D-1.1	J10	CK	6.00		C		C	/	RF	None	26		
2FDW-39	OFD-121D-2.1	J10	CK	6.00		C		C	/	RF	None	26		
3FDW-39	OFD-121D-3.1	J10	CK	6.00		C		C	/	RF	None	26		
1FDW-41	OFD-121B-1.3	D7	GL	16.00	PST	B		C	/	S/D	None		23	
2FDW-41	OFD-121B-2.3	D7	GL	16.00	PST	B		C	/	S/D	None		23	
3FDW-41	OFD-121B-3.3	D7	GL	16.00	PST	B		C	/	S/D	None		23	
1FDW-42	OFD-121B-1.3	E6	GT	6.00	EMO	B		C	/	S/D	None		10	
2FDW-42	OFD-121B-2.3	E5	GT	6.00	EMO	B		C	/	S/D	None		10	
3FDW-42	OFD-121B-3.3	E6	GT	6.00	EMO	B		C	/	S/D	None		10	
1FDW-44	OFD-121B-1.3	F7	GL	6.00	AOV	B		C	/	S/D	None		10	
2FDW-44	OFD-121B-2.3	F7	GL	6.00	AOV	B		C	/	S/D	None		10	
3FDW-44	OFD-121B-3.3	F7	GL	6.00	AOV	B		C	/	S/D	None		10	
1FDW-91	OFD-121D-1.1	I2	CK	6.00		C		O	/	QTR	None			
2FDW-91	OFD-121D-2.1	I2	CK	6.00		C		O	/	QTR	None			
3FDW-91	OFD-121D-3.1	H3	CK	6.00		C		O	/	QTR	None			
1FDW-103	OFD-121B-1.5	K8	GT	4.00	EMO	A		C	/	QTR	RF			
2FDW-103	OFD-121B-2.5	J9	GT	4.00	EMO	A		C	/	QTR	RF			
3FDW-103	OFD-121B-3.5	J9	GT	4.00	EMO	A		C	/	QTR	RF			
1FDW-104	OFD-121B-1.5	C8	GT	4.00	EMO	A		C	/	QTR	RF			
2FDW-104	OFD-121B-2.5	C9	GT	4.00	EMO	A		C	/	QTR	RF			
3FDW-104	OFD-121B-3.5	D9	GT	4.00	EMO	A		C	/	QTR	RF			
1FDW-105	OFD-110A-1.1	F3	GT	0.75	EMO	A		C	/	QTR	RF			
2FDW-105	OFD-110A-2.1	F3	GL	0.50	EMO	A		C	/	QTR	RF			

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3FDW-105	OFD-110A-3.1	F3	GT	0.75	EMO	A		C	/	QTR	RF			
1FDW-106	OFD-110A-1.1	F6	GT	0.50	PST	A		C	C/C	QTR	RF			
2FDW-106	OFD-110A-2.1	F6	GT	0.50	PST	A		C	C/C	QTR	RF			
3FDW-106	OFD-110A-3.1	F6	GT	0.50	PST	A		C	C/C	QTR	RF			
1FDW-107	OFD-110A-1.1	D3	GT	0.75	EMO	A		C	/	QTR	RF			
2FDW-107	OFD-110A-2.1	D3	GT	0.75	EMO	A		C	/	QTR	RF			
3FDW-107	OFD-110A-3.1	D3	GT	0.75	EMO	A		C	C/	QTR	RF			
1FDW-108	OFD-110A-1.1	D6	GT	0.50	PST	A		C	C/C	QTR	RF			
2FDW-108	OFD-110A-2.1	D6	GT	0.50	PST	A		C	C/C	QTR	RF			
3FDW-108	OFD-110A-3.1	D6	GT	0.50	PST	A		C	/C	QTR	RF			
1FDW-232	OFD-121D-1.1	K13	CK	6.00		C		O	/	S/D	None		19	
2FDW-232	OFD-121D-2.1	K13	CK	6.00		C		O	/	S/D	None		19	
3FDW-232	OFD-121D-3.1	K13	CK	6.00		C		O	/	S/D	None		19	
1FDW-233	OFD-121D-1.1	D13	CK	6.00		C		O	/	S/D	None		19	
2FDW-233	OFD-121D-2.1	D13	CK	6.00		C		O	/	S/D	None		19	
3FDW-233	OFD-121D-3.1	D13	CK	6.00		C		O	/	S/D	None		19	
1FDW-311	OFD-121D-1.1	J6	CK	6.00		C		O/C	/	S/D	None		19	
2FDW-311	OFD-121D-2.1	J6	CK	6.00		C		O/C	/	S/D	None		19	
3FDW-311	OFD-121D-3.1	I6	CK	6.00		C		O/C	/	S/D	None		19	
1FDW-312	OFD-121D-1.1	E6	CK	6.00		C		O/C	/	S/D	None		19	
2FDW-312	OFD-121D-2.1	E7	CK	6.00		C		O/C	/	S/D	None		19	
3FDW-312	OFD-121D-3.1	E6	CK	6.00		C		O/C	/	S/D	None		19	
1FDW-315	OFD-121D-1.1	K10	GL	6.00	AOV	B		O/C	O/O	QTR	None			
2FDW-315	OFD-121D-2.1	K10	GL	6.00	AOV	B		O/C	O/O	QTR	None			
3FDW-315	OFD-121D-3.1	K10	GL	6.00	AOV	B		O/C	O/O	QTR	None			
1FDW-316	OFD-121D-1.1	D10	GL	6.00	AOV	B		O/C	O/O	QTR	None			
2FDW-316	OFD-121D-2.1	D10	GL	6.00	AOV	B		O/C	O/O	QTR	None			
3FDW-316	OFD-121D-3.1	D10	GL	6.00	AOV	B		O/C	O/O	QTR	None			
1FDW-317	OFD-121D-1.1	K10	CK	6.00		C		O	/	S/D	None		19	
2FDW-317	OFD-121D-2.1	K10	CK	6.00		C		O	/	S/D	None		19	
3FDW-317	OFD-121D-3.1	K10	CK	6.00		C		O	/	S/D	None		19	
1FDW-318	OFD-121D-1.1	D10	CK	6.00		C		O	/	S/D	None		19	
2FDW-318	OFD-121D-2.1	D10	CK	6.00		C		O	/	S/D	None		19	

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
3FDW-318	OFD-121D-3.1	D10	CK	6.00		C		O	/	S/D	None		19	
1FDW-329	OFD-121B-1.5	J8	GT	4.00	MAN	A	Y	C	/	None	RF			
2FDW-329	OFD-121B-2.5	I8	GT	4.00	MAN	A	Y	C	/	None	RF			
3FDW-329	OFD-121B-3.5	J8	GT	4.00	MAN	A	Y	C	/	None	RF			
1FDW-331	OFD-121B-1.5	D8	GT	4.00	MAN	A	Y	C	/	None	RF			
2FDW-331	OFD-121B-2.5	C8	GT	4.00	MAN	A	Y	C	/	None	RF			
3FDW-331	OFD-121B-3.5	D8	GT	4.00	MAN	A	Y	C	/	None	RF			
1FDW-334	OFD-121B-1.5	L6	GT	4.00	MAN	A	Y	C	/	None	RF			
2FDW-334	OFD-121B-2.5	K7	GT	4.00	MAN	A	Y	C	/	None	RF			
3FDW-334	OFD-121B-3.5	L6	GT	4.00	MAN	A	Y	C	/	None	RF			
1FDW-335	OFD-121B-1.5	C6	GT	4.00	MAN	A	Y	C	/	None	RF			
2FDW-335	OFD-121B-2.5	C6	GT	4.00	MAN	A	Y	C	/	None	RF			
3FDW-335	OFD-121B-3.5	C6	GT	4.00	MAN	A	Y	C	/	None	RF			
1FDW-345	OFD-121D-1.1	K12	CK	6.00		C		O	/	S/D	None		19	
2FDW-345	OFD-121D-2.1	K12	CK	6.00		C		O	/	S/D	None		19	
3FDW-345	OFD-121D-3.1	K13	CK	6.00		C		O	/	S/D	None		19	
1FDW-346	OFD-121D-1.1	D12	CK	6.00		C		O	/	S/D	None		19	
2FDW-346	OFD-121D-2.1	D12	CK	6.00		C		O	/	S/D	None		19	
3FDW-346	OFD-121D-3.1	D12	CK	6.00		C		O	/	S/D	None		19	
1FDW-347-SSF	OFD-121D-1.1	D13	GT	6.00	EMO	B		O/C	/	S/D	None		16	
2FDW-347-SSF	OFD-121D-2.1	D13	GT	6.00	EMO	B		O/C	/	S/D	None		16	
3FDW-347-SSF	OFD-121D-3.1	D13	GT	6.00	EMO	B		O/C	/	S/D	None		16	
1FDW-370	OFD-121D-1.1	K3	CK	6.00		C		O	/	QTR	None			
2FDW-370	OFD-121D-2.1	K3	CK	4.00		C		O	/	QTR	None			
3FDW-370	OFD-121D-3.1	K4	CK	4.00		C		O	/	QTR	None			
1FDW-372	OFD-121D-1.1	K7	GT	6.00	EMO	B		C	/	QTR	None			
2FDW-372	OFD-121D-2.1	K7	GT	6.00	EMO	B		C	/	QTR	None			
3FDW-372	OFD-121D-3.1	K7	GT	6.00	EMO	B		C	/	QTR	None			
1FDW-373	OFD-121D-1.1	K7	CK	6.00		C		O/C	/	S/D	None		19	
2FDW-373	OFD-121D-2.1	K7	CK	6.00		C		O/C	/	S/D	None		19	
3FDW-373	OFD-121D-3.1	K7	CK	6.00		C		O/C	/	S/D	None		19	
1FDW-378	OFD-121D-1.1	K3	CK	2.00		C		O	/	QTR	None			
2FDW-378	OFD-121D-2.1	K3	CK	2.00		C		O	/	QTR	None			

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
3FDW-378	OFD-121D-3.1	D12	CK	2.00		C		O	/	QTR	None			
1FDW-380	OFD-121D-1.1	D3	CK	6.00		C		O	/	QTR	None			
2FDW-380	OFD-121D-2.1	D3	CK	4.00		C		O	/	QTR	None			
3FDW-380	OFD-121D-3.1	D4	CK	4.00		C		O	/	QTR	None			
1FDW-382	OFD-121D-1.1	D7	GT	6.00	EMO	B		C	/	QTR	None			
2FDW-382	OFD-121D-2.1	D7	GT	6.00	EMO	B		C	/	QTR	None			
3FDW-382	OFD-121D-3.1	D7	GT	6.00	EMO	B		C	/	QTR	None			
1FDW-383	OFD-121D-1.1	D7	CK	6.00		C		O/C	/	S/D	None		19	
2FDW-383	OFD-121D-2.1	D6	CK	6.00		C		O/C	/	S/D	None		19	
3FDW-383	OFD-121D-3.1	D7	CK	6.00		C		O/C	/	S/D	None		19	
1FDW-388	OFD-121D-1.1	D3	CK	2.00		C		O	/	QTR	None			
2FDW-388	OFD-121D-2.1	D3	CK	2.00		C		O	/	QTR	None			
3FDW-388	OFD-121D-3.1	D4	CK	2.00		C		O	/	QTR	None			
1FDW-432	OFD-121D-1.1	E10	CK	6.00		C		C	/	RF	None	26		
2FDW-432	OFD-121D-2.1	E10	CK	6.00		C		C	/	RF	None	26		
3FDW-432	OFD-121D-3.1	E10	CK	6.00		C		C	/	RF	None	26		
1FDW-442	OFD-121D-1.1	D11	CK	6.00		C		O	/	S/D	None		19	
2FDW-442	OFD-121D-2.1	D11	CK	6.00		C		O	/	S/D	None		19	
3FDW-442	OFD-121D-3.1	D11	CK	6.00		C		O	/	S/D	None		19	
FO-50	OFD-135A-1.2	D7	CK	2.00		C		O	/	QTR	None			
FO-52	OFD-135A-1.2	E5	RV	1.5X2		C		O/C	/					
1FW-64	OFD-106E-1.1	J2	DP	6.00	MAN	A	Y	C	/	None	RF			
2FW-64	OFD-106E-2.1	J3	DP	6.00	MAN	A	Y	C	/	None	RF			
3FW-64	OFD-106E-3.1	J3	DP	6.00	MAN	A	Y	C	/	None	RF			
1FW-65	OFD-106E-1.1	J4	DP	6.00	MAN	A	Y	C	/	None	RF			Reverse Direction Leak Test
2FW-65	OFD-106E-2.1	J6	DP	6.00	MAN	A	Y	C	/	None	RF			Reverse Direction Leak Test
3FW-65	OFD-106E-3.1	J4	DP	6.00	MAN	A	Y	C	/	None	RF			Reverse Direction Leak Test
1GWD-12	OFD-107A-1.1	J11	DP	2.00	EMO	A		C	/	QTR	RF			Reverse Direction Leak Test
2GWD-12	OFD-107A-2.1	J11	DP	2.00	EMO	A		C	/	QTR	RF			Reverse Direction Leak Test
3GWD-12	OFD-107A-3.1	J11	DP	2.00	EMO	A		C	/	QTR	RF			Reverse Direction Leak Test
1GWD-13	OFD-107A-1.1	K13	DP	2.00	AOV	A		C	C/C	QTR	RF			
2GWD-13	OFD-107A-2.1	K13	DP	2.00	AOV	A		C	C/C	QTR	RF			
3GWD-13	OFD-107A-3.1	K13	DP	2.00	AOV	A		C	C/C	QTR	RF			

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1HP-3	OFD-101A-1.1	L5	GL	2.50	EMO	A		C	/	QTR	RF			
2HP-3	OFD-101A-2.1	L5	GL	2.50	EMO	A		C	/	QTR	RF			
3HP-3	OFD-101A-3.1	K5	GL	2.50	EMO	A		C	/	QTR	RF			
1HP-4	OFD-101A-1.1	J5	GL	2.50	EMO	A		C	/	QTR	RF			
2HP-4	OFD-101A-2.1	J5	GL	2.50	EMO	A		C	/	QTR	RF			
3HP-4	OFD-101A-3.1	J5	GL	2.50	EMO	A		C	/	QTR	RF			
1HP-5	OFD-101A-1.1	K8	GL	2.50	PST	A		C	C/C	S/D	RF		3	
2HP-5	OFD-101A-2.1	K8	GL	2.50	PST	A		C	C/C	S/D	RF		3	
3HP-5	OFD-101A-3.1	K8	GL	2.50	PST	A		C	C/C	S/D	RF		3	
1HP-20	OFD-101A-1.1	F5	GL	4.00	EMO	A		C	/	S/D	RF		4	Reverse Direction Leak Test
2HP-20	OFD-101A-2.1	E6	GL	4.00	EMO	A		C	/	S/D	RF		4	Reverse Direction Leak Test
3HP-20	OFD-101A-3.1	E6	GL	4.00	EMO	A		C	/	S/D	RF		4	Reverse Direction Leak Test
1HP-21	OFD-101A-1.1	E7	GL	4.00	PST	A		C	C/O	S/D	RF		4	
2HP-21	OFD-101A-2.1	E8	GL	4.00	PST	A		C	C/O	S/D	RF		4	
3HP-21	OFD-101A-3.1	E7	GL	4.00	PST	A		C	C/O	S/D	RF		4	
1HP-24	OFD-101A-1.3	I3	GT	6.00	EMO	B		O	/	QTR	None			
2HP-24	OFD-101A-2.3	I3	GT	6.00	EMO	B		O	/	QTR	None			
3HP-24	OFD-101A-3.3	I2	GT	6.00	EMO	B		O	/	QTR	None			
1HP-25	OFD-101A-1.3	F3	GT	6.00	EMO	B		O	/	QTR	None			
2HP-25	OFD-101A-2.3	F3	GT	6.00	EMO	B		O	/	QTR	None			
3HP-25	OFD-101A-3.3	F3	GT	6.00	EMO	B		O	/	QTR	None			
1HP-26	OFD-101A-1.4	J7	GL	4.00	EMO	B		O	/	S/D	None		5	
2HP-26	OFD-101A-2.4	J7	GL	4.00	EMO	B		O	/	S/D	None		5	
3HP-26	OFD-101A-3.4	J6	GL	4.00	EMO	B		O	/	S/D	None		5	
1HP-27	OFD-101A-1.4	D7	GL	4.00	EMO	B		O	/	QTR	None			
2HP-27	OFD-101A-2.4	D7	GL	4.00	EMO	B		O	/	QTR	None			
3HP-27	OFD-101A-3.4	D7	GL	4.00	EMO	B		O	/	QTR	None			
1HP-43	OFD-101A-1.1	J13	RV	2X2.5		C		O/C	/					
2HP-43	OFD-101A-2.1	J13	RV	2X2.5		C		O/C	/					
3HP-43	OFD-101A-3.1	J13	RV	2X2.5		C		O/C	/					
1HP-45	OFD-109A-1.1	G3	RV	.75X1		C		O/C	/					
2HP-45	OFD-109A-1.1	G10	RV	.75X1		C		O/C	/					
3HP-45	OFD-109A-3.1	H4	RV	.75X1		C		O/C	/					

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
HP-48	OFD-109A-1.1	G7	RV	.75X1		C		O/C	/					
3HP-48	OFD-109A-3.1	H9	RV	.75X1		C		O/C	/					
1HP-55	OFD-101A-1.2	H2	RV	.75X1		C		O/C	/					
2HP-55	OFD-101A-2.2	H2	RV	.75X1		C		O/C	/					
3HP-55	OFD-101A-3.2	H2	RV	.75X1		C		O/C	/					
1HP-56	OFD-101A-1.2	H10	RV	.75X1		C		O/C	/					
2HP-56	OFD-101A-2.2	H9	RV	.75X1		C		O/C	/					
3HP-56	OFD-101A-3.2	H9	RV	.75X1		C		O/C	/					
1HP-71	OFD-101A-1.1	F10	RV	3X4		C		O/C	/					
2HP-71	OFD-101A-2.1	F10	RV	3X4		C		O/C	/					
3HP-71	OFD-101A-3.1	F10	RV	3X4		C		O/C	/					
1HP-78	OFD-101A-1.2	F6	SC	4.00	MAN	C		O	/	QTR	None			
2HP-78	OFD-101A-2.2	F6	SC	4.00	MAN	C		O	/	QTR	None			
3HP-78	OFD-101A-3.2	F6	SC	4.00	MAN	C		O	/	QTR	None			
1HP-79	OFD-101A-1.2	C10	RV	2X3		C		O/C	/					
2HP-79	OFD-101A-2.2	C8	RV	2X3		C		O/C	/					
3HP-79	OFD-101A-3.2	C11	RV	2X3		C		O/C	/					
1HP-97	OFD-101A-1.2	D12	CK	6.00		A/C		O/C	/	QTR	RF	32	28	
2HP-97	OFD-101A-2.2	D12	CK	6.00		A/C		O/C	/	QTR	RF	32	28	
3HP-97	OFD-101A-3.2	D12	CK	6.00		A/C		O/C	/	QTR	RF	32	28	
1HP-101	OFD-101A-1.3	J3	CK	6.00		A/C		O/C	/	S/RF	RF	4		
2HP-101	OFD-101A-2.3	J3	CK	6.00		A/C		O/C	/	S/RF	RF	4		
3HP-101	OFD-101A-3.3	J2	CK	6.00		A/C		O/C	/	S/RF	RF	4		
1HP-102	OFD-101A-1.3	E3	CK	6.00		A/C		O/C	/	S/RF	RF	4		
2HP-102	OFD-101A-2.3	E3	CK	6.00		A/C		O/C	/	S/RF	RF	4		
3HP-102	OFD-101A-3.3	E2	CK	6.00		A/C		O/C	/	S/RF	RF	4		
1HP-104	OFD-101A-1.3	K6	RV	.75X1		C		O/C	/					
2HP-104	OFD-101A-2.3	K6	RV	.75X1		C		O/C	/					
3HP-104	OFD-101A-3.3	J5	RV	.75X1		C		O/C	/					
1HP-105	OFD-101A-1.3	J10	CK	3.00		C		O/C	/	Q/RF	None	5		
2HP-105	OFD-101A-2.3	J10	CK	3.00		C		O/C	/	Q/RF	None	5		
3HP-105	OFD-101A-3.3	J10	CK	3.00		C		O/C	/	Q/RF	None	5		
1HP-108	OFD-101A-1.3	H6	RV	.75X1		C		O/C	/					

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2HP-108	OFD-101A-2.3	H6	RV	.75X1		C		O/C	/					
3HP-108	OFD-101A-3.3	H5	RV	.75X1		C		O/C	/					
1HP-109	OFD-101A-1.3	G10	CK	3.00		C		O/C	/	Q/RF	None	5		
2HP-109	OFD-101A-2.3	G10	CK	3.00		C		O/C	/	Q/RF	None	5		
3HP-109	OFD-101A-3.3	G10	CK	3.00		C		O/C	/	Q/RF	None	5		
1HP-112	OFD-101A-1.3	E6	RV	.75X1		C		O/C	/					
2HP-112	OFD-101A-2.3	D6	RV	.75X1		C		O/C	/					
3HP-112	OFD-101A-3.3	C5	RV	.75X1		C		O/C	/					
1HP-113	OFD-101A-1.3	D10	CK	3.00		C		O/C	/	Q/RF	None	5		
2HP-113	OFD-101A-2.3	D10	CK	3.00		C		O/C	/	Q/RF	None	5		
3HP-113	OFD-101A-3.3	D10	CK	3.00		C		O/C	/	Q/RF	None	5		
1HP-126	OFD-101A-1.4	J13	SC	2.50	MAN	C		O	/	S/RF	None	6		
2HP-126	OFD-101A-2.4	J13	SC	2.50	MAN	C		O	/	S/RF	None	6		
3HP-126	OFD-101A-3.4	J11	SC	2.50	MAN	C		O	/	S/RF	None	6		
1HP-127	OFD-101A-1.4	J13	SC	2.50	MAN	C		O	/	S/RF	None	6		
2HP-127	OFD-101A-2.4	J13	SC	2.50	MAN	C		O	/	S/RF	None	6		
3HP-127	OFD-101A-3.4	J11	SC	2.50	MAN	C		O	/	S/RF	None	6		
1HP-144	OFD-101A-1.4	G13	SC	1.50	MAN	A/C		O/C	/	RF	RF	19		Reverse Direction Leak Test
2HP-144	OFD-101A-2.4	F12	SC	1.50	MAN	A/C		O/C	/	RF	RF	19		Reverse Direction Leak Test
3HP-144	OFD-101A-3.4	H13	SC	1.50	MAN	A/C		O/C	/	RF	RF	19		Reverse Direction Leak Test
1HP-145	OFD-101A-1.4	F13	SC	1.50	MAN	A/C		O/C	/	RF	RF	19		Reverse Direction Leak Test
2HP-145	OFD-101A-2.4	G12	SC	1.50	MAN	A/C		O/C	/	RF	RF	19		Reverse Direction Leak Test
3HP-145	OFD-101A-3.4	I13	SC	1.50	MAN	A/C		O/C	/	RF	RF	19		Reverse Direction Leak Test
1HP-146	OFD-101A-1.4	H13	SC	1.50	MAN	A/C		O/C	/	RF	RF	19		Reverse Direction Leak Test
2HP-146	OFD-101A-2.4	H12	CK	1.00		A/C		O/C	/	RF	RF	19		
3HP-146	OFD-101A-3.4	G13	SC	1.50	MAN	A/C		O/C	/	RF	RF	19		Reverse Direction Leak Test
1HP-147	OFD-101A-1.4	I12	CK	1.50		A/C		O/C	/	RF	RF	19		
2HP-147	OFD-101A-2.4	I12	CK	1.00		A/C		O/C	/	RF	RF	19		
3HP-147	OFD-101A-3.4	F13	SC	1.50	MAN	A/C		O/C	/	RF	RF	19		Reverse Direction Leak Test
1HP-152	OFD-101A-1.4	D14	SC	2.50	MAN	C		O	/	S/RF	None	7		
2HP-152	OFD-101A-2.4	D13	SC	2.50	MAN	C		O	/	S/RF	None	7		
3HP-152	OFD-101A-3.4	D13	SC	2.50	MAN	C		O	/	S/RF	None	7		
1HP-153	OFD-101A-1.4	E13	SC	2.50	MAN	C		O	/	S/RF	None	7		

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
2HP-153	OFD-101A-2.4	E13	SC	2.50	MAN	C		O	/	S/RF	None	7		
3HP-153	OFD-101A-3.4	E13	SC	2.50	MAN	C		O	/	S/RF	None	7		
1HP-155	OFD-127B-1.2	H7	GL	1.00	MAN	A	Y	C	/	None	RF			
2HP-155	OFD-127B-2.2	H7	GL	1.00	MAN	A	Y	C	/	None	RF			
3HP-155	OFD-127B-3.2	H7	GL	0.50	MAN	A	Y	C	/	None	RF			
1HP-156	OFD-127B-1.2	I7	GL	1.00	MAN	A	Y	C	/	None	RF			
2HP-156	OFD-127B-2.2	I7	GL	1.00	MAN	A	Y	C	/	None	RF			
3HP-156	OFD-127B-3.2	I7	GL	0.50	MAN	A	Y	C	/	None	RF			
1HP-188	OFD-101A-1.4	D11	CK	4.00		C		O	/	S/RF	None	8		
2HP-188	OFD-101A-2.4	D11	CK	4.00		C		O	/	S/RF	None	8		
3HP-188	OFD-101A-3.4	D10	CK	4.00		C		O	/	S/RF	None	8		
1HP-189	OFD-101A-1.2	F6	CK	4.00		C		O	/	RF	None	1		
2HP-189	OFD-101A-2.2	F5	CK	4.00		C		O	/	RF	None	1		
3HP-189	OFD-101A-3.2	F5	CK	4.00		C		O	/	RF	None	1		
1HP-194	OFD-101A-1.4	J10	CK	4.00		C		O	/	Q/RF	None	9		
2HP-194	OFD-101A-2.4	J10	CK	4.00		C		O	/	Q/RF	None	9		
3HP-194	OFD-101A-3.4	J8	CK	4.00		C		O	/	Q/RF	None	9		
1HP-247	OFD-101A-1.3	K10	GL	1.50	MAN	B		C	/	S/D	None		29	
2HP-247	OFD-101A-2.3	K10	GL	1.50	MAN	B		C	/	S/D	None		29	
3HP-247	OFD-101A-3.3	K9	GL	1.50	MAN	B		C	/	S/D	None		29	
1HP-248	OFD-101A-1.3	L10	SC	1.50	MAN	C		O	/	RF	None	15		
2HP-248	OFD-101A-2.3	L10	SC	1.50	MAN	C		O	/	RF	None	15		
3HP-248	OFD-101A-3.3	H9	SC	1.50	MAN	C		O	/	RF	None	15		
1HP-249	OFD-101A-1.3	H9	GL	1.50	MAN	B		C	/	S/D	None		29	
2HP-249	OFD-101A-2.3	H9	GL	1.50	MAN	B		C	/	S/D	None		29	
3HP-249	OFD-101A-3.3	H9	GL	1.50	MAN	B		C	/	S/D	None		29	
1HP-250	OFD-101A-1.3	I9	SC	1.50	MAN	C		O	/	RF	None	15		
2HP-250	OFD-101A-2.3	I9	SC	1.50	MAN	C		O	/	RF	None	15		
3HP-250	OFD-101A-3.3	I9	SC	1.50	MAN	C		O	/	RF	None	15		
1HP-251	OFD-101A-1.3	D9	GL	1.50	MAN	B		C	/	S/D	None		29	
2HP-251	OFD-101A-2.3	D9	GL	1.50	MAN	B		C	/	S/D	None		29	
3HP-251	OFD-101A-3.3	D8	GL	1.50	MAN	B		C	/	S/D	None		29	
1HP-252	OFD-101A-1.3	E9	SC	1.50	MAN	C		O	/	RF	None	15		

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2HP-252	OFD-101A-2.3	E9	SC	1.50	MAN	C		O	/	RF	None	15		
3HP-252	OFD-101A-3.3	F8	SC	1.50	MAN	C		O	/	RF	None	15		
3HP-285	OFD-101A-3.4	F11	SC	1.50	MAN	A/C		C	/	RF	RF	19		
2HP-286	OFD-101A-2.4	H10	SC	1.50	MAN	A/C		C	/	RF	RF	19		
1HP-302	OFD-101A-1.1	F10	RV	3X4		C		O/C	/					
2HP-302	OFD-101A-2.1	F8	RV	1X2		C		O/C	/					
3HP-302	OFD-101A-3.1	F8	RV	1X2		C		O/C	/					
1HP-304	OFD-101A-1.1	G6	RV	1X2		C		O/C	/					
1HP-357	OFD-101A-1.1	I9	RV	0.75		C		O/C	/					
3HP-357	OFD-101A-3.1	J10	RV	0.75		C		O/C	/					
1HP-363	OFD-101A-1.2	F7	GL	2.00	MAN	B		O	/	QTR	None			
2HP-363	OFD-101A-2.2	F7	GT	2.00	MAN	B		O	/	QTR	None			
3HP-363	OFD-101A-3.2	F7	GT	2.00	MAN	B		O	/	QTR	None			
1HP-364	OFD-101A-1.2	F7	CK	2.00		C		O	/	RF	None	2		
2HP-364	OFD-101A-2.2	F7	CK	2.00		C		O	/	RF	None	2		
3HP-364	OFD-101A-3.2	F8	CK	2.00		C		O	/	RF	None	2		
2HP-389	OFD-101A-2.4	I10	CK	1.00		A/C		C	/	RF	RF	19		
1HP-390	OFD-101A-1.4	F10	CK	1.00		A/C		C	/	RF	RF	19		
2HP-390	OFD-101A-2.4	G10	CK	1.00		A/C		C	/	RF	RF	19		
3HP-390	OFD-101A-3.4	I11	CK	1.00		A/C		C	/	RF	RF	19		
1HP-393	OFD-101A-1.4	I10	CK	1.50		A/C		C	/	RF	RF	19		
1HP-398-SSF	OFD-101A-1.5	F11	GT	2.00	EMO	B		O	/	S/D	None		14	
2HP-398-SSF	OFD-101A-2.5	F11	GT	2.00	EMO	B		O	/	S/D	None		14	
3HP-398-SSF	OFD-101A-3.5	F11	GT	2.00	EMO	B		O	/	S/D	None		14	
1HP-399-SSF	OFD-101A-1.5	G13	CK	1.00		C		O	/	S/D	None		2	
2HP-399-SSF	OFD-101A-2.5	H13	CK	1.00		C		O	/	S/D	None		2	
3HP-399-SSF	OFD-101A-3.5	H13	CK	0.75		C		O	/	S/D	None		2	
1HP-400-SSF	OFD-101A-1.5	H13	CK	1.00		C		O	/	S/D	None		2	
2HP-400-SSF	OFD-101A-2.5	G13	CK	1.00		C		O	/	S/D	None		2	
3HP-400-SSF	OFD-101A-3.5	G13	CK	0.75		C		O	/	S/D	None		2	
1HP-401-SSF	OFD-101A-1.5	F13	CK	1.00		C		O	/	S/D	None		2	
2HP-401-SSF	OFD-101A-2.5	F13	CK	1.00		C		O	/	S/D	None		2	
3HP-401-SSF	OFD-101A-3.5	F13	CK	0.75		C		O	/	S/D	None		2	

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1HP-402-SSF	OFD-101A-1.5	F13	CK	1.00		C		O	/	S/D	None		2	
2HP-402-SSF	OFD-101A-2.5	F13	CK	1.00		C		O	/	S/D	None		2	
3HP-402-SSF	OFD-101A-3.5	F13	CK	0.75		C		O	/	S/D	None		2	
1HP-404	OFD-101A-1.5	G9	RV	.75X1		C		O/C	/					
2HP-404	OFD-101A-2.5	G9	RV	.75X1		C		O/C	/					
3HP-404	OFD-101A-3.5	G9	RV	.75X1		C		O/C	/					
1HP-405-SSF	OFD-101A-1.5	H10	GT	1.50	EMO	A		C	/	QTR	RF			
2HP-405-SSF	OFD-101A-2.5	H10	GT	1.50	EMO	A		C	/	QTR	RF			
3HP-405-SSF	OFD-101A-3.5	H10	GT	1.50	EMO	A		C	/	QTR	RF			
1HP-409	OFD-101A-1.4	D7	GT	4.00	EMO	B		O	/	S/D	None		27	
2HP-409	OFD-101A-2.4	E8	GT	4.00	EMO	B		O	/	S/D	None		27	
3HP-409	OFD-101A-3.4	E8	GT	4.00	EMO	B		O	/	S/D	None		27	
1HP-410	OFD-101A-1.4	H7	GT	4.00	EMO	B		O	/	S/D	None		27	
2HP-410	OFD-101A-2.4	F7	GT	4.00	EMO	B		O	/	S/D	None		27	
3HP-410	OFD-101A-3.4	I7	GT	4.00	EMO	B		O	/	S/D	None		27	
1HP-417-SSF	OFD-101A-1.5	H9	GL	1.00	EMO	A		O/C	/	QTR	RF			
2HP-417-SSF	OFD-101A-2.5	I9	GL	1.00	EMO	A		O/C	/	QTR	RF			
3HP-417-SSF	OFD-101A-3.5	I9	GL	1.00	EMO	A		O/C	/	QTR	RF			
1HP-426-SSF	OFD-101A-1.5	J9	GL	1.00	EMO	A		O/C	/	S/D	RF		15	
2HP-426-SSF	OFD-101A-2.5	J9	GL	1.00	EMO	A		O/C	/	S/D	RF		15	
3HP-426-SSF	OFD-101A-3.5	K9	GL	1.00	EMO	A		O/C	/	S/D	RF		15	
1HP-428-SSF	OFD-101A-1.5	J13	GT	3.00	EMO	A		O	/	QTR	RF			
2HP-428-SSF	OFD-101A-2.5	J13	GT	3.00	EMO	A		O	/	QTR	RF			
3HP-428-SSF	OFD-101A-3.5	J13	GT	3.00	EMO	A		O	/	QTR	RF			
1HP-454	OFD-101A-1.4	G10	CK	1.00		A/C		C	/	RF	RF	19		
2HP-454	OFD-101A-2.4	G10	SC	1.00	MAN	A/C		C	/	RF	RF	19		
3HP-454	OFD-101A-3.4	H11	CK	1.00		A/C		C	/	RF	RF	19		
1HP-457	OFD-101A-1.4	H10	CK	1.00		A/C		C	/	RF	RF	19		
3HP-457	OFD-101A-3.4	G11	SC	1.00	MAN	A/C		C	/	RF	RF	19		
1HPSW-184	OFD-124A-1.3	K10	GL	2.00	PST	B		O	O/O	QTR	None			
2HPSW-184	OFD-124A-2.3	K10	GL	2.00	AOV	B		O	O/O	QTR	None			
3HPSW-184	OFD-124A-3.3	K10	GL	2.00	PST	B		O	O/O	QTR	None			
1HPSW-193	OFD-124A-1.3	K11	CK	2.00		C		O	/	QTR	None			

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2HPSW-193	OFD-124A-2.3	K11	CK	2.00		C		O	/	QTR	None			
3HPSW-193	OFD-124A-3.3	K11	CK	2.00		C		O	/	QTR	None			
1IA-90	OFD-137B-1.2	D4	BL	3.00	MAN	A	Y	C	/	None	RF			
2IA-90	OFD-137B-1.2	D7	BL	3.00	MAN	A	Y	C	/	None	RF			
3IA-90	OFD-137B-1.2	D11	BL	3.00	MAN	A	Y	C	/	None	RF			
1IA-91	OFD-137B-1.2	C4	BL	3.00	MAN	A	Y	C	/	None	RF			
2IA-91	OFD-137B-1.2	C7	BL	3.00	MAN	A	Y	C	/	None	RF			
3IA-91	OFD-137B-1.2	C11	BL	3.00	MAN	A	Y	C	/	None	RF			
1LP-1	OFD-102A-1.1	H2	GT	12.00	EMO	B		O	/	S/D	None		6	
2LP-1	OFD-102A-2.1	H2	GT	12.00	EMO	B		O	/	S/D	None		6	
3LP-1	OFD-102A-3.1	H2	GT	12.00	EMO	B		O	/	S/D	None		6	
1LP-2	OFD-102A-1.1	H2	GT	12.00	EMO	B		O	/	S/D	None		6	
2LP-2	OFD-102A-2.1	H2	GT	12.00	EMO	B		O	/	S/D	None		6	
3LP-2	OFD-102A-3.1	H2	GT	12.00	EMO	B		O	/	S/D	None		6	
2LP-3	OFD-102A-2.1	H6	GT	10.00	EMO	B		O	/	QTR	None			
3LP-3	OFD-102A-3.1	H6	GT	12.00	EMO	B		O	/	QTR	None			
1LP-9	OFD-102A-1.2	I7	GT	10.00	EMO	B			/	QTR	None			
2LP-9	OFD-102A-2.2	I8	GT	10.00	EMO	B			/	QTR	None			
3LP-9	OFD-102A-3.2	I7	GT	10.00	EMO	B			/	QTR	None			
1LP-10	OFD-102A-1.2	G7	GT	10.00	EMO	B			/	QTR	None			
2LP-10	OFD-102A-2.2	H8	GT	10.00	EMO	B			/	QTR	None			
3LP-10	OFD-102A-3.2	G7	GT	10.00	EMO	B			/	QTR	None			
1LP-12	OFD-102A-1.2	K11	GL	8.00	EMO	B		O/C	/	QTR	None			
2LP-12	OFD-102A-2.2	K11	GL	8.00	EMO	B		O/C	/	QTR	None			
3LP-12	OFD-102A-3.2	K11	GL	8.00	EMO	B		O/C	/	QTR	None			
1LP-14	OFD-102A-1.2	E11	GL	8.00	EMO	B		O/C	/	QTR	None			
2LP-14	OFD-102A-2.2	E11	GL	8.00	EMO	B		O/C	/	QTR	None			
3LP-14	OFD-102A-3.2	E11	GL	8.00	EMO	B		O/C	/	QTR	None			
1LP-15	OFD-102A-1.2	L11	GT	4.00	EMO	B		O/C	/	QTR	None			
2LP-15	OFD-102A-2.2	L11	GT	4.00	EMO	B		O/C	/	QTR	None			
3LP-15	OFD-102A-3.2	K12	GT	4.00	EMO	B		O/C	/	QTR	None			
1LP-16	OFD-102A-1.2	O-4	GT	4.00	EMO	B		O/C	/	QTR	None			
2LP-16	OFD-102A-2.2	D11	GT	4.00	EMO	B		O/C	/	QTR	None			

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3LP-16	OFD-102A-3.2	E12	GT	4.00	EMO	B		O/C	/	QTR	None			
1LP-17	OFD-102A-1.2	K13	GT	10.00	EMO	B		O	/	QTR	None			
2LP-17	OFD-102A-2.2	K12	GT	10.00	EMO	B		O	/	QTR	None			
3LP-17	OFD-102A-3.2	K13	GT	10.00	EMO	B		O	/	QTR	None			
1LP-18	OFD-102A-1.2	E13	GT	10.00	EMO	B		O	/	QTR	None			
2LP-18	OFD-102A-2.2	E13	GT	10.00	EMO	B		O	/	QTR	None			
3LP-18	OFD-102A-3.2	E13	GT	10.00	EMO	B		O	/	QTR	None			
1LP-19	OFD-102A-1.1	D5	GT	14.00	EMO	B		O	/	QTR	None			
2LP-19	OFD-102A-2.1	D5	GT	14.00	EMO	B		O	/	QTR	None			
3LP-19	OFD-102A-3.1	D5	GT	14.00	EMO	B		O	/	QTR	None			
1LP-20	OFD-102A-1.1	D5	GT	14.00	EMO	B		O	/	QTR	None			
2LP-20	OFD-102A-2.1	D5	GT	14.00	EMO	B		O	/	QTR	None			
3LP-20	OFD-102A-3.1	D5	GT	14.00	EMO	B		O	/	QTR	None			
1LP-21	OFD-102A-1.1	F7	GT	14.00	EMO	B		C	/	QTR	None			
2LP-21	OFD-102A-2.1	E7	GT	14.00	EMO	B		C	/	QTR	None			
3LP-21	OFD-102A-3.1	E7	GT	14.00	EMO	B		C	/	QTR	None			
1LP-22	OFD-102A-1.1	D7	GT	14.00	EMO	B		C	/	QTR	None			
2LP-22	OFD-102A-2.1	D7	GT	14.00	EMO	B		C	/	QTR	None			
3LP-22	OFD-102A-3.1	D7	GT	14.00	EMO	B		C	/	QTR	None			
1LP-28	OFD-102A-1.1	H10	GT	14.00	MAN	B		C	/	S/D	None		31	
2LP-28	OFD-102A-2.1	H10	GT	14.00	MAN	B		C	/	S/D	None		31	
3LP-28	OFD-102A-3.1	H10	GT	14.00	MAN	B		C	/	/D	None		31	
1LP-29	OFD-102A-1.1	F6	CK	14.00		A/C		O	/	QTR	RF			
2LP-29	OFD-102A-2.1	F6	CK	14.00		A/C		O	/	QTR	RF			
3LP-29	OFD-102A-3.1	E7	CK	14.00		A/C		O	/	QTR	RF			
1LP-30	OFD-102A-1.1	D6	CK	14.00		A/C		O	/	QTR	RF			
2LP-30	OFD-102A-2.1	D6	CK	14.00		A/C		O	/	QTR	RF			
3LP-30	OFD-102A-3.1	C6	CK	14.00		A/C		O	/	QTR	RF			
1LP-31	OFD-102A-1.2	K5	CK	10.00		C		O/C	/	Q/SD	None		22	
2LP-31	OFD-102A-2.2	K5	CK	10.00		C		O/C	/	Q/SD	None		22	
3LP-31	OFD-102A-3.2	K5	CK	10.00		C		O/C	/	Q/SD	None		22	
1LP-33	OFD-102A-1.2	E6	CK	10.00		C		O/C	/	QTR	None			
2LP-33	OFD-102A-2.2	E5	CK	10.00		C		O/C	/	QTR	None			

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3LP-33	OFD-102A-3.2	E5	CK	10.00		C		O/C	/	QTR	None			
1LP-35	OFD-102A-1.2	H5	CK	10.00		C		C	/	QTR	None			
2LP-35	OFD-102A-2.2	H5	CK	10.00		C		C	/	QTR	None			
3LP-35	OFD-102A-3.2	H5	CK	10.00		C		C	/	QTR	None			
1LP-47	OFD-102A-1.2	E14	CK	10.00		A/C		O	/	S/D	S/D		7	
2LP-47	OFD-102A-2.2	E14	CK	10.00		A/C		O	/	S/D	S/D		7	
3LP-47	OFD-102A-3.2	E14	CK	10.00		A/C		O	/	S/D	S/D		7	
1LP-48	OFD-102A-1.2	K14	CK	10.00		A/C		O	/	S/D	S/D		7	
2LP-48	OFD-102A-2.2	K14	CK	10.00		A/C		O	/	S/D	S/D		7	
3LP-48	OFD-102A-3.2	K14	CK	10.00		A/C		O	/	S/D	S/D		7	
1LP-55	OFD-101A-1.3	K3	CK	3.00		C		O	/	S/RF	None	21		
2LP-55	OFD-101A-2.3	K3	CK	3.00		C		O	/	S/RF	None	21		
3LP-55	OFD-101A-3.3	K3	CK	3.00		C		O	/	S/RF	None	21		
1LP-57	OFD-101A-1.3	C3	CK	3.00		C		O	/	S/RF	None	21		
2LP-57	OFD-101A-2.3	C3	CK	3.00		C		O	/	S/RF	None	21		
3LP-57	OFD-101A-3.3	D2	CK	3.00		C		O	/	S/RF	None	21		
1LP-60	OFD-102A-1.1	J9	VB	8.00		C		O/C	/					
2LP-60	OFD-102A-2.1	J9	VB	8		C		O/C	/					
3LP-60	OFD-102A-3.1	J9	VB	8		C		O/C	/					
1LP-61	OFD-102A-1.1	J10	VB	8.00		C		O/C	/					
2LP-61	OFD-102A-2.1	J10	VB	8		C		O/C	/					
3LP-61	OFD-102A-3.1	J10	VB	8		C		O/C	/					
1LP-103	OFD-102A-1.1	H2	GT	3.00	EMO	B		O	/	S/D	None		8	
2LP-103	OFD-102A-2.1	H2	GT	3.00	EMO	B		O	/	S/D	None		8	
3LP-103	OFD-102A-3.1	G2	GT	3.00	EMO	B		O	/	S/D	None		8	
1LP-104	OFD-102A-1.1	F2	GT	3.00	EMO	B		O	/	S/D	None		8	
2LP-104	OFD-102A-2.1	F2	GT	3.00	EMO	B		O	/	S/D	None		8	
3LP-104	OFD-102A-3.1	G2	GT	3.00	EMO	B		O	/	S/D	None		8	
1LP-105	OFD-102A-1.1	H2	GT	8.00	EMO	B		O	/	QTR	None			
1LPSW-4	OFD-124B-1.1	K6	GT	16.00	EMO	B		O/C	/	QTR	None			
2LPSW-4	OFD-124B-2.1	K6	GT	16.00	EMO	B		O/C	/	QTR	None			
3LPSW-4	OFD-124B-3.1	K6	GT	16.00	EMO	B		O/C	/	QTR	None			
1LPSW-5	OFD-124B-1.1	H6	GT	16.00	EMO	B		O/C	/	QTR	None			

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
2LPSW-5	OFD-124B-2.1	H6	GT	16.00	EMO	B		O/C	/	QTR	None			
3LPSW-5	OFD-124B-3.1	H6	GT	16.00	EMO	B		O/C	/	QTR	None			
1LPSW-6	OFD-124B-1.4	L2	GT	10.00	EMO	B		C	/	S/D	None		17	
2LPSW-6	OFD-124B-2.4	L2	GT	10.00	EMO	B		C	/	S/D	None		17	
3LPSW-6	OFD-124B-3.4	L2	GT	10.00	EMO	B		C	/	S/D	None		17	
1LPSW-15	OFD-124B-1.4	G14	BF	10.00	EMO	A		C	/	S/D	RF		17	
2LPSW-15	OFD-124B-2.4	G14	BF	10.00	EMO	A		C	/	S/D	RF		17	
3LPSW-15	OFD-124B-3.4	G14	BF	10.00	EMO	A		C	/	S/D	RF		17	
1LPSW-18	OFD-124B-1.2	D3	BF	8.00	EMO	B		O	/	QTR	None			
2LPSW-18	OFD-124B-2.2	D3	GL	8.00	EMO	B		O	/	QTR	None			
3LPSW-18	OFD-124B-3.2	C3	BF	8.00	EMO	B		O	/	QTR	None			
1LPSW-21	OFD-124B-1.2	D8	BF	8.00	EMO	B		O	/	QTR	None			
2LPSW-21	OFD-124B-2.2	D8	GL	8.00	EMO	B		O	/	QTR	None			
3LPSW-21	OFD-124B-3.2	C8	BF	8.00	EMO	B		O	/	QTR	None			
1LPSW-24	OFD-124B-1.2	D12	BF	8.00	EMO	B		O	/	QTR	None			
2LPSW-24	OFD-124B-2.2	D12	GL	8.00	EMO	B		O	/	QTR	None			
3LPSW-24	OFD-124B-3.2	C12	BF	8.00	EMO	B		O	/	QTR	None			
LPSW-25	OFD-124A-1.1	D7	CK	24.0		C		O/C	/	QTR	None			
LPSW-28	OFD-124A-1.1	J7	CK	24.00		C		O/C	/	QTR	None			
LPSW-31	OFD-124A-1.1	G7	CK	24.00		C		O/C	/	QTR	None			
3LPSW-45	OFD-124A-3.1	E10	BF	14.00	EMO	B		C	/	S/D	None		34	
1LPSW-75	OFD-124B-1.1	K6	CK	16.00		C		O	/	QTR	None			
2LPSW-75	OFD-124B-2.1	K7	CK	16.00		C		O	/	QTR	None			
3LPSW-75	OFD-124B-3.1	K6	CK	16.00		C		O	/	QTR	None			
1LPSW-76	OFD-124B-1.1	H6	CK	16.00		C		O	/	QTR	None			
2LPSW-76	OFD-124B-2.1	H7	CK	16.00		C		O	/	QTR	None			
3LPSW-76	OFD-124B-3.1	H6	CK	16.00		C		O	/	QTR	None			
3LPSW-121	OFD-124A-3.1	J7	CK	24.00		C		O/C	/	QTR	None			
3LPSW-124	OFD-124A-3.1	G7	CK	24.00		C		O/C	/	QTR	None			
1LPSW-137	OFD-124A-1.3	K11	GT	1.50	EMO	B		O	/	QTR	None			
2LPSW-137	OFD-124A-2.3	K11	GT	1.50	EMO	B		O	/	QTR	None			
3LPSW-137	OFD-124A-3.3	K11	GT	1.50	EMO	B		O	/	QTR	None			
1LPSW-138	OFD-124A-1.3	L11	GL	2.00	PST	B		O	O/O	QTR	None			

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
2LPSW-138	OFD-124A-2.3	L11	GL	2.00	PST	B		O	O/O	QTR	None			
3LPSW-138	OFD-124A-3.3	L11	GL	2.00	PST	B		O	O/O	QTR	None			
1LPSW-139	OFD-124A-1.1	C8	BF	24.00	EMO	B		C	/	RF	None	29		
1LPSW-148	OFD-124B-1.1	L4	CK	1.00		C		O/C	/	QTR	None	28		
2LPSW-148	OFD-124B-2.1	L7	CK	1.00		C		O/C	/	QTR	None			
3LPSW-148	OFD-124B-3.1	L4	CK	1.00		C		O/C	/	QTR	None	28		
1LPSW-151	OFD-124B-1.1	F3	CK	1.00		C		O/C	/	QTR	None	28		
2LPSW-151	OFD-124B-2.1	G10	CK	1.00		C		O/C	/	QTR	None			
3LPSW-151	OFD-124B-3.1	F8	CK	1.00		C		O/C	/	QTR	None			
1LPSW-251	OFD-124B-1.1	J8	BL	10.00	AOV	B		O	O/O	QTR	None			
2LPSW-251	OFD-124B-2.1	J8	BL	10.00	AOV	B		O	O/O	QTR	None			
1LPSW-252	OFD-124B-1.1	I8	BL	10.00	AOV	B		O	O/O	QTR	None			
2LPSW-252	OFD-124B-2.1	I8	BL	10.00	AOV	B		O	O/O	QTR	None			
3LPSW-404	OFD-124B-3.1	H7	BL	10.00	AOV	B		O	O/O	QTR	None			
3LPSW-405	OFD-124B-3.1	K7	BL	10.00	AOV	B		O	O/O	QTR	None			
2LPSW-503	OFD-124B-2.1	G3	CK	1.00		C		O/C	/	QTR	None	28		
3LPSW-503	OFD-124B-3.1	F3	CK	1.00		C		O	/	QTR	None	28		
1LPSW-516	OFD-124A-1.3	K5	BL	2.00	PST	B		O	O/O	QTR	None			
2LPSW-516	OFD-124A-2.3	K5	BL	2.00	PST	B		O	O/O	QTR	None			
3LPSW-516	OFD-124A-3.3	K5	BL	2.00	PST	B		O	O/O	QTR	None			
1LPSW-525	OFD-124A-1.3	J5	BL	2.00	PST	B		O	O/O	QTR	None			
2LPSW-525	OFD-124A-2.3	J5	BL	2.00	PST	B		O	O/O	QTR	None			
3LPSW-525	OFD-124A-3.3	J5	BL	2.00	PST	B		O	O/O	QTR	None			
1LPSW-565	OFD-124B-1.2	J8	GT	8.00	EMO	B		C	/	QTR	None			
2LPSW-565	OFD-124B-2.2	J8	GT	8.00	EMO	B		C	/	QTR	None			
3LPSW-565	OFD-124B-3.2	I8	GT	8.00	EMO	B		C	/	QTR	None			
1LPSW-566	OFD-124B-1.2	I8	GT	8.00	EMO	B		O	/	QTR	None			
2LPSW-566	OFD-124B-2.2	I8	GT	8.00	EMO	B		O	/	QTR	None			
3LPSW-566	OFD-124B-3.2	I8	GT	8.00	EMO	B		O	/	QTR	None			
2LPSW-900	OFD-124C-2.2	H10	CK	2.00		C		O	/	QTR	None			
1LRT-17	OFD-137E-1.1	K10	DP	8.00	AOV	A	Y	C	C/	None	RF			
2LRT-17	OFD-137E-1.1	H10	DP	8.00	AOV	A	Y	C	C/	None	RF			
3LRT-17	OFD-137E-1.1	E9	DP	8.00	AOV	A	Y	C	C/	None	RF			

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
1LRT-24	OFD-137E-1.1	I12	GL	0.5	MAN	A	Y	C	/	None	RF			
2LRT-24	OFD-137E-1.1	G11	DP	1.00	MAN	A	Y	C	/	None	RF			
3LRT-24	OFD-137E-1.1	C11	GL	0.5	MAN	A	Y	C	/	None	RF			
1LRT-25	OFD-137E-1.1	I12	GL	0.5	MAN	A	Y	C	/	None	RF			
2LRT-25	OFD-137E-1.1	G11	GL	0.5	MAN	A	Y	C	/	None	RF			
3LRT-25	OFD-137E-1.1	C11	GL	0.5	MAN	A	Y	C	/	None	RF			
2LRT-36	OFD-137E-1.1	F11	GL	0.5	MAN	A	Y	C	/	None	RF			
3LRT-36	OFD-137E-1.1	C11	GL	0.5	MAN	A	Y	C	/	None	RF			
2LRT-37	OFD-137E-1.1	F11	GL	0.5	MAN	A	Y	C	/	None	RF			
3LRT-37	OFD-137E-1.1	C11	GL	0.5	MAN	A	Y	C	/	None	RF			
1LRT-38	OFD-137E-1.1	J12	GL	0.5	MAN	A	Y	C	/	None	RF			
2LRT-38	OFD-137E-1.1	H11	GL	0.5	MAN	A	Y	C	/	None	RF			
3LRT-38	OFD-137E-1.1	D11	GL	0.5	MAN	A	Y	C	/	None	RF			
1LRT-39	OFD-137E-1.1	J13	GL	0.5	MAN	A	Y	C	/	None	RF			
2LRT-39	OFD-137E-1.1	H12	GL	0.5	MAN	A	Y	C	/	None	RF			
3LRT-39	OFD-137E-1.1	D11	GL	0.5	MAN	A	Y	C	/	None	RF			
1LWD-1	OFD-107B-1.1	C11	DP	2.00	EMO	A		C	/	QTR	RF			
2LWD-1	OFD-107B-2.1	C11	DP	2.00	EMO	A		C	/	QTR	RF			Reverse Direction Leak Test
3LWD-1	OFD-107B-3.1	C11	DP	2.00	EMO	A		C	/	QTR	RF			
1LWD-2	OFD-107B-1.1	C11	DP	2.00	AOV	A		C	C/C	QTR	RF			Reverse Direction Leak Test
2LWD-2	OFD-107B-2.1	C12	DP	2.00	AOV	A		C	C/C	QTR	RF			
3LWD-2	OFD-107B-3.1	C12	DP	2.00	AOV	A		C	C/C	QTR	RF			Reverse Direction Leak Test
1LWD-99	OFD-107D-1.2	E9	GT	2.00	MAN	A	Y	C	/	None	ILRT			
2LWD-99	OFD-107D-2.2	G8	GT	2.00	MAN	A	Y	C	/	None	ILRT			
3LWD-99	OFD-107D-3.2	G3	GT	2.00	MAN	A	Y	C	/	None	ILRT			
1LWD-103	OFD-107D-1.2	E9	GT	2.00	MAN	A	Y	C	/	None	ILRT			
2LWD-103	OFD-107D-2.2	G8	GT	2.00	MAN	A	Y	C	/	None	ILRT			
3LWD-103	OFD-107D-3.2	G3	GT	2.00	MAN	A	Y	C	/	None	ILRT			
1MS-1	OFD-122A-1.1	J9	RV	6.00		C		O/C	/					
2MS-1	OFD-122A-2.1	J9	RV	6.00		C		O/C	/					
3MS-1	OFD-122A-3.1	J9	RV	6.00		C		O/C	/					
1MS-2	OFD-122A-1.1	J4	RV	6.00		C		O/C	/					
2MS-2	OFD-122A-2.1	J4	RV	6.00		C		O/C	/					

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
3MS-2	OFD-122A-3.1	J4	RV	6.00		C		O/C	/					
1MS-3	OFD-122A-1.1	J7	RV	6.00		C		O/C	/					
2MS-3	OFD-122A-2.1	J7	RV	6.00		C		O/C	/					
3MS-3	OFD-122A-3.1	J7	RV	6.00		C		O/C	/					
1MS-4	OFD-122A-1.1	J5	RV	6.00		C		O/C	/					
2MS-4	OFD-122A-2.1	J5	RV	6.00		C		O/C	/					
3MS-4	OFD-122A-3.1	J5	RV	6.00		C		O/C	/					
1MS-5	OFD-122A-1.1	J8	RV	6.00		C		O/C	/					
2MS-5	OFD-122A-2.1	J8	RV	6.00		C		O/C	/					
3MS-5	OFD-122A-3.1	J8	RV	6.00		C		O/C	/					
1MS-6	OFD-122A-1.1	J5	RV	6.00		C		O/C	/					
2MS-6	OFD-122A-2.1	J5	RV	6.00		C		O/C	/					
3MS-6	OFD-122A-3.1	J5	RV	6.00		C		O/C	/					
1MS-7	OFD-122A-1.1	J7	RV	6.00		C		O/C	/					
2MS-7	OFD-122A-2.1	J7	RV	6.00		C		O/C	/					
3MS-7	OFD-122A-3.1	J7	RV	6.00		C		O/C	/					
1MS-8	OFD-122A-1.1	J6	RV	6.00		C		O/C	/					
2MS-8	OFD-122A-2.1	J6	RV	6.00		C		O/C	/					
3MS-8	OFD-122A-3.1	J6	RV	6.00		C		O/C	/					
1MS-9	OFD-122A-1.1	D9	RV	6.00		C		O/C	/					
2MS-9	OFD-122A-2.1	D9	RV	6.00		C		O/C	/					
3MS-9	OFD-122A-3.1	D9	RV	6.00		C		O/C	/					
1MS-10	OFD-122A-1.1	D4	RV	6.00		C		O/C	/					
2MS-10	OFD-122A-2.1	D4	RV	6.00		C		O/C	/					
3MS-10	OFD-122A-3.1	D4	RV	6.00		C		O/C	/					
1MS-11	OFD-122A-1.1	D7	RV	6.00		C		O/C	/					
2MS-11	OFD-122A-2.1	D7	RV	6.00		C		O/C	/					
3MS-11	OFD-122A-3.1	D7	RV	6.00		C		O/C	/					
1MS-12	OFD-122A-1.1	D5	RV	6.00		C		O/C	/					
2MS-12	OFD-122A-2.1	D5	RV	6.00		C		O/C	/					
3MS-12	OFD-122A-3.1	D5	RV	6.00		C		O/C	/					
1MS-13	OFD-122A-1.1	D8	RV	6.00		C		O/C	/					
2MS-13	OFD-122A-2.1	D8	RV	6.00		C		O/C	/					

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
3MS-13	OFD-122A-3.1	D8	RV	6.00		C		O/C	/					
1MS-14	OFD-122A-1.1	D5	RV	6.00		C		O/C	/					
2MS-14	OFD-122A-2.1	D5	RV	6.00		C		O/C	/					
3MS-14	OFD-122A-3.1	D5	RV	6.00		C		O/C	/					
1MS-15	OFD-122A-1.1	D7	RV	6.00		C		O/C	/					
2MS-15	OFD-122A-2.1	D7	RV	6.00		C		O/C	/					
3MS-15	OFD-122A-3.1	D7	RV	6.00		C		O/C	/					
1MS-16	OFD-122A-1.1	D6	RV	6.00		C		O/C	/					
2MS-16	OFD-122A-2.1	D6	RV	6.00		C		O/C	/					
3MS-16	OFD-122A-3.1	D6	RV	6.00		C		O/C	/					
1MS-17	OFD-122A-1.2	I5	GT	12.00	EMO	B		C	/	S/D	None		21	
2MS-17	OFD-122A-2.2	I5	GT	12.00	EMO	B		C	/	S/D	None		21	
3MS-17	OFD-122A-3.2	I5	GT	12.00	EMO	B		C	/	S/D	None		21	
1MS-24	OFD-122A-1.2	H3	GT	6.00	EMO	B		O/C	/	QTR	None			
2MS-24	OFD-122A-2.2	H3	GT	6.00	EMO	B		O/C	/	QTR	None			
3MS-24	OFD-122A-3.2	H3	GT	6.00	EMO	B		O/C	/	QTR	None			
1MS-25	OFD-122A-1.2	G3	CK	6.00		C		O	/	RF	None	31		
2MS-25	OFD-122A-2.2	G3	CK	4.00		C		O	/	RF	None	31		
3MS-25	OFD-122A-3.2	G3	CK	6.00		C		O	/	RF	None	31		
1MS-26	OFD-122A-1.2	D5	GT	12.00	EMO	B		C	/	S/D	None		21	
2MS-26	OFD-122A-2.2	D5	GT	12.00	EMO	B		C	/	S/D	None		21	
3MS-26	OFD-122A-3.2	D5	GT	12.00	EMO	B		C	/	S/D	None		21	
1MS-33	OFD-122A-1.2	E3	GT	6.00	EMO	B		O/C	/	QTR	None			
2MS-33	OFD-122A-2.2	E3	GT	6.00	EMO	B		O/C	/	QTR	None			
3MS-33	OFD-122A-3.2	E3	GT	6.00	EMO	B		O/C	/	QTR	None			
1MS-34	OFD-122A-1.2	F3	CK	6.00		C		O	/	RF	None	31		
2MS-34	OFD-122A-2.2	F3	CK	4.00		C		O	/	RF	None	31		
3MS-34	OFD-122A-3.2	E3	CK	6.00		C		O	/	RF	None	31		
1MS-35	OFD-122A-1.3	L2	GT	8.00	EMO	B		C	/	S/D	None		25	
2MS-35	OFD-122A-2.3	L2	GT	8.00	EMO	B		C	/	S/D	None		25	
3MS-35	OFD-122A-3.3	L2	GT	8.00	EMO	B		C	/	S/D	None		25	
1MS-36	OFD-122A-1.3	F2	GT	8.00	EMO	B		C	/	S/D	None		25	
2MS-36	OFD-122A-2.3	F2	GT	8.00	EMO	B		C	/	S/D	None		25	

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
3MS-36	OFD-122A-3.3	F2	GT	8.00	EMO	B		C	/	S/D	None		25	
1MS-76	OFD-122A-1.1	C10	GT	12.00	EMO	B		C	/	S/D	None		26	
2MS-76	OFD-122A-2.1	I10	GT	12.00	EMO	B		C	/	S/D	None		26	
3MS-76	OFD-122A-3.1	I10	GT	12.00	EMO	B		C	/	S/D	None		26	
1MS-79	OFD-122A-1.1	I10	GT	12.00	EMO	B		C	/	S/D	None		26	
2MS-79	OFD-122A-2.1	C10	GT	12.00	EMO	B		C	/	S/D	None		26	
3MS-79	OFD-122A-3.1	C10	GT	12.00	EMO	B		C	/	S/D	None		26	
1MS-82	OFD-122A-1.4	I2	GT	6.00	EMO	B		C	/	QTR	None			
2MS-82	OFD-122A-2.4	I2	GT	6.00	EMO	B		C	/	QTR	None			
3MS-82	OFD-122A-3.4	I2	GT	6.00	EMO	B		C	/	QTR	None			
1MS-83	OFD-122A-1.4	H2	CK	6.00		C		O	/	QTR	None			
2MS-83	OFD-122A-2.4	H2	CK	4.00		C		O	/	QTR	None			
3MS-83	OFD-122A-3.4	H2	CK	6.00		C		O	/	QTR	None			
1MS-84	OFD-122A-1.4	G2	GT	6.00	EMO	B		C	/	QTR	None			
2MS-84	OFD-122A-2.4	G2	GT	6.00	EMO	B		C	/	QTR	None			
3MS-84	OFD-122A-3.4	G2	GT	6.00	EMO	B		C	/	QTR	None			
1MS-85	OFD-122A-1.4	G2	CK	6.00		C		O	/	QTR	None			
2MS-85	OFD-122A-2.4	G2	CK	6.00		C		O	/	QTR	None			
3MS-85	OFD-122A-3.4	G2	CK	6.00		C		O	/	QTR	None			
1MS-87	OFD-122A-1.4	H3	GL	2.00	AOV	B		O/C	O/O	QTR	None			Reg. valve, not timed (Nitrogen Backup)
2MS-87	OFD-122A-2.4	H3	GL	2.00	AOV	B		O/C	O/O	QTR	None			Reg. valve, not timed (Nitrogen Backup)
3MS-87	OFD-122A-3.4	H3	BL	2.00	AOV	B		O/C	O/O	QTR	None			Reg. valve, not timed (Nitrogen Backup)
1MS-91	OFD-122A-1.4	H5	CK	6.00		C		O	/	QTR	None			
2MS-91	OFD-122A-2.4	H5	CK	6.00		C		O	/	QTR	None			
3MS-91	OFD-122A-3.4	H5	CK	6.00		C		O	/	QTR	None			
1MS-92	OFD-122A-1.4	H6	RV	3X4		C		O/C	/					
2MS-92	OFD-122A-2.4	H6	RV	3X4		C		O/C	/					
3MS-92	OFD-122A-3.4	H6	RV	3X4		C		O/C	/					
1MS-93	OFD-122A-1.4	H7	BL	6.00	AOV	B		O	O/O	QTR	None			
2MS-93	OFD-122A-2.4	H7	BL	6.00	AOV	B		O	O/O	QTR	None			

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
3MS-93	OFD-122A-3.4	H7	BL	6.00	AOV	B		O	O/O	QTR	None			
1MS-94	OFD-122A-1.4	H8	ST	6.00	SPR	B		C	C/	QTR	None			
2MS-94	OFD-122A-2.4	H8	ST	6.00	SPR	B		C	C/	QTR	None			
3MS-94	OFD-122A-3.4	H8	ST	6.00	SPR	B		C	C/	QTR	None			
1MS-102	OFD-122B-1.1	J3	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
2MS-102	OFD-122B-2.1	J3	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
3MS-102	OFD-122B-3.1	J3	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
1MS-103	OFD-122B-1.1	J4	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
2MS-103	OFD-122B-2.1	J4	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
3MS-103	OFD-122B-3.1	J4	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
1MS-104	OFD-122B-1.1	J4	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
2MS-104	OFD-122B-2.1	J4	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
3MS-104	OFD-122B-3.1	J4	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
1MS-105	OFD-122B-1.1	J5	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
2MS-105	OFD-122B-2.1	J5	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
3MS-105	OFD-122B-3.1	J5	ST	24.00	EHO	B		C	/C	Q/SD	None		11	
1N-106	OFD-127B-1.2	E4	GL	1.00	MAN	A	Y	C	/	None	RF			
1N-107	OFD-127B-1.2	F4	GL	1.00	MAN	A	Y	C	/	None	RF			
1N-129	OFD-127B-1.2	G7	CK	1.00		A/C		C	/	RF	RF	30		
2N-129	OFD-127B-2.2	G7	CK	1.00		A/C		C	/	RF	RF	30		
3N-129	OFD-127B-3.2	G7	CK	1.00		A/C		C	/	RF	RF	30		
1N-131	OFD-127B-1.2	J7	CK	1.00		A/C		C	/	RF	RF	30		
2N-131	OFD-127B-2.2	J7	CK	1.00		A/C		C	/	RF	RF	30		
3N-131	OFD-127B-3.2	J7	CK	1.00		A/C		C	/	RF	RF	30		
1N-246	OFD-127B-1.2	E10	CK	1.50		A	Y	C	/	None	RF			
2N-246	OFD-127B-2.2	E10	CK	1.50		A	Y	C	/	None	RF			
3N-246	OFD-127B-3.2	E10	CK	1.50		A	Y	C	/	None	RF			
2N-263	OFD-127B-2.2	E7	GL	2.00	MAN	A	Y	C	/	None	RF			
3N-263	OFD-127B-3.2	E7	GL	1.50	MAN	A	Y	C	/	None	RF			
1PR-1	OFD-116A-1.1	F3	BF	48.00	EMO	A		C	/	S/D	RF			Reverse Direction Leak Test,Ref. T.S. 4.4.4 for stroke freq.
2PR-1	OFD-116A-2.1	G3	BF	48.00	EMO	A		C	/	S/D	RF			Reverse Direction Leak Test,Ref. T.S. 4.4.4 for stroke freq.

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
3PR-1	OFD-116A-3.1	G3	BF	48.00	EMO	A		C	/	S/D	RF			Reverse Direction Leak Test,Ref. T.S. 4.4.4 for stroke freq.
1PR-2	OFD-116A-1.1	F5	BF	48.00	PST	A		C	C/C	S/D	RF			Ref. T.S. 4.4.4 for stroke freq.
2PR-2	OFD-116A-2.1	G5	BF	48.00	PST	A		C	C/C	S/D	RF			Ref. T.S. 4.4.4 for stroke freq.
3PR-2	OFD-116A-3.1	G5	BF	48.00	PST	A		C	C/C	S/D	RF			Ref. T.S. 4.4.4 for stroke freq.
1PR-5	OFD-116A-1.1	D5	BF	48.00	PST	A		C	C/C	S/D	RF			Ref. T.S. 4.4.4 for stroke freq.
2PR-5	OFD-116A-2.1	D5	BF	48.00	PST	A		C	C/C	S/D	RF			Ref. T.S. 4.4.4 for stroke freq.
3PR-5	OFD-116A-3.1	D5	BF	48.00	PST	A		C	C/C	S/D	RF			Ref. T.S. 4.4.4 for stroke freq.
1PR-6	OFD-116A-1.1	D3	BF	48.00	EMO	A		C	/	S/D	RF			Reverse Direction Leak Test,Ref. T.S. 4.4.4 for stroke freq.
2PR-6	OFD-116A-2.1	D3	BF	48.00	EMO	A		C	/	S/D	RF			Reverse Direction Leak Test,Ref. T.S. 4.4.4 for stroke freq.
3PR-6	OFD-116A-3.1	D3	BF	48.00	EMO	A		C	/	S/D	RF			Reverse Direction Leak Test,Ref. T.S. 4.4.4 for stroke freq.
1PR-7	OFD-116C-1.1	G3	DP	2.00	EMO	A		O/C	/	QTR	RF			Reverse Direction Leak Test
2PR-7	OFD-116C-2.1	G3	DP	2.00	EMO	A		O/C	/	QTR	RF			Reverse Direction Leak Test
3PR-7	OFD-116C-3.1	G3	DP	2.00	EMO	A		O/C	/	QTR	RF			Reverse Direction Leak Test
1PR-8	OFD-116C-1.1	K3	DP	2.00	AOV	A		O/C	C/O	QTR	RF			
2PR-8	OFD-116C-2.1	K3	DP	2.00	AOV	A		O/C	C/O	QTR	RF			
3PR-8	OFD-116C-3.1	K3	DP	2.00	AOV	A		O/C	C/O	QTR	RF			
1PR-9	OFD-116C-1.1	D2	DP	2.00	EMO	A		O/C	/	QTR	RF			Reverse Direction Leak Test
2PR-9	OFD-116C-2.1	D2	DP	2.00	EMO	A		O/C	/	QTR	RF			Reverse Direction Leak Test
3PR-9	OFD-116C-3.1	D2	DP	2.00	EMO	A		O/C	/	QTR	RF			Reverse Direction Leak Test
1PR-10	OFD-116C-1.1	C4	DP	2.00	AOV	A		O/C	C/O	QTR	RF			
2PR-10	OFD-116C-2.1	C4	DP	2.00	AOV	A		O/C	C/O	QTR	RF			
3PR-10	OFD-116C-3.1	C4	DP	2.00	AOV	A		O/C	C/O	QTR	RF			
1PR-15	OFD-116B-1.1	I11	BF	12.00	EMO	B		O	/	QTR	None			
2PR-15	OFD-116B-2.1	I11	BF	12.00	EMO	B		O	/	QTR	None			
3PR-15	OFD-116B-3.1	I11	BF	12.00	EMO	B		O	/	QTR	None			
1PR-19	OFD-116B-1.1	E11	BF	12.00	EMO	B		O	/	QTR	None			
2PR-19	OFD-116B-2.1	E11	BF	12.00	EMO	B		O	/	QTR	None			
3PR-19	OFD-116B-3.1	E11	BF	12.00	EMO	B		O	/	QTR	None			
1PR-34	OFD-116B-1.1	I11	CK	8.00		C		O/C	/	QTR	None			

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2PR-34	OFD-116B-2.1	I11	CK	8.00		C		O/C	/	QTR	None			
3PR-34	OFD-116B-3.1	I11	CK	8.00		C		O/C	/	QTR	None			
1PR-35	OFD-116B-1.1	E11	CK	8.00		C		O/C	/	QTR	None			
2PR-35	OFD-116B-2.1	E11	CK	8.00		C		O/C	/	QTR	None			
3PR-35	OFD-116B-3.1	E11	CK	8.00		C		O/C	/	QTR	None			
1PR-59	OFD-116C-1.1	H2	DP	2.00	EMO	A		O	/	QTR	RF			Reverse Direction Leak Test
2PR-59	OFD-116C-2.1	H3	DP	2.00	EMO	A		O	/	QTR	RF			Reverse Direction Leak Test
3PR-59	OFD-116C-3.1	H3	DP	3.00	EMO	A		O	/	QTR	RF			Reverse Direction Leak Test
1PR-60	OFD-116C-1.1	D3	DP	2.00	EMO	A		O	/	QTR	RF			Reverse Direction Leak Test
2PR-60	OFD-116C-2.1	D3	DP	2.00	EMO	A		O	/	QTR	RF			Reverse Direction Leak Test
3PR-60	OFD-116C-3.1	D3	DP	3.00	EMO	A		O	/	QTR	RF			Reverse Direction Leak Test
1PR-61	OFD-116C-1.1	F9	DP	3.00	MAN	B		O	/	QTR	None			
2PR-61	OFD-116C-2.1	E9	DP	3.00	MAN	B		O	/	QTR	None			
3PR-61	OFD-116C-3.1	E9	DP	3.00	MAN	B		O	/	QTR	None			
1PR-69	OFD-116C-1.1	J10	PG	2.00	MAN	B		C	/	QTR	None			
2PR-69	OFD-116C-2.1	J10	BL	2.00	MAN	B		C	/	QTR	None			
3PR-69	OFD-116C-3.1	J10	PG	2.00	MAN	B		C	/	QTR	None			
1PR-70	OFD-116C-1.1	D10	PG	2.00	MAN	B		C	/	QTR	None			
2PR-70	OFD-116C-2.1	D10	BL	2.00	MAN	B		C	/	QTR	None			
3PR-70	OFD-116C-3.1	D10	PG	2.00	MAN	B		C	/	QTR	None			
1PR-81	OFD-110A-1.3	J6	SN	0.50	SOV	A		O	/C	QTR	RF			
2PR-81	OFD-110A-2.3	J6	SN	0.50	SOV	A		O	/C	QTR	RF			
3PR-81	OFD-110A-3.3	J6	SN	0.50	SOV	A		O	/C	QTR	RF			
1PR-84	OFD-110A-1.3	K6	SN	0.50	SOV	A		O	/C	QTR	RF			
2PR-84	OFD-110A-2.3	K6	SN	0.50	SOV	A		O	/C	QTR	RF			
3PR-84	OFD-110A-3.3	K6	SN	0.50	SOV	A		O	/C	QTR	RF			
1PR-87	OFD-110A-1.3	E6	SN	0.50	SOV	A		O	/C	QTR	RF			
2PR-87	OFD-110A-2.3	E6	SN	0.50	SOV	A		O	/C	QTR	RF			
3PR-87	OFD-110A-3.3	E6	SN	0.50	SOV	A		O	/C	QTR	RF			
1PR-90	OFD-110A-1.3	F6	SN	0.50	SOV	A		O	/C	QTR	RF			
2PR-90	OFD-110A-2.3	F6	SN	0.50	SOV	A		O	/C	QTR	RF			
3PR-90	OFD-110A-3.3	F6	SN	0.50	SOV	A		O	/C	QTR	RF			
1RC-1	OFD-100A-1.2	H10	GL	2.50	SOV	B		O/C	/C	S/D	None			

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
2RC-1	OFD-100A-2.2	H10	GL	2.50	SOV	B		O/C	/C	S/D	None			
3RC-1	OFD-100A-3.2	H10	GL	2.50	SOV	B		O/C	/C	S/D	None			
1RC-4	OFD-100A-1.2	J9	GT	3.00	EMO	B		C	/	QTR	None			
2RC-4	OFD-100A-2.2	J9	GT	3.00	EMO	B		C	/	QTR	None			
3RC-4	OFD-100A-3.2	J9	GT	3.00	EMO	B		C	/	QTR	None			
1RC-5	OFD-110A-1.1	I3	GT	0.75	EMO	A		C	/	QTR	RF			
2RC-5	OFD-110A-2.1	I3	GL	0.50	EMO	A		C	/	QTR	RF			
3RC-5	OFD-110A-3.1	I3	GT	0.75	EMO	A		C	/	QTR	RF			
1RC-6	OFD-110A-1.1	H3	GT	0.75	EMO	A		C	/	QTR	RF			
2RC-6	OFD-110A-2.1	H3	GL	0.50	EMO	A		C	/	QTR	RF			
3RC-6	OFD-110A-3.1	H3	GL	0.50	EMO	A		C	/	QTR	RF			
1RC-7	OFD-110A-1.1	I6	GT	0.50	PST	A		C	C/C	QTR	RF			
2RC-7	OFD-110A-2.1	I6	GT	0.50	PST	A		C	C/C	QTR	RF			
3RC-7	OFD-110A-3.1	I6	GT	0.50	PST	A		C	C/C	QTR	RF			
1RC-66	OFD-100A-1.2	J9	RV	2.50		C		O/C	/					
2RC-66	OFD-100A-2.2	J9	RV	2.50		C		O/C	/					
3RC-66	OFD-100A-3.2	J9	RV	2.50		C		O/C	/					
1RC-67	OFD-100A-1.2	J8	RV	2.5		C		O/C	/					
2RC-67	OFD-100A-2.2	J8	RV	2.5		C		O/C	/					
3RC-67	OFD-100A-3.2	J8	RV	2.5		C		O/C	/					
1RC-68	OFD-100A-1.2	J7	RV	2.5		C		O/C	/					
2RC-68	OFD-100A-2.2	J7	RV	2.5		C		O/C	/					
3RC-68	OFD-100A-3.2	J7	RV	2.5		C		O/C	/					
1RC-155	OFD-100A-1.1	I4	SN	1.00	SOV	B		O	/C	S/D	None		9	
2RC-155	OFD-100A-2.1	J4	SN	1.00	SOV	B		O	/C	S/D	None		9	
3RC-155	OFD-100A-3.1	J4	SN	1.00	SOV	B		O	/C	S/D	None		9	
1RC-156	OFD-100A-1.1	J4	SN	1.00	SOV	B		O	/C	S/D	None		9	
2RC-156	OFD-100A-2.1	J4	SN	1.00	SOV	B		O	/C	S/D	None		9	
3RC-156	OFD-100A-3.1	J4	SN	1.00	SOV	B		O	/C	S/D	None		9	
1RC-157	OFD-100A-1.1	I12	SN	1.00	SOV	B		O	/C	S/D	None		9	
2RC-157	OFD-100A-2.1	I11	SN	1.00	SOV	B		O	/C	S/D	None		9	
3RC-157	OFD-100A-3.1	I12	SN	1.00	SOV	B		O	/C	S/D	None		9	
1RC-158	OFD-100A-1.1	I11	SN	1.00	SOV	B		O	/C	S/D	None		9	

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2RC-158	OFD-100A-2.1	I11	SN	1.00	SOV	B		O	/C	S/D	None		9	
3RC-158	OFD-100A-3.1	I11	SN	1.00	SOV	B		O	/C	S/D	None		9	
1RC-159	OFD-100A-1.1	I9	SN	1.00	SOV	B		O	/C	S/D	None		9	
2RC-159	OFD-100A-2.1	I9	SN	1.00	SOV	B		O	/C	S/D	None		9	
3RC-159	OFD-100A-3.1	I9	SN	1.00	SOV	B		O	/C	S/D	None		9	
1RC-160	OFD-100A-1.1	I9	SN	1.00	SOV	B		O	/C	S/D	None		9	
2RC-160	OFD-100A-2.1	I9	SN	1.00	SOV	B		O	/C	S/D	None		9	
3RC-160	OFD-100A-3.1	I9	SN	1.00	SOV	B		O	/C	S/D	None		9	
1RC-164	OFD-110A-1.4	G4	SN	1.00	SOV	A		C	/C	QTR	RF			
2RC-164	OFD-110A-2.4	G4	SN	1.00	SOV	A		C	/C	QTR	RF			
3RC-164	OFD-110A-3.4	G4	GL	1.00	MAN	A		C	/	QTR	RF			
1RC-165	OFD-110A-1.4	G4	SN	1.00	SOV	A		C	/C	QTR	RF			
2RC-165	OFD-110A-2.4	G4	SN	1.00	SOV	A		C	/C	QTR	RF			
3RC-165	OFD-110A-3.4	G4	GL	1.00	MAN	A		C	/	QTR	RF			
1SF-60	OFD-104A-1.1	D3	GT	8.00	MAN	A	Y	C	/	None	ILRT			
3SF-60	OFD-104A-3.1	C5	GT	8.00	MAN	A	Y	C	/	None	ILRT			
1SF-61	OFD-104A-1.1	D3	GT	8.00	MAN	A	Y	C	/	None	ILRT			
2SF-61	OFD-104A-1.1	D12	GT	8.00	MAN	A	Y	C	/	None	ILRT			
3SF-61	OFD-104A-3.1	C4	GT	8.00	MAN	A	Y	C	/	None	ILRT			
1SF-72	OFD-104A-1.1	J3	DP	0.50	MAN	A	Y	C	/	None	RF			
2SF-72	OFD-104A-1.1	J12	BL	0.50	MAN	A	Y	C	/	None	RF			
3SF-72	OFD-104A-3.1	J4	DP	0.50	MAN	A	Y	C	/	None	RF			
1SF-73	OFD-104A-1.1	J3	DP	0.50	MAN	A	Y	C	/	None	RF			
2SF-73	OFD-104A-1.1	J12	BL	0.50	MAN	A	Y	C	/	None	RF			
3SF-73	OFD-104A-3.1	J5	DP	0.50	MAN	A	Y	C	/	None	RF			
2SF-81	OFD-104A-1.1	D12	GT	8.00	MAN	A	Y	C	/	None	ILRT			
1SF-82-SSF	OFD-101A-1.5	F2	GT	4.00	EMO	A		O	/	QTR	RF			
2SF-82-SSF	OFD-101A-2.5	F2	GT	4.00	EMO	A		O	/	QTR	RF			
3SF-82-SSF	OFD-101A-3.5	F2	GT	4.00	EMO	A		O	/	QTR	RF			
1SF-97-SSF	OFD-104A-1.1	K3	GT	3.00	EMO	A		O	/	QTR	RF			
2SF-97-SSF	OFD-104A-1.1	K12	GT	3.00	EMO	A		O	/	QTR	RF			
3SF-97-SSF	OFD-104A-3.1	K3	GT	3.00	EMO	A		O	/	QTR	RF			
1SSH-22	OFD-122B-1.1	I6	RV	1.50		C		O/C	/					

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Valve	Flow Diagram	Coor	Valve Type	Size	Oper Type	Valve Category	Pass-ive	Safety Posn.	Fail Pos. Air/Pwr.	Stroke Freq.	Leak Freq.	Relief Request	Cold S/D Just	Remarks
2SSH-22	OFD-122B-2.1	I6	RV	1.5		C		O/C	/					
3SSH-22	OFD-122B-3.1	I6	RV	1.5		C		O/C	/					
U1 RV CHECKS	N/A				CK	C		O	/	RF	None	24		
U2 RV CHECKS	N/A				CK	C		O	/	RF	None	24		
U3 RV CHECKS	N/A				CK	C		O	/	RF	None	24		

VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
1AS-1	OFD-128A-1.1	H7	CK	MAIN STEAM SUPPLY CHECK	MAINT	None	RF
2AS-1	OFD-128A-2.1	H6	CK	Main Steam Supply Check	MAINT	None	RF
3AS-1	OFD-128A-3.1	G6	CK	Main Steam Supply Check	MAINT	None	RF
1AS-39	OFD-122A-1.4	H6	CK	EFWPT Aux Steam Supply	PERF/MAINT	None	QTR
2AS-39	OFD-122A-2.4	H6	CK	EFWPT Aux Steam Supply Check	PERF/MAINT	None	QTR
3AS-39	OFD-122A-3.4	H6	CK	EFWPT Aux Steam Supply Check	PERF/MAINT	None	QTR
1AS-40	OFD-128A-1.1	B2	EMO	CSAE AUX STEAM SUPPLY	PERF	None	QTR
2AS-40	OFD-128A-2.1	H3	EMO	CSAE AUX STEAM SUPPLY	PERF	None	QTR
3AS-40	OFD-128A-3.1	F3	EMO	CSAE AUX STEAM SUPPLY_	PERF	None	QTR
1BA-171	OFD-137A-1.2	H8	MAN	RB Hdr Isolation Valve	PERF	RF	None
2BA-171	OFD-137A-2.2	G8	MAN	RB Hdr Isolation Valve	PERF	RF	None
3BA-171	OFD-137A-3.2	G8	MAN	RB Hdr Isolation Valve	PERF	RF	None
1BA-172	OFD-137A-1.2	H9	MAN	RB Hdr Isolation Valve	PERF	RF	None
2BA-172	OFD-137A-2.2	G9	MAN	RB Hdr Isolation Valve	PERF	RF	None
3BA-172	OFD-137A-3.2	G9	MAN	RB Hdr Isolation Valve	PERF	RF	None
1BS-1	OFD-103A-1.1	J8	EMO	"A" RBS RB Isolation Valve	PERF	None	QTR
2BS-1	OFD-103A-2.1	J8	EMO	"A" RBS RB Isolation Valve	PERF	None	QTR
3BS-1	OFD-103A-3.1	J8	EMO	"A" RBS RB Isolation Valve	PERF	None	QTR
1BS-2	OFD-103A-1.1	E8	EMO	"B" RBS RB Isolation Valve	PERF	None	QTR
2BS-2	OFD-103A-2.1	E8	EMO	"B" RBS RB Isolation Valve	PERF	None	QTR
3BS-2	OFD-103A-3.1	E8	EMO	"B" RBS RB Isolation Valve	PERF	None	QTR
1BS-5	OFD-102A-1.1	E8	CK	"A" Suction from BWST	PERF	None	QTR
2BS-5	OFD-102A-2.1	E8	CK	"A" Suction from BWST CV	PERF	None	QTR
3BS-5	OFD-102A-3.1	F8	CK	"A" Suction from BWST CV	PERF	None	QTR
1BS-6	OFD-102A-1.1	C10	CK	"B" Suction from BWST	PERF	None	QTR
2BS-6	OFD-102A-2.1	C10	CK	"B" Suction from BWST CV	PERF	None	QTR
3BS-6	OFD-102A-3.1	C9	CK	"B" Suction from BWST CV	PERF	None	QTR
1BS-11	OFD-103A-1.1	J6	CK	RBS "A" Pump Discharge	PERF	None	QTR
2BS-11	OFD-103A-2.1	J6	CK	RBS "A" Pump Discharge CV	PERF	None	QTR
3BS-11	OFD-103A-3.1	J6	CK	RBS "A" Pump Discharge CV	PERF	None	QTR
1BS-14	OFD-103A-1.1	J10	CK	"A" Header Penetration	PERF/MAINT	None	RF
2BS-14	OFD-103A-2.1	J10	CK	"A" Header Penetration CV	PERF/MAINT	None	RF
3BS-14	OFD-103A-3.1	J10	CK	"A" Header Penetration CV	PERF/MAINT	None	RF
1BS-16	OFD-103A-1.1	E6	CK	RBS "B" Pump Discharge	PERF	None	QTR
2BS-16	OFD-103A-2.1	E6	CK	RBS "B" Pump Discharge	PERF	None	QTR
3BS-16	OFD-103A-3.1	E6	CK	RBS "B" Pump Discharge CV	PERF	None	QTR
1BS-19	OFD-103A-1.1	E10	CK	"B" Header Penetration	PERF/MAINT	None	RF
2BS-19	OFD-103A-2.1	E10	CK	"B" Header Penetration CV	PERF/MAINT	None	RF
3BS-19	OFD-103A-3.1	E10	CK	"B" Header Penetration CV	PERF/MAINT	None	RF
1C-156	OFD-121A-1.7	I7	EMO	Emerg FDW Pump Normal Supply	PERF	None	S/D
2C-156	OFD-121A-2.7	H7	EMO	Emerg FDW Pump Normal Supply	PERF	None	S/D
3C-156	OFD-121A-3.7	I7	EMO	Emerg FDW Pump Normal Supply	PERF	None	S/D
1C-176	OFD-121A-1.8	I7	AOV	Emergency Make-up to Condenser from UST	PERF	None	S/D
2C-176	OFD-121A-2.8	I7	AOV	Emergency Make-up to Condenser from UST	PERF	None	S/D
3C-176	OFD-121A-3.8	I7	AOV	Emergency Make-up to Condenser from UST	PERF	None	S/D
1C-186	OFD-121A-1.8	G8	MAN	Hotwell Emergency Makeup #1 Control	PERF	None	QTR
2C-186	OFD-121A-2.8	G8	MAN	Hotwell Emergency Makeup #1 Control	PERF	None	QTR
3C-186	OFD-121A-3.8	G8	MAN	Hotwell Emergency Makeup #1 Control Inlet	PERF	None	QTR
1C-187	OFD-121A-1.8	G7	AOV	Emergency Make-up to Condenser from UST	PERF	None	S/D
2C-187	OFD-121A-2.8	G7	AOV	Emergency Make-up to Condenser from UST	PERF	None	S/D
3C-187	OFD-121A-3.8	G7	AOV	Emergency Make-up to Condenser from UST	PERF	None	S/D
1C-192	OFD-121A-1.8	J7	AOV	Normal Make-up to Condenser from UST	PERF	None	S/D
2C-192	OFD-121A-2.8	J7	AOV	Normal Make-up to Condenser from UST	PERF	None	S/D
3C-192	OFD-121A-3.8	J7	AOV	Normal Make-up to Condenser from UST	PERF	None	S/D
1C-391	OFD-121A-1.8	J11	EMO	TDEFDWP Suction from Hotwell	PERF	None	QTR
2C-391	OFD-121A-2.8	J11	EMO	TDEFDWP Suction from Hotwell	PERF	None	QTR

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
3C-391	OFD-121A-3.8	J11	EMO	TDEFDWP Suction from Hotwell	PERF	None	QTR
1C-572	OFD-121A-1.8	E7	CK	MDEFWPs Suction from UST	PERF/OPS	None	Q/SD
2C-572	OFD-121A-2.8	E6	CK	MDEFWPs Suction from UST Check	PERF/OPS	None	Q/SD
3C-572	OFD-121A-3.8	E7	CK	TDEFWPs Suction from UST Check	PERF/OPS	None	Q/SD
1C-573	OFD-121A-1.8	E7	MAN	MDEFWPs Suction from UST	PERF	None	S/D
2C-573	OFD-121A-2.8	D6	MAN	MDEFWPs Suction from UST	PERF	None	S/D
3C-573	OFD-121A-3.8	D7	MAN	MDEFWPs Suction from UST	PERF	None	S/D
1C-850	OFD-121A-1.8	D4	CK	MDEFWP A Suction From Hotwell	PERF	None	RF
2C-850	OFD-121A-2.8	D4	CK	MDEFWP A Suction From Hotwell	PERF	None	RF
3C-850	OFD-121A-3.8	D4	CK	MDEFWP A Suction From Hotwell	PERF	None	RF
1C-852	OFD-121A-1.8	C4	CK	MDEFWP B Suction From Hotwell	PERF	None	RF
2C-852	OFD-121A-2.8	C4	CK	MDEFWP B Suction From Hotwell	PERF	None	RF
3C-852	OFD-121A-3.8	C4	CK	MDEFWP B Suction From Hotwell	PERF	None	RF
1CA-27	OFD-127B-1.2	G7	MAN	Boric Acid Supply to CFT "1A"	PERF	RF	QTR
2CA-27	OFD-127B-2.2	G7	MAN	Boric Acid Supply to CFT "2A"	PERF	RF	QTR
3CA-27	OFD-127B-3.2	G7	MAN	Boric Acid Supply to CFT "3A"	PERF	RF	QTR
1CA-29	OFD-127B-1.2	J7	MAN	Boric Acid Supply to CFT "1B"	PERF	RF	QTR
2CA-29	OFD-127B-2.2	J7	MAN	Boric Acid Supply to CFT "2B"	PERF	RF	QTR
3CA-29	OFD-127B-3.2	J7	MAN	Boric Acid Supply to CFT "3B"	PERF	RF	QTR
1CC-7	OFD-144A-1.2	D13	EMO	CC from RCP	PERF	RF	S/D
2CC-7	OFD-144A-2.2	D11	EMO	CC from RCP	PERF	RF	S/D
3CC-7	OFD-144A-3.2	D11	EMO	CC from RCP	PERF	RF	S/D
1CC-8	OFD-144A-1.2	D13	PST	CC from RCP	PERF	RF	S/D
2CC-8	OFD-144A-2.2	D13	PST	CC from RCP	PERF	RF	S/D
3CC-8	OFD-144A-3.2	D13	AOV	CC from RCP	PERF	RF	S/D
1CC-20	OFD-144A-1.2	D4	CK	CC to RCP	PERF	RF	RF
2CC-20	OFD-144A-2.2	D3	CK	CC to RCP	PERF	RF	RF
3CC-20	OFD-144A-3.2	D3	CK	CC to RCP	PERF	RF	RF
1CC-21	OFD-144A-1.2	D3	MAN	Supply Hdr Penet 3 Drain	PERF	RF	None
2CC-21	OFD-144A-2.2	C2	MAN	Supply Hdr Penet 3 Drain	PERF	RF	None
3CC-21	OFD-144A-3.2	C2	MAN	Supply Hdr Penet 3 Drain	PERF	RF	None
1CC-22	OFD-144A-1.2	D3	MAN	Supply Hdr Penet 3 Vent	PERF	RF	None
2CC-22	OFD-144A-2.2	D3	MAN	Supply Hdr Penet 3 Vent	PERF	RF	None
3CC-22	OFD-144A-3.2	D3	MAN	Supply Hdr Penet 3 Vent	PERF	RF	None
1CC-23	OFD-144A-1.2	D3	MAN	Supply Hdr Penet 3 PX	PERF	RF	None
2CC-23	OFD-144A-2.2	D3	MAN	Supply Hdr Penet 3 PX	PERF	RF	None
1CC-24	OFD-144A-1.2	D2	CK	CC to RCP	PERF	RF	RF
2CC-24	OFD-144A-2.2	D1	CK	CC to RCP	PERF	RF	RF
3CC-24	OFD-144A-3.2	D1	CK	CC to RCP	PERF	RF	RF
1CC-28	OFD-144A-1.2	J9	RF	RCP 1,2,3 A1 Cooler Shell Relief			
2CC-28	OFD-144A-2.2	L7	RF	RCP 1,2,3 A1 Cooler Shell Relief			
3CC-28	OFD-144A-3.2	L7	RF	RCP 1,2,3 A1 Cooler Shell Relief			
1CC-32	OFD-144A-1.2	I9	RF	RCP 1,2,3 A2 Cooler Shell Relief			
2CC-32	OFD-144A-2.2	K7	RF	RCP 1,2,3 A2 Cooler Shell Relief			
3CC-32	OFD-144A-3.2	K7	RF	RCP 1,2,3 A2 Cooler Shell Relief			
1CC-36	OFD-144A-1.2	H9	RF	RCP 1,2,3 B1 Cooler Shell Relief			
2CC-36	OFD-144A-2.2	J7	RF	RCP 1,2,3 B1 Cooler Shell Relief			
3CC-36	OFD-144A-3.2	J7	RF	RCP 1,2,3 B1 Cooler Shell Relief			
1CC-40	OFD-144A-1.2	G9	RF	RCP 1,2,3 B2 Cooler Shell Relief			
2CC-40	OFD-144A-2.2	H7	RF	RCP 1,2,3 B2 Cooler Shell Relief			
3CC-40	OFD-144A-3.2	H7	RF	RCP 1,2,3 B2 Cooler Shell Relief			
1CC-54	OFD-144A-1.2	C12	MAN	Return Penet 54 Drain	PERF	RF	None
2CC-54	OFD-144A-2.2	C12	MAN	Return Penet 54 Drain	PERF	RF	None
3CC-54	OFD-144A-3.2	C12	MAN	Return Penet 54 Drain	PERF	RF	None
1CC-55	OFD-144A-1.2	D13	MAN	Return Penet 54 Vent	PERF	RF	None
2CC-55	OFD-144A-2.2	D13	MAN	Return Penet 54 Vent	PERF	RF	None

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
3CC-55	OFD-144A-3.2	D13	MAN	Return Penet 54 Vent	PERF	RF	None
1CC-56	OFD-144A-1.2	D12	MAN	Return Penet 54 PX	PERF	RF	None
2CC-56	OFD-144A-2.2	D12	MAN	Return Penet 54 PX	PERF	RF	None
3CC-56	OFD-144A-3.2	D12	MAN	Return Penet 54 PX	PERF	RF	None
1CC-76	OFD-144A-1.3	H6	CK	CC to CRD Service Structure	PERF	RF	RF
2CC-76	OFD-144A-2.3	H6	CK	CC to CRD Service Structure	PERF	RF	RF
3CC-76	OFD-144A-3.3	H6	CK	CC to CRD Service Structure	PERF	RF	RF
1CC-77	OFD-144A-1.3	H7	CK	CC to CRD Service Structure	PERF	RF	RF
2CC-77	OFD-144A-2.3	H7	CK	CC to CRD Service Structure	PERF	RF	RF
3CC-77	OFD-144A-3.3	H7	CK	CC to CRD Service Structure	PERF	RF	RF
1CC-80	OFD-144A-1.3	I7	MAN	CRD Hdr Penet 44 Vent	PERF	RF	None
2CC-80	OFD-144A-2.3	I7	MAN	CRD Hdr Penet 44 Vent	PERF	RF	None
3CC-80	OFD-144A-3.3	I7	MAN	CRD Hdr Penet 44 Vent	PERF	RF	None
1CC-81	OFD-144A-1.3	I7	MAN	CRD Hdr Penet 44 PX	PERF	RF	None
2CC-81	OFD-144A-2.3	I7	MAN	CRD Hdr Penet 44 PX	PERF	RF	None
1CC-82	OFD-144A-1.3	H7	MAN	CRD Hdr Penet 44 Drain	PERF	RF	None
2CC-82	OFD-144A-2.3	H7	MAN	CRD Hdr Penet 44 Drain	PERF	RF	None
3CC-82	OFD-144A-3.3	H7	MAN	CRD Hdr Penet 44 Drain	PERF	RF	None
1CC-97	OFD-144A-1.2	E13	MAN	Return Penet 54 Inside Vent	PERF	RF	None
1CC-98	OFD-144A-1.2	E13	MAN	Return Penet 54 Inside PX	PERF	RF	None
1CC-99	OFD-144A-1.2	D13	MAN	Return Penet 54 Inside Drain	PERF	RF	None
1CCW-1	OFD-133A-1.2	I2	EMO	Condenser "1A1" Emergency Outlet	PERF	None	QTR
1CCW-2	OFD-133A-1.2	I4	EMO	Condenser "1A2" Emergency Outlet	PERF	None	QTR
1CCW-3	OFD-133A-1.2	I6	EMO	Condenser "1B1" Emergency Outlet	PERF	None	QTR
1CCW-4	OFD-133A-1.2	I7	EMO	Condenser "1B2" Emergency Outlet	PERF	None	QTR
1CCW-5	OFD-133A-1.2	I9	EMO	Condenser "1C1" Emergency Outlet	PERF	None	QTR
1CCW-6	OFD-133A-1.2	I11	EMO	Condenser "1C2" Emergency Outlet	PERF	None	QTR
2CCW-7	OFD-133A-2.2	D2	EMO	Unit 2 Condenser Emergency Outlet	PERF	None	QTR
CCW-8	OFD-133A-3.2	B1	EMO	Condenser Disch to Tailrace	PERF	None	QTR
CCW-9	OFD-133A-3.2	D2	EMO	Condenser Discharge to Intake Canal	PERF	None	QTR
1CCW-10	OFD-133A-1.1	J2	EMO	CCW Pump "A" Discharge	PERF	None	QTR
2CCW-10	OFD-133A-2.1	J2	EMO	CCW Pump "A" Discharge	PERF	None	QTR
3CCW-10	OFD-133A-3.1	J2	EMO	CCW Pump "A" Discharge	PERF	None	QTR
1CCW-11	OFD-133A-1.1	J5	EMO	CCW Pump "B" Discharge	PERF	None	QTR
2CCW-11	OFD-133A-2.1	J5	EMO	CCW Pump "B" Discharge	PERF	None	QTR
3CCW-11	OFD-133A-3.1	J5	EMO	CCW Pump "B" Discharge	PERF	None	QTR
1CCW-12	OFD-133A-1.1	J7	EMO	CCW Pump "C" Discharge	PERF	None	QTR
2CCW-12	OFD-133A-2.1	J7	EMO	CCW "C" Discharge	PERF	None	QTR
3CCW-12	OFD-133A-3.1	J7	EMO	CCW "C" Discharge	PERF	None	QTR
1CCW-13	OFD-133A-1.1	J10	EMO	CCW Pump "D" Discharge	PERF	None	QTR
2CCW-13	OFD-133A-2.1	J10	EMO	CCW Pump "D" Discharge	PERF	None	QTR
3CCW-13	OFD-133A-3.1	J10	EMO	CCW Pump "D" Discharge	PERF	None	QTR
1CCW-20	OFD-133A-1.2	G2	PST	Condenser "1A1" Outlet	PERF	None	S/D
2CCW-20	OFD-133A-2.2	G2	PST	Condenser "2A1" Outlet	PERF	None	S/D
3CCW-20	OFD-133A-3.2	G2	PST	Condenser "3A1" Outlet	PERF	None	S/D
1CCW-21	OFD-133A-1.2	G4	PST	Condenser "1A2" Outlet	PERF	None	S/D
2CCW-21	OFD-133A-2.2	G4	PST	Condenser "2A2" Outlet	PERF	None	S/D
3CCW-21	OFD-133A-3.2	G4	PST	Condenser "3A2" Outlet	PERF	None	S/D
1CCW-22	OFD-133A-1.2	G5	PST	Condenser "1B1" Outlet	PERF	None	S/D
2CCW-22	OFD-133A-2.2	G5	PST	Condenser "2B1" Outlet	PERF	None	S/D
3CCW-22	OFD-133A-3.2	G5	PST	Condenser "3B1" Outlet	PERF	None	S/D
1CCW-23	OFD-133A-1.2	G8	PST	Condenser "1B2" Outlet	PERF	None	S/D
2CCW-23	OFD-133A-2.2	G8	PST	Condenser "2B2" Outlet	PERF	None	S/D
3CCW-23	OFD-133A-3.2	G8	PST	Condenser "3B2" Outlet	PERF	None	S/D
1CCW-24	OFD-133A-1.2	G9	PST	Condenser "1C1" Outlet	PERF	None	S/D
2CCW-24	OFD-133A-2.2	G9	PST	Condenser "2C1" Outlet	PERF	None	S/D

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3CCW-24	OFD-133A-3.2	G9	PST	Condenser "3C1" Outlet	PERF	None	S/D
1CCW-25	OFD-133A-1.2	G11	PST	Condenser "1C2" Outlet	PERF	None	S/D
2CCW-25	OFD-133A-2.2	G11	PST	Condenser "2C2" Outlet	PERF	None	S/D
3CCW-25	OFD-133A-3.2	G11	PST	Condenser "3C2" Outlet	PERF	None	S/D
1CCW-90	OFD-133A-1.2	C4	EMO	Discharge Canal Hdr "1A" Mid Point Vent	PERF	None	RF
2CCW-90	OFD-133A-2.2	C4	EMO	Discharge Canal Hdr "2A" Mid Point Vent	PERF	None	RF
3CCW-90	OFD-133A-3.2	C4	EMO	Discharge Canal Hdr "3A" Mid Point Valve	PERF	None	RF
1CCW-91	OFD-133A-1.2	C9	EMO	Discharge Canal Hdr "1B" Mid Point Vent	PERF	None	RF
2CCW-91	OFD-133A-2.2	C9	EMO	Discharge Canal Hdr "2B" Mid Point Valve	PERF	None	RF
3CCW-91	OFD-133A-3.2	C9	EMO	Discharge Canal Hdr "3B" Mid Point Vent	PERF	None	RF
3CCW-93	OFD-133A-3.2	D2	EMO	Unit 3 Condenser Emergency Outlet	PERF	None	QTR
CCW-99	OFD-121D-1.2	E2	MAN	Aux Service Water Pump Suction	PERF	None	QTR
CCW-100	OFD-121D-1.2	E4	CK	Aux Service Water Pump Disch Check	PERF	None	RF
CCW-101	OFD-121D-1.2	E4	MAN	Aux Service Water Pump Disch	PERF	None	RF
1CCW-104	OFD-121D-1.2	H10	MAN	Aux Service Water to "1A" SG Stop	PERF	None	RF
1CCW-105	OFD-121D-1.2	H10	CK	Aux Service Water to "1A" SG Check	PERF	None	RF
1CCW-108	OFD-121D-1.2	H13	MAN	Aux Service Water to "1B" SG Stop	PERF	None	RF
2CCW-112	OFD-121D-1.2	H7	MAN	Aux Service Water to "2A" SG Stop	PERF	None	RF
2CCW-113	OFD-121D-1.2	H7	CK	Aux Service Water to "2A" SG Check	PERF	None	RF
2CCW-116	OFD-121D-1.2	H9	MAN	Aux Service Water to "2B" SG Stop	PERF	None	RF
3CCW-120	OFD-121D-1.2	H3	MAN	Aux Service Water to "3A" SG Stop	PERF	None	RF
3CCW-121	OFD-121D-1.2	H3	CK	Aux Service Water to "3A" SG Check	MAINT	None	RF
3CCW-124	OFD-121D-1.2	H6	MAN	Aux Service Water to "3B" SG Stop	PERF	None	RF
2CCW-152	OFD-121D-1.2	I9	CK	Aux Service Water to 2B SG Check	PERF	None	RF
CCW-247	OFD-121D-1.2	D4	MAN	Aux Service Water Pump Recirc	PERF	None	QTR
3CCW-254	OFD-121D-1.2	I6	CK	Aux Service Water To 3B SG check	MAINT	None	RF
1CCW-265	OFD-121D-1.2	H12	MAN	ASW Pump to HPI Motor Coolers	PERF	None	RF
2CCW-265	OFD-121D-1.2	H8	MAN	ASW Pump to HPI Motor Coolers	PERF	None	RF
3CCW-265	OFD-121D-1.2	H4	MAN	ASW Pump to HPI Motor Coolers	PERF	None	RF
CCW-267	OFD-133A-2.5	J10	MAN	SSF AUX SERV MTR PUMP RETURN	PERF	None	QTR
1CCW-268-SSF	OFD-133A-2.5	I13	EMO	SSF Aux Ser Wtr Disch to SG Supply	PERF	None	QTR
2CCW-268-SSF	OFD-133A-2.5	I12	EMO	SSF Aux Ser Wtr Dsch to SG Supply	PERF	None	QTR
3CCW-268-SSF	OFD-133A-2.5	I11	EMO	SSF Aux Ser Wtr Dsch to SG Supply	PERF	None	QTR
1CCW-269-SSF	OFD-121D-1.1	G13	EMO	SSF Aux Ser Water to "A" OTSG	PERF	None	S/D
2CCW-269-SSF	OFD-121D-2.1	G13	EMO	SSF Aux Ser Water to "A" OTSG	PERF	None	S/D
3CCW-269-SSF	OFD-121D-3.1	G13	EMO	SSF Aux Ser Water to "A" OTSG	PERF	None	S/D
CCW-271-SSF	OFD-133A-2.5	I5	CK	HVAC Service Water Pump Disc	PERF	None	QTR
CCW-274-SSF	OFD-133A-2.5	J5	CK	HVAC Service Water Pump Disc	PERF	None	QTR
CCW-284-SSF	OFD-133A-2.5	H5	CK	Diesel Eng Ser Water Pump Disc	PERF	None	QTR
CCW-285-SSF	OFD-133A-2.5	H6	MAN	Diesel Eng Ser Water Pump Disch	PERF	None	QTR
CCW-286-SSF	OFD-133A-2.5	H8	MAN	Diesel Cooling Jacket Return	PERF	None	QTR
1CCW-287-SSF	OFD-133A-2.5	H13	EMO	SSF Aux Ser Water Disch	PERF	None	QTR
2CCW-287-SSF	OFD-133A-2.5	H12	EMO	SSF Aux Ser Water Disch	PERF	None	QTR
3CCW-287-SSF	OFD-133A-2.5	H11	EMO	SSF Aux Ser Water Disch	PERF	None	QTR
CCW-289-SSF	OFD-133A-2.5	K8	CK	SSF Aux Ser Water Disch	PERF	None	QTR
1CCW-304	OFD-133A-1.2	J14	CK	EFDW Pump Turb Oil Cooler Inlet Check	PERF	None	QTR
2CCW-304	OFD-133A-2.2	K14	CK	EFDW Pump Turb Oil Cooler Inlet Check	PERF	None	QTR
3CCW-304	OFD-133A-3.2	K14	CK	EFDW Pump Turb Oil Cooler Inlet	PERF	None	QTR
CCW-309	OFD-121D-1.2	F4	MAN	AUX SERV WTR PUMP DISCH DRAIN_	PERF	None	RF
1CCW-321	OFD-121D-1.2	I13	CK	Aux Service Water to "1B" SG Check	PERF	None	RF
CCW-382	OFD-133A-2.5	L4	MAN	SSF Aux Service Water Air Ejector Block Valve	PERF	None	QTR
CCW-383	OFD-133A-2.5	J12	MAN	SSF Aux Service Water Air Ejector Block Valve	PERF	None	QTR
CCW-384	OFD-133A-2.5	F10	MAN	SSF Diesel Service Water Drain	PERF	None	QTR
1CF-1	OFD-102A-1.3	F10	EMO	"A" CFT Isolation Valve	PERF	None	S/D
2CF-1	OFD-102A-2.3	E10	EMO	"A" CFT Isolation Valve	PERF	None	S/D
3CF-1	OFD-102A-3.3	F10	EMO	"A" CFT Isolation Valve	PERF	None	S/D

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
1CF-2	OFD-102A-1.3	F6	EMO	"B" CFT Isolation Valve	PERF	None	S/D
2CF-2	OFD-102A-2.3	E6	EMO	"B" CFT Isolation Valve	PERF	None	S/D
3CF-2	OFD-102A-3.3	F6	EMO	"B" CFT Isolation Valve	PERF	None	S/D
1CF-3	OFD-102A-1.3	G9	EMO	"A" CFT Isolation Valve	PERF	RF	QTR
2CF-3	OFD-102A-2.3	G10	EMO	"A" CFT Isolation Valve	PERF	RF	QTR
3CF-3	OFD-102A-3.3	G9	EMO	"A" CFT Isolation Valve	PERF	RF	QTR
1CF-4	OFD-102A-1.3	G5	EMO	"B" CFT Isolation	PERF	RF	QTR
2CF-4	OFD-102A-2.3	G4	EMO	"B" CFT Isolation Valve	PERF	RF	QTR
3CF-4	OFD-102A-3.3	G5	EMO	"B" ICFT Isolation Valve	PERF	RF	QTR
1CF-7	OFD-102A-1.3	G4	MAN	CF Bleed to Waste Holdup Tank	PERF	RF	None
2CF-7	OFD-102A-2.3	F3	MAN	CF Bleed to Waste Holdup Tank	PERF	RF	None
3CF-7	OFD-102A-3.3	G4	MAN	CF Bleed to Waste Holdup Tank	PERF	RF	None
1CF-11	OFD-102A-1.3	E10	CK	"A" CFT Disch Check Valve	PERF/OPS	S/D	S/RF
2CF-11	OFD-102A-2.3	D10	CK	"A" CFT Disch Check valve	PERF/OPS	S/D	S/RF
3CF-11	OFD-102A-3.3	E10	CK	"A" CFT Disch Check valve	PERF/OPS	S/D	S/RF
1CF-12	OFD-102A-1.3	D9	CK	LPI Inlet Header "A" Check Valve	PERF	S/D	S/RF
2CF-12	OFD-102A-2.3	D10	CK	LPI Inlet Header "A" Check Valve	PERF	S/D	S/RF
3CF-12	OFD-102A-3.3	D9	CK	LPI Inlet Header "A" Check Valve	PERF	S/D	S/RF
1CF-13	OFD-102A-1.3	E6	CK	"B" CFT Disch Check Valve	PERF/OPS	S/D	S/RF
2CF-13	OFD-102A-2.3	D6	CK	"B" CFT Disch Check Valve	PERF/OPS	S/D	S/RF
3CF-13	OFD-102A-3.3	E6	CK	"B" CFT Disch Check Valve	PERF/OPS	S/D	S/RF
1CF-14	OFD-102A-1.3	D7	CK	LPI Inlet Header "B" Check Valve	PERF	S/D	S/RF
2CF-14	OFD-102A-2.3	D6	CK	LPI Inlet Header "B" Check Valve	PERF	S/D	S/RF
3CF-14	OFD-102A-3.3	D7	CK	LPI Inlet Header "B" Check Valve	PERF	S/D	S/RF
1CF-15	OFD-102A-1.3	J10	RF	CF Tank "A" Relief			
2CF-15	OFD-102A-2.3	H10	RF	CF Tank "A" Relief			
3CF-15	OFD-102A-3.3	I10	RF	CF Tank "A" Relief			
1CF-17	OFD-102A-1.3	I6	RF	CF Tank "A" Relief			
2CF-17	OFD-102A-2.3	H6	RF	CF Tank "A" Relief			
3CF-17	OFD-102A-3.3	I6	RF	CF Tank "A" Relief			
1CF-19	OFD-102A-1.3	G4	MAN	Sample Block	PERF	RF	QTR
2CF-19	OFD-102A-2.3	G3	MAN	Sample Block	PERF	RF	QTR
3CF-19	OFD-102A-3.3	G4	MAN	Sample Block	PERF	RF	QTR
1CF-41	OFD-127B-1.2	I8	MAN	Penetration 39 Vent	PERF	ILRT	None
2CF-41	OFD-127B-2.2	I8	MAN	Penetration 39 Vent	PERF	ILRT	None
3CF-41	OFD-127B-3.2	I8	MAN	Penetration 39 Vent	PERF	ILRT	None
1CF-42	OFD-127B-1.2	G11	CK	CF Tank "1A" Inlet Check	PERF	RF	RF
2CF-42	OFD-127B-2.2	G11	CK	CF Tank "2A" Inlet Check	PERF	RF	RF
3CF-42	OFD-127B-3.2	G11	CK	CF Tank "3A" Inlet Check	PERF	RF	RF
1CF-43	OFD-127B-1.2	G10	MAN	Penetration 53 Vent	PERF	RF	None
2CF-43	OFD-127B-2.2	G10	MAN	Penetration 53 Vent	PERF	RF	None
3CF-43	OFD-127B-3.2	G10	MAN	Penetration 53 Vent	PERF	RF	None
1CF-44	OFD-127B-1.2	J11	CK	CF Tank "1B" Inlet Check	PERF	RF	RF
2CF-44	OFD-127B-2.2	J11	CK	CF Tank "2B" Inlet Check	PERF	RF	RF
3CF-44	OFD-127B-3.2	J11	CK	CF Tank "3B" Inlet Check	PERF	RF	RF
1CF-45	OFD-127B-1.2	J10	MAN	Penetration 39 Vent	PERF	RF	None
2CF-45	OFD-127B-2.2	J10	MAN	Penetration 39 Vent	PERF	RF	None
3CF-45	OFD-127B-3.2	J10	MAN	Penetration 39 Vent	PERF	RF	None
1CF-47	OFD-127B-1.2	G8	MAN	Penetration 53 Vent	PERF	ILRT	None
2CF-47	OFD-127B-2.2	G8	MAN	Penetration 53 Vent	PERF	ILRT	None
3CF-47	OFD-127B-3.2	G8	MAN	Penetration 53 Vent	PERF	ILRT	None
1CS-5	OFD-107A-1.2	D5	EMO	QT RB Isolation	PERF	RF	QTR
2CS-5	OFD-107A-2.2	D5	EMO	QT RB Isolation	PERF	RF	QTR
3CS-5	OFD-107A-3.2	D5	EMO	QT RB Isolation	PERF	RF	QTR
1CS-6	OFD-107A-1.2	D8	AOV	QT RB Isolation	PERF	RF	QTR
2CS-6	OFD-107A-2.2	D8	AOV	QT RB Isolation	PERF	RF	QTR

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3CS-6	OFD-107A-3.2	D8	AOV	QT RB Isolation	PERF	RF	QTR
1CS-11	OFD-107A-1.1	J2	CK	QT Recirc Check Valve	PERF	RF	RF
2CS-11	OFD-107A-2.1	J2	CK	QT Recirc Check Valve	PERF	RF	RF
3CS-11	OFD-107A-3.1	J3	CK	QT Recirc Check Valve	PERF	RF	RF
1CS-12	OFD-107A-1.1	J5	CK	QT Recirc CHwck Valve	PERF	RF	RF
2CS-12	OFD-107A-2.1	J5	CK	QT Recirc Check Valve	PERF	RF	RF
3CS-12	OFD-107A-3.1	J5	CK	QT Recirc CHwck Valve	PERF	RF	RF
1CS-17	OFD-107A-1.1	J3	MAN	QT Return Penet 38 Drain	PERF	RF	None
2CS-17	OFD-107A-2.1	J3	MAN	QT Return Penet 38 Drain	PERF	RF	None
3CS-17	OFD-107A-3.1	J3	MAN	QT Return Penet 38 Drain	PERF	RF	None
1CS-18	OFD-107A-1.1	K3	MAN	QT Return Penet 38 Vent	PERF	RF	None
2CS-18	OFD-107A-2.1	K3	MAN	QT Return Penet 38 Vent	PERF	RF	None
3CS-18	OFD-107A-3.1	K3	MAN	QT Return Penet 38 Vent	PERF	RF	None
1CS-19	OFD-107A-1.1	K4	MAN	QT Return Penet 38 PX	PERF	RF	None
3CS-23	OFD-107A-3.2	C6	MAN	Comp Drn Hdr Penet 29 Drn	PERF	RF	None
1CS-24	OFD-107A-1.2	D5	MAN	Comp Drn Hdr Penet 29 Vent	PERF	RF	None
2CS-24	OFD-107A-2.2	D5	MAN	Comp Drn Hdr Penet 29 Vent	PERF	RF	None
3CS-24	OFD-107A-3.2	D5	MAN	Comp Drn Hdr Penet 29 Vent	PERF	RF	None
1CS-25	OFD-107A-1.2	D7	MAN	Comp Drn Hdr Penet 29 PX	PERF	RF	None
2CS-25	OFD-107A-2.2	D7	MAN	Comp Drn Hdr Penet 29 PX	PERF	RF	None
3CS-25	OFD-107A-3.2	D7	MAN	Comp Drn Hdr Penet 29 PX	PERF	RF	None
1CS-46	OFD-106A-1.1	D10	AOV	Bleed Transfer Pump A Discharge Control	PERF	None	QTR
2CS-46	OFD-106A-2.1	D10	AOV	Bleed Transfer Pump A Discharge Control	PERF	None	QTR
3CS-46	OFD-106A-3.1	D10	AOV	Bleed Transfer Pump A Discharge Control	PERF	None	QTR
1CS-56	OFD-106A-1.1	G10	AOV	Bleed Transfer Pump B Discharge Control	PERF	None	QTR
2CS-56	OFD-106A-2.1	G10	AOV	Bleed Transfer Pump B Discharge Control	PERF	None	QTR
3CS-56	OFD-106A-3.1	G10	AOV	Bleed Transfer Pump B Discharge Control	PERF	None	QTR
1CS-73	OFD-101A-1.2	J12	CK	CBAT to LDST	OPS	None	QTR
2CS-73	OFD-101A-2.2	J12	CK	CBAST to LDST	OPS	None	QTR
3CS-73	OFD-101A-3.2	J12	CK	CBAST to LDST	OPS	None	QTR
DA-03	OFD-137D-1.1	F3	CK	Receiver Tank A Inlet Check	PERF	None	QTR
DA-6	OFD-137D-1.1	F4	RF	Receiver Tank "A" Relief			
DA-08	OFD-137D-1.1	G7	CK	Receiver Tank B Inlet Check	PERF	None	QTR
DA-11	OFD-137D-1.1	F7	RF	Receiver Tank "B" Relief			
DA-13	OFD-137D-1.2	F3	CK	Receiver C Inlet Check	PERF	None	QTR
DA-16	OFD-137D-1.2	F4	RF	Receiver Tank "C" Relief			
DA-18	OFD-137D-1.2	G72	CK	Receiver Tank D Inlet Check	PERF	None	QTR
DA-21	OFD-137D-1.2	F7	RF	Receiver Tank "D" Relief			
DA-25	OFD-137D-1.1	H11	PST	Inlet to Diesel "A" Air Start Motor	OPS	None	QTR
DA-26	OFD-137D-1.1	H12	CK	Engine A - A Air Starter Relay Outlet Check	OPS	None	QTR
DA-27	OFD-137D-1.1	I11	SOV	Engine A-A Air Starter Solenoid	OPS	None	QTR
DA-28	OFD-137D-1.1	I12	CK	Engine A-A Air Starter Solenoid Outlet Check	OPS	None	QTR
DA-31	OFD-137D-1.1	E11	PST	Diesel "A" Air Start Motor "B" Inlet	OPS	None	QTR
DA-32	OFD-137D-1.1	E12	CK	Engine A - B Air Starter Relay Outlet Check	OPS	None	QTR
DA-33	OFD-137D-1.1	E11	SOV	Engine A-B Air Starter Solenoid	OPS	None	QTR
DA-34	OFD-137D-1.1	D12	CK	Engine A - B Air Starter Solenoid Outlet Check	OPS	None	QTR
DA-37	OFD-137D-1.2	H11	PST	Engine B-C Air Starter Relay	OPS	None	QTR
DA-38	OFD-137D-1.2	H12	CK	Engine B - C Air Starter Relay Outlet Check	OPS	None	QTR
DA-39	OFD-137D-1.2	I11	SOV	Engine B-C Air Starter Solenoid	OPS	None	QTR
DA-40	OFD-137D-1.2	I12	CK	Engine B - C Air Starter Solenoid Outlet Check	OPS	None	QTR
DA-43	OFD-137D-1.2	E11	PST	Engine B-D Air Starter Relay	OPS	None	QTR
DA-44	OFD-137D-1.2	E12	CK	Engine B - D Air Starter Relay Outlet Check	OPS	None	QTR
DA-45	OFD-137D-1.2	E11	SOV	Engine B-D Air Starter Solenoid	OPS	None	QTR
DA-46	OFD-137D-1.2	D12	CK	Engine B - D Air Starter Solenoid Outlet Check	OPS	None	QTR
1DW-59	OFD-106E-1.1	H2	MAN	DW to RB	PERF	RF	None
2DW-59	OFD-106E-2.1	H3	MAN	DW to RB	PERF	RF	None

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3DW-59	OFD-106E-3.1	H2	MAN	DW to RB	PERF	RF	None
1DW-60	OFD-106E-1.1	H3	MAN	DW to RB	PERF	RF	None
2DW-60	OFD-106E-2.1	H4	MAN	DW to RB	PERF	RF	None
3DW-60	OFD-106E-3.1	H4	MAN	DW to RB	PERF	RF	None
1DW-155	OFD-106E-1.1	E3	CK	DW to RCP Seal Vent	PERF	RF	RF
1DW-156	OFD-106E-1.1	E4	CK	DW to RCP Seal Vent	PERF	RF	RF
1DW-284	OFD-106E-1.1	E3	MAN	Penet 47 Drain	PERF	RF	None
1FDW-32	OFD-121B-1.3	J7	PST	"A" OTSG Main Flow Control Valve	PERF	None	S/D
2FDW-32	OFD-121B-2.3	J6	PST	"A" OTSG Main Flow Control Valve	PERF	None	S/D
3FDW-32	OFD-121B-3.3	J7	PST	"A" OTSG Main Flow Control Valve	PERF	None	S/D
1FDW-33	OFD-121B-1.3	J6	EMO	EFDW to OTSG "A"	PERF	None	S/D
2FDW-33	OFD-121B-2.3	K5	EMO	EFDW to OTSG "A"	PERF	None	S/D
3FDW-33	OFD-121B-3.3	K6	EMO	EFDW to OTSG "A"	PERF	None	S/D
1FDW-35	OFD-121B-1.3	L7	AOV	EFDW to OTSG "A"	PERF	None	S/D
2FDW-35	OFD-121B-2.3	K6	AOV	EFDW to OTSG "A"	PERF	None	S/D
3FDW-35	OFD-121B-3.3	K7	PST	EFDW to OTSG "A"	PERF	None	S/D
1FDW-36	OFD-121B-1.3	K7	EMO	EFDW to OTSG "A"	PERF	None	S/D
2FDW-36	OFD-121B-2.3	K7	EMO	EFDW to OTSG "A"	PERF	None	S/D
3FDW-36	OFD-121B-3.3	K8	EMO	EFDW to OTSG "A"	PERF	None	S/D
1FDW-38	OFD-121B-1.3	L8	EMO	EFDW to OTSG "A"	PERF	None	S/D
2FDW-38	OFD-121B-2.3	L7	EMO	EFDW to OTSG "A"	PERF	None	S/D
3FDW-38	OFD-121B-3.3	L8	EMO	EFDW to OTSG "A"	PERF	None	S/D
1FDW-39	OFD-121D-1.1	J10	CK	EFDW to OTSG "A" Check Valve	OPS/MAINT	None	RF
2FDW-39	OFD-121D-2.1	J10	CK	EFDW to OTSG "A" Check Valve	OPS/MAINT	None	RF
3FDW-39	OFD-121D-3.1	J10	CK	EFDW to OTSG "A" Check Valve	OPS/MAINT	None	RF
1FDW-41	OFD-121B-1.3	D7	PST	"B" OTSG Main Flow Control Valve	PERF	None	S/D
2FDW-41	OFD-121B-2.3	D7	PST	"B" OTSG Main Flow Control Valve	PERF	None	S/D
3FDW-41	OFD-121B-3.3	D7	PST	"B" OTSG Main Flow Control Valve	PERF	None	S/D
1FDW-42	OFD-121B-1.3	E6	EMO	EFDW to OTSG "B"	PERF	None	S/D
2FDW-42	OFD-121B-2.3	E5	EMO	EFDW to OTSG "B"	PERF	None	S/D
3FDW-42	OFD-121B-3.3	E6	EMO	EFDW to OTSG "B"	PERF	None	S/D
1FDW-44	OFD-121B-1.3	F7	AOV	EFDW to OTSG "B"	PERF	None	S/D
2FDW-44	OFD-121B-2.3	F7	AOV	EFDW to OTSG "B"	PERF	None	S/D
3FDW-44	OFD-121B-3.3	F7	AOV	EFDW to OTSG "B"	PERF	None	S/D
1FDW-45	OFD-121B-1.3	E7	EMO	EFDW to OTSG "B"	PERF	None	S/D
2FDW-45	OFD-121B-2.3	E7	EMO	EFDW to OTSG "B"	PERF	None	S/D
3FDW-45	OFD-121B-3.3	E8	EMO	EFDW to OTSG "B"	PERF	None	S/D
1FDW-47	OFD-121B-1.3	F8	EMO	EFDW to OTSG "B"	PERF	None	S/D
2FDW-47	OFD-121B-2.3	F8	EMO	EFDW to OTSG "B"	PERF	None	S/D
3FDW-47	OFD-121B-3.3	F8	EMO	EFDW to OTSG "B"	PERF	None	S/D
1FDW-48	OFD-121D-1.1	E10	CK	EFDW to OTSG "B" Check	OPS	None	RF
2FDW-48	OFD-121D-2.1	E10	CK	EFDW to OTSG "B" Check	OPS	None	RF
3FDW-48	OFD-121D-3.1	E10	CK	EFDW to OTSG "B" Check	OPS	None	RF
1FDW-91	OFD-121D-1.1	I2	CK	Emerg FDWP Recirc to UST Check	PERF	None	QTR
2FDW-91	OFD-121D-2.1	I2	CK	Emerg FDWP Recirc to UST Check	PERF	None	QTR
3FDW-91	OFD-121D-3.1	H3	CK	Emerg FDWP Recirc to UST Check	PERF	None	QTR
1FDW-93	OFD-121D-1.1	H6	CK	Emerg FDWP Disch Line "A" Check	OPS	None	RF
2FDW-93	OFD-121D-2.1	H6	CK	Emerg FDWP Disch Line "2A" Check	OPS	None	RF
3FDW-93	OFD-121D-3.1	H6	CK	Emerg FDWP Disch Line "3A" Check	OPS	None	RF
1FDW-94	OFD-121D-1.1	H6	MAN	Emerg FDWP Disch Line 1A	PERF	None	QTR
2FDW-94	OFD-121D-2.1	H6	MAN	Emerg FDWP Disch Line 2A	PERF	None	QTR
3FDW-94	OFD-121D-3.1	H6	MAN	Emerg FDWP Disch Line 3A	PERF	None	QTR
1FDW-95	OFD-121D-1.1	F6	CK	Emerg FDWP Disch Check Line 1B	OPS	None	RF
2FDW-95	OFD-121D-2.1	F6	CK	Emerg FDWP Disch Line 2B	OPS	None	RF
3FDW-95	OFD-121D-3.1	F6	CK	Emerg FDWP Disch Check Line 3B	OPS	None	RF
1FDW-96	OFD-121D-1.1	F6	MAN	Emerg FDWP Disch Line 1B	PERF	None	QTR

ILRT = Tested only during ILRT outages
RF = Tested only during refueling outages
S/D = Tested during cold shutdowns and refueling outages
QTR = Tested quarterly
Q/SD= Partial stroked quarterly and full stroked at cold shutdown and refueling
Q/RF = Partial stroked quarterly and full stroked at refueling
S/RF = Partial stroked at cold shutdown and full stroked at refueling

VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
2FDW-96	OFD-121D-2.1	F6	MAN	Emerg FDWP Disch Line B	PERF	None	QTR
3FDW-96	OFD-121D-3.1	F6	MAN	Emerg FDWP Disch Line B	PERF	None	QTR
1FDW-99	OFD-121D-1.1	H8	CK	Emerg FDW Line "A" Check	OPS	None	RF
2FDW-99	OFD-121D-2.1	H8	CK	Emerg FDW Line "A" Check	OPS	None	RF
3FDW-99	OFD-121D-3.1	H8	CK	Emerg FDW Line "A" Check	OPS	None	RF
1FDW-101	OFD-121D-1.1	F8	CK	Emerg FDW Line "B" Check	OPS	None	RF
2FDW-101	OFD-121D-2.1	F8	CK	Emerg FDW Line "B" Check	OPS	None	RF
3FDW-101	OFD-121D-3.1	F8	CK	Emerg FDW Line "B" Check	OPS	None	RF
1FDW-103	OFD-121B-1.5	K8	EMO	S/G "1A" Shell Drain Block	PERF	RF	QTR
2FDW-103	OFD-121B-2.5	J9	EMO	S/G "2A" Shell Drain Block	PERF	RF	QTR
3FDW-103	OFD-121B-3.5	J9	EMO	S/G "3A" Shell Drain Block	PERF	RF	QTR
1FDW-104	OFD-121B-1.5	C8	EMO	S/G "1B" Shell Drain Block	PERF	RF	QTR
2FDW-104	OFD-121B-2.5	C9	EMO	S/G "2B" Shell Drain Block	PERF	RF	QTR
3FDW-104	OFD-121B-3.5	D9	EMO	S/G "3B" Shell Drain Block	PERF	RF	QTR
1FDW-105	OFD-110A-1.1	F3	EMO	OTSG "A" Sample	PERF	RF	QTR
2FDW-105	OFD-110A-2.1	F3	EMO	OTSG "A" Sample	PERF	RF	QTR
3FDW-105	OFD-110A-3.1	F3	EMO	OTSG "A" Sample	PERF	RF	QTR
1FDW-106	OFD-110A-1.1	F6	PST	OTSG "A" Sample	PERF	RF	QTR
2FDW-106	OFD-110A-2.1	F6	PST	OTSG "A" Sample	PERF	RF	QTR
3FDW-106	OFD-110A-3.1	F6	PST	OTSG "A" Sample	PERF	RF	QTR
1FDW-107	OFD-110A-1.1	D3	EMO	OTSG "B" Sample	PERF	RF	QTR
2FDW-107	OFD-110A-2.1	D3	EMO	OTSG "B" Sample	PERF	RF	QTR
3FDW-107	OFD-110A-3.1	D3	EMO	OTSG "B" Sample	PERF	RF	QTR
1FDW-108	OFD-110A-1.1	D6	PST	OTSG "B" Sample	PERF	RF	QTR
2FDW-108	OFD-110A-2.1	D6	PST	OTSG "B" Sample	PERF	RF	QTR
3FDW-108	OFD-110A-3.1	D6	PST	OTSG "B" Sample	PERF	RF	QTR
1FDW-117	OFD-110A-1.1	F5	MAN	"1A" OTSG Smpl Penet 2 Vent	PERF	RF	None
2FDW-117	OFD-110A-2.1	F5	MAN	"2A" OTSG Smpl Penet 2 Vent	PERF	RF	None
3FDW-117	OFD-110A-3.1	F5	MAN	"3A" OTSG Smpl Penet 2 Vent	PERF	RF	None
1FDW-118	OFD-110A-1.1	F5	MAN	"1A" OTSG Smpl Penet 2 Drain	PERF	RF	None
2FDW-118	OFD-110A-2.1	F5	MAN	"2A" OTSG Smpl Penet 2 Drain	PERF	RF	None
3FDW-118	OFD-110A-3.1	D5	MAN	"3A" OTSG Smpl Penet 2 Drain	PERF	RF	None
1FDW-119	OFD-110A-1.1	F5	MAN	"1A" OTSG Smpl Penet 2 PX	PERF	RF	None
2FDW-119	OFD-110A-2.1	F5	MAN	"2A" OTSG Smpl Penet 2 PX	PERF	RF	None
1FDW-122	OFD-110A-1.1	F6	MAN	"1B" OTSG Smpl Penet 58 Vent	PERF	RF	None
2FDW-122	OFD-110A-2.1	D5	MAN	"2B" Smpl Penet 58 Vent	PERF	RF	None
3FDW-122	OFD-110A-3.1	D5	MAN	"3B" Smpl Penet 58 Vent	PERF	RF	None
1FDW-123	OFD-110A-1.1	C5	MAN	"1B" OTSG Smpl Penet 58 Drain	PERF	RF	None
2FDW-123	OFD-110A-2.1	C5	MAN	"2B" OTSG Smpl Penet 58 Drain	PERF	RF	None
3FDW-123	OFD-110A-3.1	C5	MAN	"3B" OTSG Smpl Penet 58 Drain	PERF	RF	None
1FDW-124	OFD-110A-1.1	D5	MAN	"1B" OTSG Smpl Penet 58 PX	PERF	RF	None
2FDW-124	OFD-110A-2.1	D5	MAN	"2B" OTSG Smpl Penet 58 PX	PERF	RF	None
2FDW-176	OFD-121B-2.5	L8	MAN	Penetration 43 Vent	PERF	RF	None
3FDW-176	OFD-121B-3.5	L8	MAN	Penetration 43 Vent	PERF	RF	None
2FDW-177	OFD-121B-2.5	C8	MAN	Penetration 4 Vent	PERF	RF	None
3FDW-177	OFD-121B-3.5	C8	MAN	Penetration 4 Vent	PERF	RF	None
1FDW-232	OFD-121D-1.1	K13	CK	OTSG "A" Emergency Hdr. Check	OPS	None	S/D
2FDW-232	OFD-121D-2.1	K13	CK	OTSG "A" Emergency Hdr. Check	OPS	None	S/D
3FDW-232	OFD-121D-3.1	K13	CK	OTSG "A" Emergency Hdr. Check	OPS	None	S/D
1FDW-233	OFD-121D-1.1	D13	CK	OTSG "B" Emergency Hdr. Check	OPS	None	S/D
2FDW-233	OFD-121D-2.1	D13	CK	OTSG "B" Emergency Hdr. Check	OPS	None	S/D
3FDW-233	OFD-121D-3.1	D13	CK	OTSG "B" Emergency Hdr. Check	OPS	None	S/D
1FDW-311	OFD-121D-1.1	J6	CK	EFDW to OTSG "A"	OPS	None	S/D
2FDW-311	OFD-121D-2.1	J6	CK	EFDW to OTSG "A"	OPS	None	S/D
3FDW-311	OFD-121D-3.1	I6	CK	EFDW to OTSG "A"	OPS	None	S/D
1FDW-312	OFD-121D-1.1	E6	CK	EFDW to OTSG "B"	OPS	None	S/D

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QTR = Tested quarterly
Q/SD= Partial stroked quarterly and full stroked at cold shutdown and refueling
Q/RF = Partial stroked quarterly and full stroked at refueling
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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
2FDW-312	OFD-121D-2.1	E7	CK	EFDW to OTSG "B"	OPS	None	S/D
3FDW-312	OFD-121D-3.1	E6	CK	EFDW to OTSG "B"	OPS	None	S/D
1FDW-313	OFD-121D-1.1	H10	MAN	EFWP Line "1A2" Disch to S/G "1A" X-Tie	PERF	None	QTR
2FDW-313	OFD-121D-2.1	I10	MAN	EFWP Line "2A2" Disch to S/G "2A" X-Tie	PERF	None	QTR
3FDW-313	OFD-121D-3.1	H10	MAN	EFWP Line "3A2" Disch to S/G "3A" X-Tie	PERF	None	QTR
1FDW-314	OFD-121D-1.1	F10	MAN	EFWP Line "1B2" Disch to S/G "1B" X-Tie	PERF	None	QTR
2FDW-314	OFD-121D-2.1	F10	MAN	EFWP to Line "2B2" Disch to S/G "2B" X-Tie	PERF	None	QTR
3FDW-314	OFD-121D-3.1	F10	MAN	EFWP to Line "3B2" Disch to S/G "3B" X-Tie	PERF	None	QTR
1FDW-315	OFD-121D-1.1	K10	AOV	EFDW to OTSG "A"	PERF	None	QTR
2FDW-315	OFD-121D-2.1	K10	AOV	EFDW to OTSG "A"	PERF	None	QTR
3FDW-315	OFD-121D-3.1	K10	AOV	EFDW to OTSG "A"	PERF	None	QTR
1FDW-316	OFD-121D-1.1	D10	AOV	EFDW to OTSG "B"	PERF	None	QTR
2FDW-316	OFD-121D-2.1	D10	AOV	EFDW to OTSG "B"	PERF	None	QTR
3FDW-316	OFD-121D-3.1	D10	AOV	EFDW to OTSG "B"	PERF	None	QTR
1FDW-317	OFD-121D-1.1	K10	CK	EFDW to OTSG "A"	OPS	None	S/D
2FDW-317	OFD-121D-2.1	K10	CK	EFDW to OTSG "B"	OPS	None	S/D
3FDW-317	OFD-121D-3.1	K10	CK	EFDW to OTSG "B"	OPS	None	S/D
1FDW-318	OFD-121D-1.1	D10	CK	EFDW to OTSG "B"	OPS	None	S/D
2FDW-318	OFD-121D-2.1	D10	CK	EFDW to OTSG "A"	OPS	None	S/D
3FDW-318	OFD-121D-3.1	D10	CK	EFDW to OTSG "A"	OPS	None	S/D
1FDW-329	OFD-121B-1.5	J8	MAN	OTSG DRAIN PENETRATION BLOCK	PERF	RF	None
2FDW-329	OFD-121B-2.5	I8	MAN	OTSG Drain Penetration Block	PERF	RF	None
3FDW-329	OFD-121B-3.5	J8	MAN	OTSG Drain Penetration Block	PERF	RF	None
1FDW-331	OFD-121B-1.5	D8	MAN	OTSG Drain Penetration Block	PERF	RF	None
2FDW-331	OFD-121B-2.5	C8	MAN	OTSG Drain Penetration Block	PERF	RF	None
3FDW-331	OFD-121B-3.5	D8	MAN	OTSG Drain Penetration Block	PERF	RF	None
1FDW-334	OFD-121B-1.5	L6	MAN	OTSG Drain Block	PERF	RF	None
2FDW-334	OFD-121B-2.5	K7	MAN	OTSG Drain Block	PERF	RF	None
3FDW-334	OFD-121B-3.5	L6	MAN	OTSG Drain Block	PERF	RF	None
1FDW-335	OFD-121B-1.5	C6	MAN	OTSG Drain Block	PERF	RF	None
2FDW-335	OFD-121B-2.5	C6	MAN	OTSG Drain Block	PERF	RF	None
3FDW-335	OFD-121B-3.5	C6	MAN	OTSG Drain Block	PERF	RF	None
1FDW-345	OFD-121D-1.1	K12	CK	"1A" SG Emergency Hdr Check	OPS/MAINT	None	S/D
2FDW-345	OFD-121D-2.1	K12	CK	"2A" Emergency Hdr Check	OPS/MAINT	None	S/D
3FDW-345	OFD-121D-3.1	K13	CK	"3A" SG Emergency Hdr Check	OPS/MAINT	None	S/D
1FDW-346	OFD-121D-1.1	D12	CK	"1B" SG Emergency Hdr Check	OPS	None	S/D
2FDW-346	OFD-121D-2.1	D12	CK	"2B" SG Emergency Hdr Check	OPS	None	S/D
3FDW-346	OFD-121D-3.1	D12	CK	"3B" SG Emergency Hdr Check	OPS	None	S/D
1FDW-347-SSF	OFD-121D-1.1	D13	EMO	SSF Aux Ser Water to "B" OTSG	PERF	None	S/D
2FDW-347-SSF	OFD-121D-2.1	D13	EMO	SSF Aux Ser Water to B OTSG	PERF	None	S/D
3FDW-347-SSF	OFD-121D-3.1	D13	EMO	SSF Aux Ser Water to "B" OTSG	PERF	None	S/D
1FDW-370	OFD-121D-1.1	K3	CK	MDEFWP "A" Min Flow Recric	OPS	None	QTR
2FDW-370	OFD-121D-2.1	K3	CK	MDEFWP "A" Min Flow Recric	OPS	None	QTR
3FDW-370	OFD-121D-3.1	K4	CK	MDEFWP "A" Min Flow Recric	OPS	None	QTR
1FDW-372	OFD-121D-1.1	K7	EMO	MDEFWP "1A" Disch to SG "1A" (Emerg-Emerg Hdr)	PERF	None	QTR
2FDW-372	OFD-121D-2.1	K7	EMO	MDEFWP "2A" Disch to SG "2A" (Emerg-Emerg Hdr)	PERF	None	QTR
3FDW-372	OFD-121D-3.1	K7	EMO	MDEFWP "3A" Disch to SG "3A" (Emerg-Emerg Hdr)	PERF	None	QTR
1FDW-373	OFD-121D-1.1	K7	CK	MDEFW to OTSG "A"	OPS	None	S/D
2FDW-373	OFD-121D-2.1	K7	CK	MDEFW to OTSG "A"	OPS	None	S/D
3FDW-373	OFD-121D-3.1	K7	CK	MDEFW to OTSG "A"	OPS	None	S/D
1FDW-374	OFD-121D-1.1	J6	EMO	MDEFWP "1A" Disch to SG "1A" (Nor-Emerg Hdr)	PERF	None	QTR
2FDW-374	OFD-121D-2.1	K6	EMO	MDEFWP "2A" Disch to SG "2A" (Nor-Emerg Hdr)	PERF	None	QTR
3FDW-374	OFD-121D-3.1	J7	EMO	MDEFWP "3A" Disch to SG "3A" (Nor-Emerg Hdr)	PERF	None	QTR
1FDW-375	OFD-121D-1.1	I6	CK	MDEFWP "1A" Disch Check to SG "1A" (Nor-Emerg Hdr)	OPS	None	RF
2FDW-375	OFD-121D-2.1	J6	CK	MDEFWP "2A" Disch Check to SG "2A" (Nor-Emerg Hdr)	OPS	None	RF
3FDW-375	OFD-121D-3.1	I7	CK	MDEFWP "3A" Disch Check to SG "3A" (Nor-Emerg Hdr)	OPS	None	RF

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QTR = Tested quarterly
Q/SD= Partial stroked quarterly and full stroked at cold shutdown and refueling
Q/RF = Partial stroked quarterly and full stroked at refueling
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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
1FDW-378	OFD-121D-1.1	K3	CK	1A MDEFDW Pump Minimum Recirc Check	PERF	None	QTR
2FDW-378	OFD-121D-2.1	K3	CK	2A MDEFDW Pump Minimum Recirc Check	PERF	None	QTR
3FDW-378	OFD-121D-3.1	D12	CK	3A MDEFDW Pump Minimum Recirc Check	PERF	None	QTR
1FDW-380	OFD-121D-1.1	D3	CK	MDEFWP "B" Min Flow Recirc	OPS	None	QTR
2FDW-380	OFD-121D-2.1	D3	CK	MDEFWP "B" Min Flow Recirc	OPS	None	QTR
3FDW-380	OFD-121D-3.1	D4	CK	MDEFWP "B" Min Flow Recirc	OPS	None	QTR
1FDW-382	OFD-121D-1.1	D7	EMO	MDEFWP "1B" Disch to SG "1B" (Emerg-Emerg Hdr)	PERF	None	QTR
2FDW-382	OFD-121D-2.1	D7	EMO	MDEFWP "2B" Disch to SG "2B" (Emerg-Emerg Hdr)	PERF	None	QTR
3FDW-382	OFD-121D-3.1	D7	EMO	MDEFWP "3B" Disch to SG "3B" (Emerg-Emerg Hdr)	PERF	None	QTR
1FDW-383	OFD-121D-1.1	D7	CK	MDEFW to OTSG "B"	OPS	None	S/D
2FDW-383	OFD-121D-2.1	D6	CK	MDEFW to OTSG "B"	OPS	None	S/D
3FDW-383	OFD-121D-3.1	D7	CK	MDEFW to OTSG "B"	OPS	None	S/D
1FDW-384	OFD-121D-1.1	D6	EMO	MDEFWP "1B" Disch to SG "1B" (Nor-Emerg Hdr)	PERF	None	QTR
2FDW-384	OFD-121D-2.1	D6	EMO	MDEFWP "2B" Disch to SG "2B" (Nor-Emerg Hdr)	PERF	None	QTR
3FDW-384	OFD-121D-3.1	D7	EMO	MDEFWP "3B" Disch to SG "3B" (Nor-Emerg Hdr)	PERF	None	QTR
1FDW-385	OFD-121D-1.1	D6	CK	MDEFWP "1B" Disch Check to SG "1B" (Nor-Emerg Hdr)	OPS	None	RF
2FDW-385	OFD-121D-2.1	D6	CK	MDEFWP "2B" Disch Check to SG "2B" (Nor-Emerg Hdr)	OPS	None	RF
3FDW-385	OFD-121D-3.1	D7	CK	MDEFWP "3B" Disch Check to SG "3B" (Nor-Emerg Hdr)	OPS	None	RF
1FDW-388	OFD-121D-1.1	D3	CK	1B MDEFDW Pump Minimum Recirc Check	PERF	None	QTR
2FDW-388	OFD-121D-2.1	D3	CK	2B MDEFDW Pump Minimum Recirc Check	PERF	None	QTR
3FDW-388	OFD-121D-3.1	D4	CK	3B MDEFDW Pump Minimum Recirc Check	PERF	None	QTR
1FDW-432	OFD-121D-1.1	E10	CK	1B SG Emerg Hdr Check	OPS/MAINT	None	RF
2FDW-432	OFD-121D-2.1	E10	CK	2B SG Emerg Hdr Check (NSM-1632)	OPS/MAINT	None	RF
3FDW-432	OFD-121D-3.1	E10	CK	3B SG Emerg Hdr Check (NSM-1632)	OPS/MAINT	None	RF
1FDW-442	OFD-121D-1.1	D11	CK	EFDW to "B" S/G Outside Check	OPS	None	S/D
2FDW-442	OFD-121D-2.1	D11	CK	EFDW to "B" S/G Outside Check	OPS	None	S/D
3FDW-442	OFD-121D-3.1	D11	CK	EFDW to "B" S/G Outside Check	OPS	None	S/D
FO-50	OFD-135A-1.2	D7	CK	FO Transfer Filter Discharge Check	PERF	None	QTR
FO-52	OFD-135A-1.2	E5	RF	Diesel Engine FOTP Disch. Relief			
FO-78	OFD-135A-1.2	J7	CK	DC Fuel Oil Pump Inlet Check	PERF	None	QTR
FO-79	OFD-135A-1.2	J8	CK	DC Fuel Oil Pump to Filter Bypass Check	PERF	None	QTR
FO-80	OFD-135A-1.2	J9	CK	DC Fuel Oil Pump Outlet to Filter Check	PERF	None	QTR
FO-81	OFD-135A-1.2	I8	CK	Engine Driven Fuel Oil Pump Inlet Check	PERF	None	QTR
FO-82	OFD-135A-1.2	I9	CK	Engine Driven Fuel Oil Pump to Filter Bypass Check	PERF	None	QTR
FO-83	OFD-135A-1.2	J9	CK	Engine Driven Fuel Oil Pump Outlet to Filter Check	PERF	None	QTR
FO-84	OFD-135A-1.2	I10	CK	Engine A Fuel Injection Return Check	PERF	None	QTR
FO-89	OFD-135A-1.2	J11	CK	DC Fuel Oil Pump Inlet Check	PERF	None	QTR
FO-90	OFD-135A-1.2	J12	CK	DC Fuel Oil Pump to Filter Bypass Check	PERF	None	QTR
FO-91	OFD-135A-1.2	J13	CK	DC Fuel Oil Pump Outlet to Filter Check	PERF	None	QTR
FO-92	OFD-135A-1.2	I12	CK	Engine Driven Fuel Oil Pump Inlet Check	PERF	None	QTR
FO-93	OFD-135A-1.2	I13	CK	Engine Driven Fuel Oil Pump to Filter Bypass Check	PERF	None	QTR
FO-94	OFD-135A-1.2	J13	CK	Engine Driven Fuel Oil Pump Outlet to Filter Check	PERF	None	QTR
FO-95	OFD-135A-1.2	I14	CK	Engine B Fuel Injector Return Check	PERF	None	QTR
1FW-64	OFD-106E-1.1	J2	MAN	FW to RB	PERF	RF	None
2FW-64	OFD-106E-2.1	J3	MAN	FW to RB	PERF	RF	None
3FW-64	OFD-106E-3.1	J3	MAN	FW to RB	PERF	RF	None
1FW-65	OFD-106E-1.1	J4	MAN	FW to RB	PERF	RF	None
2FW-65	OFD-106E-2.1	J6	MAN	FW to RB	PERF	RF	None
3FW-65	OFD-106E-3.1	J4	MAN	FW to RB	PERF	RF	None
1FW-66	OFD-106E-1.1	J3	MAN	RB FW Header Drain (46)	PERF	RF	None
2FW-66	OFD-106E-2.1	J5	MAN	RB FW Header Drain (46)	PERF	RF	None
3FW-66	OFD-106E-3.1	J3	MAN	RB FW Header Drain (46)	PERF	RF	None
1GWD-10	OFD-107A-1.1	L13	MAN	QT Vent Penet 18 Vent	PERF	RF	None
2GWD-10	OFD-107A-2.1	L12	MAN	QT Vent Penet 18 Vent	PERF	RF	None
3GWD-10	OFD-107A-3.1	L12	MAN	QT Vent Penet 18 Vent	PERF	RF	None
1GWD-11	OFD-107A-1.1	L12	MAN	QT Vent Penet 18 Vent	PERF	RF	None

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
2GWD-11	OFD-107A-2.1	L12	MAN	QT Vent Penet 18 Vent	PERF	RF	None
3GWD-11	OFD-107A-3.1	L12	MAN	QT Vent Penet 18 Vent	PERF	RF	None
1GWD-12	OFD-107A-1.1	J11	EMO	QT Vent	PERF	RF	QTR
2GWD-12	OFD-107A-2.1	J11	EMO	QT Vent	PERF	RF	QTR
3GWD-12	OFD-107A-3.1	J11	EMO	QT Vent	PERF	RF	QTR
1GWD-13	OFD-107A-1.1	K13	AOV	QT Vent	PERF	RF	QTR
2GWD-13	OFD-107A-2.1	K13	AOV	QT Vent	PERF	RF	QTR
3GWD-13	OFD-107A-3.1	K13	AOV	QT Vent	PERF	RF	QTR
1HP-3	OFD-101A-1.1	L5	EMO	"A" LD Cooler Outlet	PERF	RF	QTR
2HP-3	OFD-101A-2.1	L5	EMO	"A" LD Cooler Outlet	PERF	RF	QTR
3HP-3	OFD-101A-3.1	K5	EMO	"A" LD Cooler Outlet	PERF	RF	QTR
1HP-4	OFD-101A-1.1	J5	EMO	"B" LD Cooler Outlet	PERF	RF	QTR
2HP-4	OFD-101A-2.1	J5	EMO	"B" LD Cooler Outlet	PERF	RF	QTR
3HP-4	OFD-101A-3.1	J5	EMO	"B" LD Cooler Outlet	PERF	RF	QTR
1HP-5	OFD-101A-1.1	K8	PST	LD Cooler Outlet	PERF	RF	S/D
2HP-5	OFD-101A-2.1	K8	PST	LD Cooler Outlet	PERF	RF	S/D
3HP-5	OFD-101A-3.1	K8	PST	LD Cooler Outlet	PERF	RF	S/D
1HP-16	OFD-101A-1.2	K7	PST	Makeup to LDST	PERF	None	QTR
2HP-16	OFD-101A-2.2	K8	PST	Makeup to LDST	PERF	None	QTR
3HP-16	OFD-101A-3.2	K8	PST	Makeup to LDST	PERF	None	QTR
1HP-20	OFD-101A-1.1	F5	EMO	RC Pump Seal Return	PERF	RF	S/D
2HP-20	OFD-101A-2.1	E6	EMO	RC Pump Seal Return	PERF	RF	S/D
3HP-20	OFD-101A-3.1	E6	EMO	RC Pump Seal Return	PERF	RF	S/D
1HP-21	OFD-101A-1.1	E7	PST	RC Pump Seal Return	PERF	RF	S/D
2HP-21	OFD-101A-2.1	E8	PST	RC Pump Seal Return	PERF	RF	S/D
3HP-21	OFD-101A-3.1	E7	PST	RC Pump Seal Return	PERF	RF	S/D
1HP-24	OFD-101A-1.3	I3	EMO	"A" HPI Pump Suct from BWST	PERF	None	QTR
2HP-24	OFD-101A-2.3	I3	EMO	"A" HPI Pump Suct from BWST	PERF	None	QTR
3HP-24	OFD-101A-3.3	I2	EMO	"A" HPI Pump Suct from BWST	PERF	None	QTR
1HP-25	OFD-101A-1.3	F3	EMO	"C" HPI Pump Suct from BWST	PERF	None	QTR
2HP-25	OFD-101A-2.3	F3	EMO	"C" HPI Pump Suct from BWST	PERF	None	QTR
3HP-25	OFD-101A-3.3	F3	EMO	"C" HPI Pump Suct from BWST	PERF	None	QTR
1HP-26	OFD-101A-1.4	J7	EMO	"A" Loop Injection	PERF	None	S/D
2HP-26	OFD-101A-2.4	J7	EMO	"A" Loop Injection	PERF	None	S/D
3HP-26	OFD-101A-3.4	J6	EMO	"A" Loop Injection	PERF	None	S/D
1HP-27	OFD-101A-1.4	D7	EMO	"B" Loop Injection	PERF	None	QTR
2HP-27	OFD-101A-2.4	D7	EMO	"B" Loop Injection	PERF	None	QTR
3HP-27	OFD-101A-3.4	D7	EMO	"B" Loop Injection	PERF	None	QTR
1HP-36	OFD-101A-1.1	K7	MAN	Letdown Penet 6 Vent	PERF	RF	None
2HP-36	OFD-101A-2.1	K7	MAN	Letdown Penet 6 Vent	PERF	RF	None
3HP-36	OFD-101A-3.1	K7	MAN	Letdown Penet 6 Vent	PERF	RF	None
1HP-37	OFD-101A-1.1	K7	MAN	Letdown Penet 6 Drain	PERF	RF	None
2HP-37	OFD-101A-2.1	K7	MAN	Letdown Penet 6 Drain	PERF	RF	None
3HP-37	OFD-101A-3.1	K7	MAN	Letdown Penet 6 Drain	PERF	RF	None
1HP-38	OFD-101A-1.1	K7	MAN	Letdown Penet 6 PX	PERF	RF	None
1HP-43	OFD-101A-1.1	J13	RF	Letdown Line Relief			
2HP-43	OFD-101A-2.1	J13	RF	Letdown Line Relief			
3HP-43	OFD-101A-3.1	J13	RF	Letdown Line Relief			
1HP-45	OFD-109A-1.1	G3	RF	Purification IX "A" Inlet Relief			
2HP-45	OFD-109A-1.1	G10	RF	Purification IX "A" Inlet Relief			
3HP-45	OFD-109A-3.1	H4	RF	Purification IX "A" Inlet Relief			
HP-48	OFD-109A-1.1	G7	RF	Spare Purification IX Inlet Relief			
3HP-48	OFD-109A-3.1	H9	RF	"3B" Purification IX Inlet Relief			
1HP-55	OFD-101A-1.2	H2	RF	Letdown Filter "A" Outlet Relief			
2HP-55	OFD-101A-2.2	H2	RF	Letdown Filter "A" Outlet Relief			
3HP-55	OFD-101A-3.2	H2	RF	Letdown Filter "A" Outlet Relief			

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1HP-56	OFD-101A-1.2	H10	RF	Letdown Filter "B" Outlet Relief			
2HP-56	OFD-101A-2.2	H9	RF	Letdown Filter "B" Outlet Relief			
3HP-56	OFD-101A-3.2	H9	RF	Letdown Filter "B" Outlet Relief			
1HP-68	OFD-101A-1.1	F6	MAN	Seal Return Penet 7 Vent	PERF	RF	None
2HP-68	OFD-101A-2.1	E7	MAN	Seal Return Penet 7 Vent	PERF	RF	None
3HP-68	OFD-101A-3.1	E7	MAN	Seal Return Penet 7 Vent	PERF	RF	None
1HP-69	OFD-101A-1.1	E6	MAN	Seal Return Penet 7 Drain	PERF	RF	None
2HP-69	OFD-101A-2.1	E7	MAN	Seal Return Penet 7 Drain	PERF	RF	None
3HP-69	OFD-101A-3.1	E7	MAN	Seal Return Penet 7 Drain	PERF	RF	None
1HP-70	OFD-101A-1.1	E6	MAN	Seal Return Penet 7 PX	PERF	RF	None
1HP-71	OFD-101A-1.1	F10	RF	Seal Return Line Relief			
2HP-71	OFD-101A-2.1	F10	RF	Seal Return Line Relief			
3HP-71	OFD-101A-3.1	F10	RF	Seal Return Line Relief			
1HP-78	OFD-101A-1.2	F6	CK	LDST Inlet Check	PERF	None	QTR
2HP-78	OFD-101A-2.2	F6	CK	LDST Inlet Check	PERF	None	QTR
3HP-78	OFD-101A-3.2	F6	CK	LDST Inlet Check	PERF	None	QTR
1HP-79	OFD-101A-1.2	C10	RF	Letdown Storage Tank Relief			
2HP-79	OFD-101A-2.2	C8	RF	Letdown Storage Tank Relief			
3HP-79	OFD-101A-3.2	C11	RF	Letdown Storage Tank Relief			
2HP-83	OFD-101A-2.1	K6	MAN	Letdown Line Penet 6 Vent	PERF	RF	None
1HP-97	OFD-101A-1.2	D12	CK	LDST Outlet Check	PERF	RF	QTR
2HP-97	OFD-101A-2.2	D12	CK	LDST Outlet Check	PERF	RF	QTR
3HP-97	OFD-101A-3.2	D12	CK	LDST Outlet Check	PERF	RF	QTR
1HP-101	OFD-101A-1.3	J3	CK	"A" HPI Pump Suct Check Valve	OPS	RF	S/RF
2HP-101	OFD-101A-2.3	J3	CK	"A" HPI Pump Suct Check Valve	OPS	RF	S/RF
3HP-101	OFD-101A-3.3	J2	CK	"A" HPI Pump Suct Check Valve	OPS	RF	S/RF
1HP-102	OFD-101A-1.3	E3	CK	"C" HPI Pump Suct Check Valve	OPS	RF	S/RF
2HP-102	OFD-101A-2.3	E3	CK	"C" HPI Pump Suct Check Valve	OPS	RF	S/RF
3HP-102	OFD-101A-3.3	E2	CK	"C" HPI Pump Suct Check Valve	OPS	RF	S/RF
1HP-104	OFD-101A-1.3	K6	RF	Pump "A" Suction Relief			
2HP-104	OFD-101A-2.3	K6	RF	Pump "A" Suction Relief			
3HP-104	OFD-101A-3.3	J5	RF	Pump "A" Suction Relief			
1HP-105	OFD-101A-1.3	J10	CK	"A" HPI Disch Check Valve	PERF/OPS	None	Q/RF
2HP-105	OFD-101A-2.3	J10	CK	"A" HPI Disch Check Valve	PERF/OPS	None	Q/RF
3HP-105	OFD-101A-3.3	J10	CK	"A" HPI Disch Check Valve	PERF/OPS	None	Q/RF
1HP-108	OFD-101A-1.3	H6	RF	Pump "B" Suction Relief			
2HP-108	OFD-101A-2.3	H6	RF	Pump "B" Suction Relief			
3HP-108	OFD-101A-3.3	H5	RF	Pump "B" Suction Relief			
1HP-109	OFD-101A-1.3	G10	CK	"B" HPI Disch Check Valve	PERF/OPS	None	Q/RF
2HP-109	OFD-101A-2.3	G10	CK	"B" HPI Disch Check Valve	PERF/OPS	None	Q/RF
3HP-109	OFD-101A-3.3	G10	CK	"B" HPI Disch Check Valve	PERF/OPS	None	Q/RF
1HP-112	OFD-101A-1.3	E6	RF	Pump "C" Suction Relief			
2HP-112	OFD-101A-2.3	D6	RF	Pump "C" Suction Relief			
3HP-112	OFD-101A-3.3	C5	RF	Pump "C" Suction Relief			
1HP-113	OFD-101A-1.3	D10	CK	"C" HPI Disch Check Valve	PERF/OPS	None	Q/RF
2HP-113	OFD-101A-2.3	D10	CK	"C" HPI Disch Check Valve	PERF/OPS	None	Q/RF
3HP-113	OFD-101A-3.3	D10	CK	"C" HPI Disch Check Valve	PERF/OPS	None	Q/RF
1HP-126	OFD-101A-1.4	J13	CK	"A" Loop Check Valve	OPS	None	S/RF
2HP-126	OFD-101A-2.4	J13	CK	"A" Loop Check Valve	OPS	None	S/RF
3HP-126	OFD-101A-3.4	J11	CK	"A" Loop Check Valve	OPS	None	S/RF
1HP-127	OFD-101A-1.4	J13	CK	"A" Loop Check Valve	OPS	None	S/RF
2HP-127	OFD-101A-2.4	J13	CK	"A" Loop Check Valve	OPS	None	S/RF
3HP-127	OFD-101A-3.4	J11	CK	"A" Loop Check Valve	OPS	None	S/RF
1HP-144	OFD-101A-1.4	G13	CK	Seal Supply to Pump "A2"	PERF	RF	RF
2HP-144	OFD-101A-2.4	F12	CK	Seal Supply to Pump "A2"	PERF	RF	RF
3HP-144	OFD-101A-3.4	H13	CK	Seal Supply to Pump "A2"	PERF	RF	RF

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
1HP-145	OFD-101A-1.4	F13	CK	Seal Supply to Pump "A1"	PERF	RF	RF
2HP-145	OFD-101A-2.4	G12	CK	Seal Supply to Pump "A1"	PERF	RF	RF
3HP-145	OFD-101A-3.4	I13	CK	Seal Supply to Pump "A1"	PERF	RF	RF
1HP-146	OFD-101A-1.4	H13	CK	Seal Supply to Pump "B2"	PERF	RF	RF
2HP-146	OFD-101A-2.4	H12	CK	Seal Supply to Pump "B2"	PERF	RF	RF
3HP-146	OFD-101A-3.4	G13	CK	Seal Supply to Pump "B2"	PERF	RF	RF
1HP-147	OFD-101A-1.4	I12	CK	Seal Supply to Pump "B1"	PERF	RF	RF
2HP-147	OFD-101A-2.4	I12	CK	Seal Supply to Pump "B1"	PERF	RF	RF
3HP-147	OFD-101A-3.4	F13	CK	Seal Supply to Pump "B1"	PERF	RF	RF
1HP-152	OFD-101A-1.4	D14	CK	"B" Loop Check Valve	OPS	None	S/RF
2HP-152	OFD-101A-2.4	D13	CK	"B" Loop Check Valve	OPS	None	S/RF
3HP-152	OFD-101A-3.4	D13	CK	"B" Loop Check Valve	OPS	None	S/RF
1HP-153	OFD-101A-1.4	E13	CK	"B" Loop Check Valve	OPS	None	S/RF
2HP-153	OFD-101A-2.4	E13	CK	"B" Loop Check Valve	OPS	None	S/RF
3HP-153	OFD-101A-3.4	E13	CK	"B" Loop Check Valve	OPS	None	S/RF
1HP-155	OFD-127B-1.2	H7	MAN	CF Tank "A" Fill	PERF	RF	None
2HP-155	OFD-127B-2.2	H7	MAN	CF Tank "A" Fill	PERF	RF	None
3HP-155	OFD-127B-3.2	H7	MAN	CF Tank "A" Fill	PERF	RF	None
1HP-156	OFD-127B-1.2	I7	MAN	CF Tank "B" Fill	PERF	RF	None
2HP-156	OFD-127B-2.2	I7	MAN	CF Tank "B" Fill	PERF	RF	None
3HP-156	OFD-127B-3.2	I7	MAN	CF Tank "B" Fill	PERF	RF	None
1HP-188	OFD-101A-1.4	D11	CK	"B" Loop Check Valve	OPS	None	S/RF
2HP-188	OFD-101A-2.4	D11	CK	"B" Loop Check Valve	OPS	None	S/RF
3HP-188	OFD-101A-3.4	D10	CK	"B" Loop Check Valve	OPS	None	S/RF
1HP-189	OFD-101A-1.2	F6	CK	Seal Return Line Check Valve	MAINT	None	RF
2HP-189	OFD-101A-2.2	F5	CK	Seal Return Line Check Valve	MAINT	None	RF
3HP-189	OFD-101A-3.2	F5	CK	RC Seal Return Line Check Valve	MAINT	None	RF
1HP-194	OFD-101A-1.4	J10	CK	"A" Loop Check Valve	PERF/OPS	None	Q/RF
2HP-194	OFD-101A-2.4	J10	CK	"A" Loop Check Valve	PERF/OPS	None	Q/RF
3HP-194	OFD-101A-3.4	J8	CK	"A" Loop Check Valve	PERF/OPS	None	Q/RF
1HP-202	OFD-101A-1.4	G11	MAN	RCP Seal Supply Penet 23 Vent	PERF	RF	None
2HP-202	OFD-101A-2.4	F10	MAN	RCP "A2" Seal Supply Penet 23 Vent	PERF	RF	None
3HP-202	OFD-101A-3.4	H12	MAN	RCP "A" Seal Supply Penet 23 Vent	PERF	RF	None
1HP-203	OFD-101A-1.4	G11	MAN	RCP Seal Supply Penet 23 PX	PERF	RF	None
1HP-204	OFD-101A-1.4	F10	MAN	RCP Seal Supply Penet 23 Drain	PERF	RF	None
2HP-204	OFD-101A-2.4	E10	MAN	RCP "A2" Seal Supply Penet 23 Drain	PERF	RF	None
3HP-204	OFD-101A-3.4	H11	MAN	RCP "A" Seal Supply Penet 23 Drain	PERF	RF	None
1HP-209	OFD-101A-1.4	F11	MAN	RCP "1A" Seal Supply Penet 23 Vent	PERF	RF	None
2HP-209	OFD-101A-2.4	G11	MAN	RCP "A1" Seal Supply Penet 23 Vent	PERF	RF	None
3HP-209	OFD-101A-3.4	I11	MAN	RCP "A1" Seal Supply Penet 23 Vent	PERF	RF	None
1HP-210	OFD-101A-1.4	F11	MAN	RCP "1A" Seal Supply Penet 23 PX	PERF	RF	None
1HP-211	OFD-101A-1.4	F10	MAN	RCP "1A" Seal Supply Penet 23 Drn	PERF	RF	None
2HP-211	OFD-101A-2.4	F11	MAN	RCP "A1" Seal Supply Penet 23 Drn	PERF	RF	None
3HP-211	OFD-101A-3.4	I11	MAN	RCP "A1" Seal Supply Penet 23 Drn	PERF	RF	None
1HP-216	OFD-101A-1.4	H11	MAN	RCP "B2" Seal Supply Penet 10 Vent	PERF	RF	None
2HP-216	OFD-101A-2.4	H11	MAN	RCP "B2" Seal Supply Penet 10 Vent	PERF	RF	None
3HP-216	OFD-101A-3.4	G11	MAN	RCP "B2" Seal Supply Penet 10 Vent	PERF	RF	None
1HP-217	OFD-101A-1.4	H11	MAN	RCP "B2" Seal Supply Penet 10 PX	PERF	RF	None
1HP-218	OFD-101A-1.4	G10	MAN	RCP "B2" Seal Supply Penet 10 Drn	PERF	RF	None
2HP-218	OFD-101A-2.4	H11	MAN	RCP "B2" Seal Supply Penet 10 Drn	PERF	RF	None
3HP-218	OFD-101A-3.4	G12	MAN	RCP "B2" Seal Supply Penet 10 Drn	PERF	RF	None
1HP-223	OFD-101A-1.4	I11	MAN	RCP "B1" Seal Supply Penet 10 Vent	PERF	RF	None
2HP-223	OFD-101A-2.4	I11	MAN	RCP "B1" Seal Supply Penet 10 Vent	PERF	RF	None
3HP-223	OFD-101A-3.4	F11	MAN	RCP "B1" Seal Supply Penet 10 Vent	PERF	RF	None
1HP-225	OFD-101A-1.4	I11	MAN	RCP "B1" Seal Supply Penet 10 Drn	PERF	RF	None
2HP-225	OFD-101A-2.4	I11	MAN	RCP "B1" Seal Supply Penet 10 Drn	PERF	RF	None

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3HP-225	OFD-101A-3.4	F12	MAN	RCP "B1" Seal Supply Penet 10 Drn	PERF	RF	None
1HP-247	OFD-101A-1.3	K10	MAN	Pump A Recirculation Block	PERF	None	S/D
2HP-247	OFD-101A-2.3	K10	MAN	Pump A Recirculation Block	PERF	None	S/D
3HP-247	OFD-101A-3.3	K9	MAN	Pump A Recirculation Block	PERF	None	S/D
1HP-248	OFD-101A-1.3	L10	CK	Pump "A" Recirculation Stop Check	MAINT	None	RF
2HP-248	OFD-101A-2.3	L10	CK	Pump "A" Recirculation Stop Check	MAINT	None	RF
3HP-248	OFD-101A-3.3	H9	CK	Pump "A" Recirculation Stop Check	MAINT	None	RF
1HP-249	OFD-101A-1.3	H9	MAN	Pump B Recirculation Block	PERF	None	S/D
2HP-249	OFD-101A-2.3	H9	MAN	Pump B Recirculation Block	PERF	None	S/D
3HP-249	OFD-101A-3.3	H9	MAN	Pump B Recirculation Block	PERF	None	S/D
1HP-250	OFD-101A-1.3	I9	CK	Pump "B" Recirculation Stop Check	MAINT	None	RF
2HP-250	OFD-101A-2.3	I9	CK	Pump "B" Recirculation Stop Check	MAINT	None	RF
3HP-250	OFD-101A-3.3	I9	CK	Pump "B" Recirculation Stop Check Valve	MAINT	None	RF
1HP-251	OFD-101A-1.3	D9	MAN	Pump C Recirculation Block	PERF	None	S/D
2HP-251	OFD-101A-2.3	D9	MAN	Pump C Recirculation Block	PERF	None	S/D
3HP-251	OFD-101A-3.3	D8	MAN	Pump C Recirculation Block	PERF	None	S/D
1HP-252	OFD-101A-1.3	E9	CK	Pump "C" Recirculation Stop Check	MAINT	None	RF
2HP-252	OFD-101A-2.3	E9	CK	Pump "C" Recirculation Stop Check	MAINT	None	RF
3HP-252	OFD-101A-3.3	F8	CK	Pump "C" Recirculation Stop Check	MAINT	None	RF
3HP-285	OFD-101A-3.4	F11	CK	Seal Supply to RCP "B1"	PERF	RF	RF
2HP-286	OFD-101A-2.4	H10	CK	Seal Supply to RCP "B2"	PERF	RF	RF
1HP-302	OFD-101A-1.1	F10	RF	Seal Return Line Relief			
2HP-302	OFD-101A-2.1	F8	RF	Seal Return Line Relief			
3HP-302	OFD-101A-3.1	F8	RF	Seal Return Line Relief			
1HP-304	OFD-101A-1.1	G6	RF	Seal Return Relief Valve			
1HP-355	OFD-101A-1.4	L6	AOV	Aux Pressurizer Spray Flow Control	PERF	None	S/D
2HP-355	OFD-101A-2.4	L6	AOV	Aux Pressurizer Spray Flow Control	PERF	None	S/D
3HP-355	OFD-101A-3.4	L5	AOV	Aux Pressurizer Spray Flow Control	PERF	None	S/D
1HP-357	OFD-101A-1.1	I9	RF	RIA-36 Radiation Monitor Relief			
3HP-357	OFD-101A-3.1	J10	RF	RIA-36 Radiation Monitor Relief			
1HP-363	OFD-101A-1.2	F7	MAN	Letdown Line to LPI Suction Block	PERF	None	QTR
2HP-363	OFD-101A-2.2	F7	MAN	Letdown Line to LPI Suction Block	PERF	None	QTR
3HP-363	OFD-101A-3.2	F7	MAN	Letdown Line to LPI Pump Suction Block	PERF	None	QTR
1HP-364	OFD-101A-1.2	F7	CK	Letdown Line to LPI Suction Check	MAINT	None	RF
2HP-364	OFD-101A-2.2	F7	CK	Letdown Line to LPI Suction Check	MAINT	None	RF
3HP-364	OFD-101A-3.2	F8	CK	Letdown Line to LPI Pump Suction Check	MAINT	None	RF
2HP-389	OFD-101A-2.4	I10	CK	Seal Supply to RCP "B1"	PERF	RF	RF
1HP-390	OFD-101A-1.4	F10	CK	Seal Supply to RCP "A1"	PERF	RF	RF
2HP-390	OFD-101A-2.4	G10	CK	Seal Supply to RCP "A1"	PERF	RF	RF
3HP-390	OFD-101A-3.4	I11	CK	Seal Supply to RCP "A1"	PERF	RF	RF
1HP-393	OFD-101A-1.4	I10	CK	Seal Supply to RCP "B1"	PERF	RF	RF
1HP-398-SSF	OFD-101A-1.5	F11	EMO	RC Makeup to RCP Seals	PERF	None	S/D
2HP-398-SSF	OFD-101A-2.5	F11	EMO	RC Makeup to RCP Seals	PERF	None	S/D
3HP-398-SSF	OFD-101A-3.5	F11	EMO	RC Makeup to RCP Seals	PERF	None	S/D
1HP-399-SSF	OFD-101A-1.5	G13	CK	RC Makeup to RCP Seals	PERF	None	S/D
2HP-399-SSF	OFD-101A-2.5	H13	CK	RC Makeup to RCP Seals	PERF	None	S/D
3HP-399-SSF	OFD-101A-3.5	H13	CK	RC Makeup to RCP Seals	PERF	None	S/D
1HP-400-SSF	OFD-101A-1.5	H13	CK	RC Makeup to RCP Seals	PERF	None	S/D
2HP-400-SSF	OFD-101A-2.5	G13	CK	RC Makeup to RCP Seals	PERF	None	S/D
3HP-400-SSF	OFD-101A-3.5	G13	CK	RC Makeup to RCP Seals	PERF	None	S/D
1HP-401-SSF	OFD-101A-1.5	F13	CK	RC Makeup to RCP Seals	PERF	None	S/D
2HP-401-SSF	OFD-101A-2.5	F13	CK	RC Makeup to RCP Seals	PERF	None	S/D
3HP-401-SSF	OFD-101A-3.5	F13	CK	RC Makeup to RCP Seals	PERF	None	S/D
1HP-402-SSF	OFD-101A-1.5	F13	CK	RC Makeup to RCP Seals	PERF	None	S/D
2HP-402-SSF	OFD-101A-2.5	F13	CK	RC Makeup to RCP Seals	PERF	None	S/D
3HP-402-SSF	OFD-101A-3.5	F13	CK	RC Makeup to RCP Seals	PERF	None	S/D

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
1HP-404	OFD-101A-1.5	G9	RF	RC Make Up Pump Discharge Relief			
2HP-404	OFD-101A-2.5	G9	RF	RC Make Up Pump Discharge Relief			
3HP-404	OFD-101A-3.5	G9	RF	RC Make Up Pump Discharge Relief			
1HP-405-SSF	OFD-101A-1.5	H10	EMO	RC Makeup Recirc Line	PERF	RF	QTR
2HP-405-SSF	OFD-101A-2.5	H10	EMO	RC Makeup Recirc Line	PERF	RF	QTR
3HP-405-SSF	OFD-101A-3.5	H10	EMO	RC Makeup Recirc Line	PERF	RF	QTR
1HP-409	OFD-101A-1.4	D7	EMO	B Loop HPI X-Connect	PERF	None	S/D
2HP-409	OFD-101A-2.4	E8	EMO	B Loop HPI X-Connect	PERF	None	S/D
3HP-409	OFD-101A-3.4	E8	EMO	B Loop HPI X-Connect	PERF	None	S/D
1HP-410	OFD-101A-1.4	H7	EMO	A Loop HPI X-Connect	PERF	None	S/D
2HP-410	OFD-101A-2.4	F7	EMO	A Loop HPI X-Connect	PERF	None	S/D
3HP-410	OFD-101A-3.4	I7	EMO	A Loop HPI X-Connect	PERF	None	S/D
1HP-417-SSF	OFD-101A-1.5	H9	EMO	RC Makeup Recirc Line	PERF	RF	QTR
2HP-417-SSF	OFD-101A-2.5	I9	EMO	RC Makeup Recirc Line	PERF	RF	QTR
3HP-417-SSF	OFD-101A-3.5	I9	EMO	RC Makeup Recirc Line	PERF	RF	QTR
2HP-420	OFD-101A-2.1	E6	MAN	RCP Seal Return Header Vent (7)	PERF	RF	None
1HP-423-SSF	OFD-101A-1.5	I11	MAN	RC Makeup Pump Recirc Drain (12)	PERF	RF	None
2HP-423-SSF	OFD-101A-2.5	I11	MAN	RC Makeup Pump Recirc Drain (12)	PERF	RF	None
3HP-423-SSF	OFD-101A-3.5	I11	MAN	RC Makeup Pump Recirc Drain (12)	PERF	RF	None
1HP-425-SSF	OFD-101A-1.5	J12	MAN	Letdown to Spent Fuel Vent (12)	PERF	RF	None
2HP-425-SSF	OFD-101A-2.5	J12	MAN	Letdown to Spent Fuel Vent (12)	PERF	RF	None
3HP-425-SSF	OFD-101A-3.5	J12	MAN	Letdown to Spent Fuel Vent (12)	PERF	RF	None
1HP-426-SSF	OFD-101A-1.5	J9	EMO	RC Return from Letdown Line	PERF	RF	S/D
2HP-426-SSF	OFD-101A-2.5	J9	EMO	RC Return from Letdown Line	PERF	RF	S/D
3HP-426-SSF	OFD-101A-3.5	K9	EMO	RC Return from Letdown Line	PERF	RF	S/D
1HP-428-SSF	OFD-101A-1.5	J13	EMO	RC Return from Letdown Line	PERF	RF	QTR
2HP-428-SSF	OFD-101A-2.5	J13	EMO	RC Return from Letdown Line	PERF	RF	QTR
3HP-428-SSF	OFD-101A-3.5	J13	EMO	RC Return from Letdown Line	PERF	RF	QTR
1HP-454	OFD-101A-1.4	G10	CK	Seal Supply to RCP "A2"	PERF	RF	RF
2HP-454	OFD-101A-2.4	G10	CK	Seal Supply to RCP "A2"	PERF	RF	RF
3HP-454	OFD-101A-3.4	H11	CK	Seal Supply to RCP "A2"	PERF	RF	RF
1HP-457	OFD-101A-1.4	H10	CK	Seal Supply to RCP "B2"	PERF	RF	RF
3HP-457	OFD-101A-3.4	G11	CK	Seal Supply to RCP "B2"	PERF	RF	RF
1HP-472	OFD-101A-1.4	L5	MAN	Aux Pressurizer Spray Isolation	PERF	None	S/D
2HP-472	OFD-101A-2.4	L5	MAN	Aux Pressurizer Spray Isolation	PERF	None	S/D
3HP-472	OFD-101A-3.4	L4	MAN	Aux Pressurizer Spray Isolation	PERF	None	S/D
HPSW-25	OFD-124C-1.4	C3	MAN	To Elevated Storage Tank "A"	OPS	None	QTR
1HPSW-184	OFD-124A-1.3	K10	PST	LPSW to TDEFWP Oil Coolers	PERF	None	QTR
2HPSW-184	OFD-124A-2.3	K10	AOV	LPSW to TDEFWP Oil Coolers	PERF	None	QTR
3HPSW-184	OFD-124A-3.3	K10	PST	LPSW to TDEFWP Oil Coolers	PERF	None	QTR
1HPSW-191	OFD-124C-1.2	G8	REG	Emerg FWPT Cooling Jacket	PERF	None	QTR
2HPSW-191	OFD-124C-2.2	H9	REG	Emerg FWPT Cooling Jacket	PERF	None	QTR
3HPSW-191	OFD-124C-3.2	H8	REG	Emerg FWPT Cooling Jacket	PERF	None	QTR
1HPSW-193	OFD-124A-1.3	K11	CK	Emerg FWPT Cooling Jacket	PERF	None	QTR
2HPSW-193	OFD-124A-2.3	K11	CK	Emerg FWPT Cooling Jacket	PERF	None	QTR
3HPSW-193	OFD-124A-3.3	K11	CK	Emerg FWPT Cooling Jacket	PERF	None	QTR
1HPSW-247	OFD-124C-1.2	E8	MAN	HPSW Crossover to HPI Pumps Cooling Jacket	OPS	None	S/D
2HPSW-247	OFD-124C-2.2	D9	MAN	HPSW Crossover to HPI Pumps Cooling Jacket	OPS	None	S/D
3HPSW-247	OFD-124C-3.2	F6	MAN	HPSW Crossover to HPI Pumps Cooling Jacket	OPS	None	S/D
1HPSW-556	OFD-124C-1.3	J11	REG	HPSW Emer Cooling Press Reg Valve	OPS	None	S/D
2HPSW-556	OFD-124C-1.3	I11	REG	HPSW Emer Cooling Press Reg Valve	OPS	None	S/D
3HPSW-556	OFD-124C-3.3	D8	REG	HPSW Emer Cooling Press Reg Valve	OPS	None	S/D
2HPSW-885	OFD-124C-2.2	H9	PR	HPSW SUPPLY PRESSURE REGULATOR TO TDEFWP	PERF	None	QTR
1IA-90	OFD-137B-1.2	D4	MAN	Penetration Isolation	PERF	RF	None
2IA-90	OFD-137B-1.2	D7	MAN	Penetration Isolation	PERF	RF	None
3IA-90	OFD-137B-1.2	D11	MAN	Penetration Isolation	PERF	RF	None

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1IA-91	OFD-137B-1.2	C4	MAN	Penetration Isolation	PERF	RF	None
2IA-91	OFD-137B-1.2	C7	MAN	Penetration Isolation	PERF	RF	None
3IA-91	OFD-137B-1.2	C11	MAN	Penetration Isolation	PERF	RF	None
1LP-1	OFD-102A-1.1	H2	EMO	DH Valve	PERF	None	S/D
2LP-1	OFD-102A-2.1	H2	EMO	DH Valve	PERF	None	S/D
3LP-1	OFD-102A-3.1	H2	EMO	DH Valve	PERF	None	S/D
1LP-2	OFD-102A-1.1	H2	EMO	DH RB Isolation	PERF	None	S/D
2LP-2	OFD-102A-2.1	H2	EMO	DH RB Isolation	PERF	None	S/D
3LP-2	OFD-102A-3.1	H2	EMO	DH RB Isolation	PERF	None	S/D
1LP-3	OFD-102A-1.1	H5	EMO	DH RB Isolation	PERF	None	QTR
2LP-3	OFD-102A-2.1	H6	EMO	DH RB Isolation	PERF	None	QTR
3LP-3	OFD-102A-3.1	H6	EMO	RB Isolation	PERF	None	QTR
1LP-5	OFD-102A-1.1	F10	EMO	LP Pump "A" Suction	PERF	None	QTR
2LP-5	OFD-102A-2.1	F10	EMO	LP Pump "A" Suction	PERF	None	QTR
1LP-9	OFD-102A-1.2	I7	EMO	LPI Disch X-Connect	PERF	None	QTR
2LP-9	OFD-102A-2.2	I8	EMO	LPI Disch X-Connect	PERF	None	QTR
3LP-9	OFD-102A-3.2	I7	EMO	LPI Disch X-Connect	PERF	None	QTR
1LP-10	OFD-102A-1.2	G7	EMO	LPI Disch X-Connect	PERF	None	QTR
2LP-10	OFD-102A-2.2	H8	EMO	LPI Disch X-Connect	PERF	None	QTR
3LP-10	OFD-102A-3.2	G7	EMO	LPI Disch X-Connect	PERF	None	QTR
1LP-12	OFD-102A-1.2	K11	EMO	LPI "A" Cooler Outlet	PERF	None	QTR
2LP-12	OFD-102A-2.2	K11	EMO	LPI "A" Cooler Outlet	PERF	None	QTR
3LP-12	OFD-102A-3.2	K11	EMO	LPI "A" Cooler Outlet	PERF	None	QTR
1LP-14	OFD-102A-1.2	E11	EMO	LPI "B" Cooler Outlet	PERF	None	QTR
2LP-14	OFD-102A-2.2	E11	EMO	LPI "B" Cooler Outlet	PERF	None	QTR
3LP-14	OFD-102A-3.2	E11	EMO	LPI "B" Cooler Outlet	PERF	None	QTR
1LP-15	OFD-102A-1.2	L11	EMO	LPI "A" Header to HPI	PERF	None	QTR
2LP-15	OFD-102A-2.2	L11	EMO	LPI "A" Header to HPI	PERF	None	QTR
3LP-15	OFD-102A-3.2	K12	EMO	LPI "A" Header to HPI	PERF	None	QTR
1LP-16	OFD-102A-1.2	O-4	EMO	LPI "B" Header to HPI	PERF	None	QTR
2LP-16	OFD-102A-2.2	D11	EMO	LPI "B" Header to HPI	PERF	None	QTR
3LP-16	OFD-102A-3.2	E12	EMO	LPI "B" Header to HPI	PERF	None	QTR
1LP-17	OFD-102A-1.2	K13	EMO	LPI "A" RB Isolation Valve	PERF	None	QTR
2LP-17	OFD-102A-2.2	K12	EMO	LPI "A" RB Isolation Valve	PERF	None	QTR
3LP-17	OFD-102A-3.2	K13	EMO	LPI "A" RB Isolation Valve	PERF	None	QTR
1LP-18	OFD-102A-1.2	E13	EMO	LPI "B" Isolation Valve	PERF	None	QTR
2LP-18	OFD-102A-2.2	E13	EMO	LPI "B" RB Isolation Valve	PERF	None	QTR
3LP-18	OFD-102A-3.2	E13	EMO	LPI "B" RB Isolation Valve	PERF	None	QTR
1LP-19	OFD-102A-1.1	D5	EMO	RB Emergency Sump	PERF	None	QTR
2LP-19	OFD-102A-2.1	D5	EMO	RB Emergency Sump	PERF	None	QTR
3LP-19	OFD-102A-3.1	D5	EMO	RB Emergency Sump	PERF	None	QTR
1LP-20	OFD-102A-1.1	D5	EMO	RB Emergency Sump	PERF	None	QTR
2LP-20	OFD-102A-2.1	D5	EMO	RB Emergency Sump	PERF	None	QTR
3LP-20	OFD-102A-3.1	D5	EMO	RB Emergency Sump	PERF	None	QTR
1LP-21	OFD-102A-1.1	F7	EMO	BWST to LPI Suction	PERF	None	QTR
2LP-21	OFD-102A-2.1	E7	EMO	BWST to LPI Suction	PERF	None	QTR
3LP-21	OFD-102A-3.1	E7	EMO	BWST to LPI Suction	PERF	None	QTR
1LP-22	OFD-102A-1.1	D7	EMO	BWST to LPI Suction	PERF	None	QTR
2LP-22	OFD-102A-2.1	D7	EMO	BWST to LPI Suction	PERF	None	QTR
3LP-22	OFD-102A-3.1	D7	EMO	BWST to LPI Suction	PERF	None	QTR
1LP-25	OFD-102A-1.1	J2	RV	RC Return Header Relief Valve	MAINT	None	RF
2LP-25	OFD-102A-2.1	J2	RV	RC Return Header Relief Valve	MAINT	None	RF
3LP-25	OFD-102A-3.1	J3	RV	RC Return Header Relief Valve	MAINT	None	RF
1LP-28	OFD-102A-1.1	H10	MAN	BWST Isolation	PERF	None	S/D
2LP-28	OFD-102A-2.1	H10	MAN	BWST Isolation	PERF	None	S/D
3LP-28	OFD-102A-3.1	H10	MAN	BWST Isolation	PERF	None	S/D

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
1LP-29	OFD-102A-1.1	F6	CK	BWST to "A" LPI Header	PERF	RF	QTR
2LP-29	OFD-102A-2.1	F6	CK	BWST to "A" LPI Header	PERF	RF	QTR
3LP-29	OFD-102A-3.1	E7	CK	BWST to "A" LPI Header	PERF/MAINT	RF	QTR
1LP-30	OFD-102A-1.1	D6	CK	BWST to "B" LPI Header	PERF	RF	QTR
2LP-30	OFD-102A-2.1	D6	CK	BWST to "B" LPI Header	PERF	RF	QTR
3LP-30	OFD-102A-3.1	C6	CK	BWST to "B" LPI Header	PERF/MAINT	RF	QTR
1LP-31	OFD-102A-1.2	K5	CK	"A" LPI Pump Discharge	PERF	None	Q/SD
2LP-31	OFD-102A-2.2	K5	CK	"A" LPI Pump Discharge	PERF	None	Q/SD
3LP-31	OFD-102A-3.2	K5	CK	"A" LPI Pump Discharge	PERF	None	Q/SD
1LP-33	OFD-102A-1.2	E6	CK	"B" LPI Pump Discharge	PERF	None	QTR
2LP-33	OFD-102A-2.2	E5	CK	"B" LPI Pump Discharge	PERF	None	QTR
3LP-33	OFD-102A-3.2	E5	CK	"B" LPI Pump Discharge	PERF	None	QTR
1LP-35	OFD-102A-1.2	H5	CK	Pump "C" Discharge Check	PERF	None	QTR
2LP-35	OFD-102A-2.2	H5	CK	Pump "C" Discharge Check	PERF	None	QTR
3LP-35	OFD-102A-3.2	H5	CK	Pump "C" Discharge Check	PERF	None	QTR
1LP-47	OFD-102A-1.2	E14	CK	"A" LPI Header Check Valve	PERF	S/D	S/D
2LP-47	OFD-102A-2.2	E14	CK	"B" LPI Header Check Valve	PERF	S/D	S/D
3LP-47	OFD-102A-3.2	E14	CK	"A" LPI Header Check Valve	PERF	S/D	S/D
1LP-48	OFD-102A-1.2	K14	CK	"B" LPI Header Check Valve	PERF	S/D	S/D
2LP-48	OFD-102A-2.2	K14	CK	"A" LPI Header Check Valve	PERF	S/D	S/D
3LP-48	OFD-102A-3.2	K14	CK	"B" LPI Header Check Valve	PERF	S/D	S/D
1LP-55	OFD-101A-1.3	K3	CK	"A" Cooler Out to HP Pump Suction	OPS	None	S/RF
2LP-55	OFD-101A-2.3	K3	CK	"A" Cooler Out to HP Pump Suction	OPS	None	S/RF
3LP-55	OFD-101A-3.3	K3	CK	"A" Cooler Out to HP Pump Suction	OPS	None	S/RF
1LP-57	OFD-101A-1.3	C3	CK	"B" Cooler Out to HP Pump Suction	OPS	None	S/RF
2LP-57	OFD-101A-2.3	C3	CK	"B" Cooler Out to HP Pump Suction	OPS	None	S/RF
3LP-57	OFD-101A-3.3	D2	CK	"B" Cooler Out to HP Pump Suction	OPS	None	S/RF
1LP-60	OFD-102A-1.1	J9	RF	Borated Water Storage Tank Relief	MAINT		
2LP-60	OFD-102A-2.1	J9	RF	Borated Water Storage Tank Relief	MAINT		
3LP-60	OFD-102A-3.1	J9	RF	Borated Water Storage Tank Relief	MAINT		
1LP-61	OFD-102A-1.1	J10	VB	BWST Vacuum Breaker	MAINT		
2LP-61	OFD-102A-2.1	J10	VB	BWST Vacuum Breaker	MAINT		
3LP-61	OFD-102A-3.1	J10	VB	BWST Vacuum Breaker	MAINT		
1LP-74	OFD-102A-1.2	J2	MAN	"B" Cooler Disch Block to "A" Pump	OPS/MAINT	None	S/D
2LP-74	OFD-102A-2.2	K2	MAN	"B" Cooler Disch Block to "A" Pump	OPS/MAINT	None	S/D
1LP-75	OFD-102A-1.2	H2	MAN	"B" Cooler Disc Block to "C" Pump	OPS/MAINT	None	S/D
2LP-75	OFD-102A-2.2	I2	MAN	"B" Cooler Disc Block to "C" Pump	OPS/MAINT	None	S/D
1LP-103	OFD-102A-1.1	H2	EMO	Boron Dilution	PERF	None	S/D
2LP-103	OFD-102A-2.1	H2	EMO	Boron Dilution	PERF	None	S/D
3LP-103	OFD-102A-3.1	G2	EMO	Boron Dilution	PERF	None	S/D
1LP-104	OFD-102A-1.1	F2	EMO	Boron Dilution	PERF	None	S/D
2LP-104	OFD-102A-2.1	F2	EMO	Boron Dilution	PERF	None	S/D
3LP-104	OFD-102A-3.1	G2	EMO	Boron Dilution	PERF	None	S/D
1LP-105	OFD-102A-1.1	H2	EMO	Boron Dilution	PERF	None	QTR
1LPSW-4	OFD-124B-1.1	K6	EMO	DH Cooler "1A" Outlet	PERF	None	QTR
2LPSW-4	OFD-124B-2.1	K6	EMO	DH Cooler "2A" Outlet	PERF	None	QTR
3LPSW-4	OFD-124B-3.1	K6	EMO	DH Cooler "3A" Outlet	PERF	None	QTR
1LPSW-5	OFD-124B-1.1	H6	EMO	DH Cooler "1B" Outlet	PERF	None	QTR
2LPSW-5	OFD-124B-2.1	H6	EMO	DH Cooler "2B" Outlet	PERF	None	QTR
3LPSW-5	OFD-124B-3.1	H6	EMO	DH Cooler "3B" Outlet	PERF	None	QTR
1LPSW-6	OFD-124B-1.4	L2	EMO	LPSW to RCP Oil Coolers	PERF	None	S/D
2LPSW-6	OFD-124B-2.4	L2	EMO	LPSW to RCP Oil Coolers	PERF	None	S/D
3LPSW-6	OFD-124B-3.4	L2	EMO	LPSW to RCP Oil Coolers	PERF	None	S/D
1LPSW-15	OFD-124B-1.4	G14	EMO	LPSW from RCP Oil Coolers	PERF	RF	S/D
2LPSW-15	OFD-124B-2.4	G14	EMO	LPSW from RCP Oil Coolers	PERF	RF	S/D
3LPSW-15	OFD-124B-3.4	G14	EMO	LPSW from RCP Oil Coolers	PERF	RF	S/D

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1LPSW-18	OFD-124B-1.2	D3	EMO	LPSW from RBCU "1A"	PERF	None	QTR
2LPSW-18	OFD-124B-2.2	D3	EMO	LPSW from RBCU "2A"	PERF	None	QTR
3LPSW-18	OFD-124B-3.2	C3	EMO	LPSW from RBCU "3A"	PERF	None	QTR
1LPSW-21	OFD-124B-1.2	D8	EMO	LPSW from RBCU "1B"	PERF	None	QTR
2LPSW-21	OFD-124B-2.2	D8	EMO	LPSW from RBCU "2B"	PERF	None	QTR
3LPSW-21	OFD-124B-3.2	C8	EMO	LPSW from RBCU "3B"	PERF	None	QTR
1LPSW-24	OFD-124B-1.2	D12	EMO	LPSW from RBCU "1C"	PERF	None	QTR
2LPSW-24	OFD-124B-2.2	D12	EMO	LPSW from RBCU "2C"	PERF	None	QTR
3LPSW-24	OFD-124B-3.2	C12	EMO	LPSW from RBCU "3C"	PERF	None	QTR
LPSW-25	OFD-124A-1.1	D7	CK	Pump "C" Discharge Check	PERF	None	QTR
LPSW-28	OFD-124A-1.1	J7	CK	Pump "A" Discharge Check	PERF	None	QTR
LPSW-31	OFD-124A-1.1	G7	CK	Pump "B" Discharge Check	PERF	None	QTR
3LPSW-45	OFD-124A-3.1	E10	EMO	LPSW to Main Turbine Oil Coolers	PERF	None	S/D
1LPSW-51	OFD-124A-1.2	G12	AOV	Unit 1 Main Turb Oil Clr Flow Cont	PERF	None	S/D
2LPSW-51	OFD-124A-2.2	E10	AOV	Unit 2 Main Turb Oil Clr Flow Cont	PERF	None	S/D
3LPSW-51	OFD-124A-3.2	G10	AOV	Unit 3 Main Turb Oil Clr Flow Cont	PERF	None	S/D
1LPSW-75	OFD-124B-1.1	K6	CK	DH Cooler "1A" Outlet CV	PERF	None	QTR
2LPSW-75	OFD-124B-2.1	K7	CK	DH Cooler "2A" Outlet CV	PERF	None	QTR
3LPSW-75	OFD-124B-3.1	K6	CK	DH Cooler "3A" Outlet CV	PERF	None	QTR
1LPSW-76	OFD-124B-1.1	H6	CK	DH Coolers "1B" Outlet CV	PERF	None	QTR
2LPSW-76	OFD-124B-2.1	H7	CK	DH Coolers "2B" Outlet CV	PERF	None	QTR
3LPSW-76	OFD-124B-3.1	H6	CK	DH Coolers "3B" Outlet CV	PERF	None	QTR
3LPSW-121	OFD-124A-3.1	J7	CK	LPSW Pump 3A Discharge Check	PERF	None	QTR
3LPSW-124	OFD-124A-3.1	G7	CK	LPSW Pump 3B Discharge Check	PERF	None	QTR
1LPSW-137	OFD-124A-1.3	K11	EMO	LPSW to Unit 1 TDEFWP Cooling Jacket	PERF	None	QTR
2LPSW-137	OFD-124A-2.3	K11	EMO	LPSW to Unit 2 TDEFWP Cooling Jacket	PERF	None	QTR
3LPSW-137	OFD-124A-3.3	K11	EMO	LPSW to Unit 3 TDEFWP Cooling Jacket	PERF	None	QTR
1LPSW-138	OFD-124A-1.3	L11	PST	Bypass around Vlv to Cooling Jacket	PERF	None	QTR
2LPSW-138	OFD-124A-2.3	L11	PST	Bypass around Vlv to Cooling Jacket	PERF	None	QTR
3LPSW-138	OFD-124A-3.3	L11	PST	Bypass around Vlv to Cooling Jacket	PERF	None	QTR
1LPSW-139	OFD-124A-1.1	C8	EMO	LPSW "A" Line to Turbine Building Hdr	PERF	None	RF
1LPSW-144	OFD-124B-1.4	G13	MAN	LPSW 22 Return Penet Test Drain	PERF	RF	None
2LPSW-144	OFD-124B-2.4	G13	MAN	LPSW Return Penet 22 Test Drain	PERF	RF	None
3LPSW-144	OFD-124B-3.4	G13	MAN	LPSW Return Penet 22 Test Drain	PERF	RF	None
1LPSW-145	OFD-124B-1.4	H13	MAN	LPSW 22 Return Penet Test Vent	PERF	RF	None
2LPSW-145	OFD-124B-2.4	H13	MAN	LPSW Return Penet 22 Test Vent	PERF	RF	None
3LPSW-145	OFD-124B-3.4	H13	MAN	LPSW Return Penet 22 Test Vent	PERF	RF	None
1LPSW-146	OFD-124B-1.4	H14	MAN	LPSW 22 Return Penet Test Gauge	PERF	RF	None
2LPSW-146	OFD-124B-2.4	H13	MAN	LPSW Return Penet 22 Test Gauge	PERF	RF	None
3LPSW-146	OFD-124B-3.4	H14	MAN	LPSW Return Penet 22 Test Gauge	PERF	RF	None
1LPSW-148	OFD-124B-1.1	L4	CK	Normal Supply CV to U1 HPI Pump Motor Bearing	OPS/MAINT	None	QTR
2LPSW-148	OFD-124B-2.1	L7	CK	Normal Supply CV to U2 HPI Pump Motor Bearing	OPS	None	QTR
3LPSW-148	OFD-124B-3.1	L4	CK	Normal Supply CV to U3 HPI Pump Motor Bearing	OPS/MAINT	None	QTR
1LPSW-151	OFD-124B-1.1	F3	CK	Emerg Supply CV to U1 HPI Pump Motor Bearing	OPS/MAINT	None	QTR
2LPSW-151	OFD-124B-2.1	G10	CK	Emerg Supply CV to U2 HPI Pump Motor Bearing	OPS	None	QTR
3LPSW-151	OFD-124B-3.1	F8	CK	Normal Supply CV to U3 HPI Pump Motor Bearing	OPS	None	QTR
1LPSW-251	OFD-124B-1.1	J8	AOV	DH Cooler Outlet	PERF	None	QTR
2LPSW-251	OFD-124B-2.1	J8	AOV	DH Cooler Outlet	PERF	None	QTR
1LPSW-252	OFD-124B-1.1	I8	AOV	DH Cooler Outlet	PERF	None	QTR
2LPSW-252	OFD-124B-2.1	I8	AOV	DH Cooler Outlet	PERF	None	QTR
3LPSW-404	OFD-124B-3.1	H7	AOV	LPSW DH Cooler Outlet	PERF	None	QTR
3LPSW-405	OFD-124B-3.1	K7	AOV	LPSW DH Cooler Outlet	PERF	None	QTR
2LPSW-503	OFD-124B-2.1	G3	CK	LPSW Supply Check Valve to HPI Pump Motor Bearing Co	OPS/MAINT	None	QTR
3LPSW-503	OFD-124B-3.1	F3	CK	Emerg Supply to HPI Pump Motor Coolers	OPS/MAINT	None	QTR
1LPSW-516	OFD-124A-1.3	K5	PST	Auto Valve from "A" MDEFWP Motor	PERF	None	QTR
2LPSW-516	OFD-124A-2.3	K5	PST	Auto Valve from "A" MDEFWP Motor	PERF	None	QTR

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
3LPSW-516	OFD-124A-3.3	K5	PST	Auto Valve from "A" MDEFWP Motor	PERF	None	QTR
1LPSW-525	OFD-124A-1.3	J5	PST	Auto Valve from "B" MDEFWP Motor	PERF	None	QTR
2LPSW-525	OFD-124A-2.3	J5	PST	Auto Valve from "B" MDEFWP Motor	PERF	None	QTR
3LPSW-525	OFD-124A-3.3	J5	PST	Auto Valve from "B" MDEFWP Motor	PERF	None	QTR
1LPSW-565	OFD-124B-1.2	J8	EMO	RB Aux Cooler Inlet	PERF	None	QTR
2LPSW-565	OFD-124B-2.2	J8	EMO	RB Aux Cooler Inlet	PERF	None	QTR
3LPSW-565	OFD-124B-3.2	I8	EMO	RB Aux Cooler Inlet	PERF	None	QTR
1LPSW-566	OFD-124B-1.2	I8	EMO	RBCU Inlet	PERF	None	QTR
2LPSW-566	OFD-124B-2.2	I8	EMO	RBCU Inlet	PERF	None	QTR
3LPSW-566	OFD-124B-3.2	I8	EMO	RBCU Inlet	PERF	None	QTR
1LPSW-687	OFD-124A-1.3	K10	CK	U1 TDEFWP Cooling Water Supply	PERF	None	QTR
2LPSW-687	OFD-124A-2.3	K10	CK	U2 TDEFWP Cooling Water Supply	PERF	None	QTR
3LPSW-687	OFD-124A-3.3	K10	CK	U3 TDEFWP Cooling Water Supply	PERF	None	QTR
2LPSW-900	OFD-124C-2.2	H10	CK	HPSW SUPPLY CHECK VALVE TOO TDEFWP JACKET C	PERF	None	QTR
1LRT-17	OFD-137E-1.1	K10	AOV	Pressurization Block	PERF	RF	None
2LRT-17	OFD-137E-1.1	H10	AOV	Pressurization Block	PERF	RF	None
3LRT-17	OFD-137E-1.1	E9	AOV	Pressurization Block	PERF	RF	None
1LRT-24	OFD-137E-1.1	I12	MAN	Leak Rate Test	PERF	RF	None
2LRT-24	OFD-137E-1.1	G11	MAN	Leak Rate Test	PERF	RF	None
3LRT-24	OFD-137E-1.1	C11	MAN	Leak Rate Test	PERF	RF	None
1LRT-25	OFD-137E-1.1	I12	MAN	Leak Rate Test	PERF	RF	None
2LRT-25	OFD-137E-1.1	G11	MAN	Leak Rate Test	PERF	RF	None
3LRT-25	OFD-137E-1.1	C11	MAN	Leak Rate Test	PERF	RF	None
2LRT-36	OFD-137E-1.1	F11	MAN	Leak Rate Test	PERF	RF	None
3LRT-36	OFD-137E-1.1	C11	MAN	Leak Rate Test	PERF	RF	None
2LRT-37	OFD-137E-1.1	F11	MAN	Leak Rate Test	PERF	RF	None
3LRT-37	OFD-137E-1.1	C11	MAN	Leak Rate Test	PERF	RF	None
1LRT-38	OFD-137E-1.1	J12	MAN	Leak Rate Test	PERF	RF	None
2LRT-38	OFD-137E-1.1	H11	MAN	Leak Rate Test	PERF	RF	None
3LRT-38	OFD-137E-1.1	D11	MAN	Leak Rate Test	PERF	RF	None
1LRT-39	OFD-137E-1.1	J13	MAN	Leak Rate Test	PERF	RF	None
2LRT-39	OFD-137E-1.1	H12	MAN	Leak Rate Test	PERF	RF	None
3LRT-39	OFD-137E-1.1	D11	MAN	Leak Rate Test	PERF	RF	None
1LRT-54	OFD-137E-1.1	K11	MAN	Penetration 51 Test Connection	PERF	RF	None
2LRT-54	OFD-137E-1.1	H11	MAN	Penetration 51 Test Connection	PERF	RF	None
3LRT-54	OFD-137E-1.1	E11	MAN	Penetration 51 Test Connection	PERF	RF	None
1LWD-1	OFD-107B-1.1	C11	EMO	Normal Pump Suction	PERF	RF	QTR
2LWD-1	OFD-107B-2.1	C11	EMO	Normal Pump Suction	PERF	RF	QTR
3LWD-1	OFD-107B-3.1	C11	EMO	Normal Pump Suction	PERF	RF	QTR
1LWD-2	OFD-107B-1.1	C11	AOV	Normal Pump Suction	PERF	RF	QTR
2LWD-2	OFD-107B-2.1	C12	AOV	Normal Pump Suction	PERF	RF	QTR
3LWD-2	OFD-107B-3.1	C12	AOV	Normal Pump Suction	PERF	RF	QTR
1LWD-27	OFD-107B-1.1	B11	MAN	RB Nrml Sump Penet 5 Drn	PERF	RF	None
2LWD-27	OFD-107B-2.1	B11	MAN	RB Nrml Sump Penet 5 Drn	PERF	RF	None
3LWD-27	OFD-107B-3.1	B11	MAN	RB Nrml Sump Penet 5 Drn	PERF	RF	None
1LWD-28	OFD-107B-1.1	C11	MAN	RB Nrml Sump Penet 5 Vent	PERF	RF	None
2LWD-28	OFD-107B-2.1	C11	MAN	RB Nrml Sump Penet 5 Vent	PERF	RF	None
3LWD-28	OFD-107B-3.1	B12	MAN	RB Nrml Sump Penet 5 Vent	PERF	RF	None
1LWD-29	OFD-107B-1.1	C11	MAN	RB Nrml Sump Penet 5 PX	PERF	RF	None
2LWD-29	OFD-107B-2.1	C11	MAN	RB Nrml Sump Penet 5 PX	PERF	RF	None
3LWD-29	OFD-107B-3.1	B12	MAN	RB Nrml Sump Penet 5 PX	PERF	RF	None
1LWD-99	OFD-107D-1.2	E9	MAN	Emergency Sump Drain Isolation Valve	PERF	ILRT	None
2LWD-99	OFD-107D-2.2	G8	MAN	Emergency Sump Drain Isolation Valve	PERF	ILRT	None
3LWD-99	OFD-107D-3.2	G3	MAN	Emergency Sump Drain Isolation Valve	PERF	ILRT	None
1LWD-103	OFD-107D-1.2	E9	MAN	Emergency Sump Drain Isolation	PERF	ILRT	None
2LWD-103	OFD-107D-2.2	G8	MAN	Emergency Sump Drain Isolation	PERF	ILRT	None

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
3LWD-103	OFD-107D-3.2	G3	MAN	Emergency Sump Drain Isolation	PERF	ILRT	None
1MS-1	OFD-122A-1.1	J9	RV	Main Steam Relief Valve	MAINT		
2MS-1	OFD-122A-2.1	J9	RV	Main Steam Relief Valve	MAINT		
3MS-1	OFD-122A-3.1	J9	RV	Main Steam Relief Valve	MAINT		
1MS-2	OFD-122A-1.1	J4	RV	Main Steam Relief Valve	MAINT		
2MS-2	OFD-122A-2.1	J4	RV	Main Steam Relief Valve	MAINT		
3MS-2	OFD-122A-3.1	J4	RV	Main Steam Relief Valve	MAINT		
1MS-3	OFD-122A-1.1	J7	RV	Main Steam Relief Valve	MAINT		
2MS-3	OFD-122A-2.1	J7	RV	Main Steam Relief Valve	MAINT		
3MS-3	OFD-122A-3.1	J7	RV	Main Steam Relief Valve	MAINT		
1MS-4	OFD-122A-1.1	J5	RV	Main Steam Relief Valve	MAINT		
2MS-4	OFD-122A-2.1	J5	RV	Main Steam Relief Valve	MAINT		
3MS-4	OFD-122A-3.1	J5	RV	Main Steam Relief Valve	MAINT		
1MS-5	OFD-122A-1.1	J8	RV	Main Steam Relief Valve	MAINT		
2MS-5	OFD-122A-2.1	J8	RV	Main Steam Relief Valve	MAINT		
3MS-5	OFD-122A-3.1	J8	RV	Main Steam Relief Valve	MAINT		
1MS-6	OFD-122A-1.1	J5	RV	Main Steam Relief Valve	MAINT		
2MS-6	OFD-122A-2.1	J5	RV	Main Steam Relief Valve	MAINT		
3MS-6	OFD-122A-3.1	J5	RV	Main Steam Relief Valve	MAINT		
1MS-7	OFD-122A-1.1	J7	RV	Main Steam Relief Valve	MAINT		
2MS-7	OFD-122A-2.1	J7	RV	Main Steam Relief Valve	MAINT		
3MS-7	OFD-122A-3.1	J7	RV	Main Steam Relief Valve	MAINT		
1MS-8	OFD-122A-1.1	J6	RV	Main Steam Relief Valve	MAINT		
2MS-8	OFD-122A-2.1	J6	RV	Main Steam Relief Valve	MAINT		
3MS-8	OFD-122A-3.1	J6	RV	Main Steam Relief Valve	MAINT		
1MS-9	OFD-122A-1.1	D9	RV	Main Steam Relief Valve	MAINT		
2MS-9	OFD-122A-2.1	D9	RV	Main Steam Relief Valve	MAINT		
3MS-9	OFD-122A-3.1	D9	RV	Main Steam Relief Valve	MAINT		
1MS-10	OFD-122A-1.1	D4	RV	Main Steam Relief Valve	MAINT		
2MS-10	OFD-122A-2.1	D4	RV	Main Steam Relief Valve	MAINT		
3MS-10	OFD-122A-3.1	D4	RV	Main Steam Relief Valve	MAINT		
1MS-11	OFD-122A-1.1	D7	RV	Main Steam Relief Valve	MAINT		
2MS-11	OFD-122A-2.1	D7	RV	Main Steam Relief Valve	MAINT		
3MS-11	OFD-122A-3.1	D7	RV	Main Steam Relief Valve	MAINT		
1MS-12	OFD-122A-1.1	D5	RV	Main Steam Relief Valve	MAINT		
2MS-12	OFD-122A-2.1	D5	RV	Main Steam Relief Valve	MAINT		
3MS-12	OFD-122A-3.1	D5	RV	Main Steam Relief Valve	MAINT		
1MS-13	OFD-122A-1.1	D8	RV	Main Steam Relief Valve	MAINT		
2MS-13	OFD-122A-2.1	D8	RV	Main Steam Relief Valve	MAINT		
3MS-13	OFD-122A-3.1	D8	RV	Main Steam Relief Valve	MAINT		
1MS-14	OFD-122A-1.1	D5	RV	Main Steam Relief Valve	MAINT		
2MS-14	OFD-122A-2.1	D5	RV	Main Steam Relief Valve	MAINT		
3MS-14	OFD-122A-3.1	D5	RV	Main Steam Relief Valve	MAINT		
1MS-15	OFD-122A-1.1	D7	RV	Main Steam Relief Valve	MAINT		
2MS-15	OFD-122A-2.1	D7	RV	Main Steam Relief Valve	MAINT		
3MS-15	OFD-122A-3.1	D7	RV	Main Steam Relief Valve	MAINT		
1MS-16	OFD-122A-1.1	D6	RV	Main Steam Relief Valve	MAINT		
2MS-16	OFD-122A-2.1	D6	RV	Main Steam Relief Valve	MAINT		
3MS-16	OFD-122A-3.1	D6	RV	Main Steam Relief Valve	MAINT		
1MS-17	OFD-122A-1.2	I5	EMO	Steam Header "A" Turbine Bypass	PERF	None	S/D
2MS-17	OFD-122A-2.2	I5	EMO	Steam Header "A" Turbine Bypass	PERF	None	S/D
3MS-17	OFD-122A-3.2	I5	EMO	Steam Header "A" Turbine Bypass	PERF	None	S/D
1MS-19	OFD-122A-1.2	I7	PST	Turbine Bypass Control "A"	PERF	None	S/D
2MS-19	OFD-122A-2.2	I8	PST	Turbine Bypass Control "A"	PERF	None	S/D
3MS-19	OFD-122A-3.2	I8	PST	Turbine Bypass Control "A"	PERF	None	S/D
1MS-22	OFD-122A-1.2	K8	PST	Turbine Bypass Control "B"	PERF	None	S/D

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2MS-22	OFD-122A-2.2	K8	PST	Turbine Bypass Control "B"	PERF	None	S/D
3MS-22	OFD-122A-3.2	K8	PST	Turbine Bypass Control "B"	PERF	None	S/D
1MS-24	OFD-122A-1.2	H3	EMO	MS Line "A" to Aux Steam	PERF	None	QTR
2MS-24	OFD-122A-2.2	H3	EMO	MS Line "A" to Aux Steam	PERF	None	QTR
3MS-24	OFD-122A-3.2	H3	EMO	MS Line "A" to Aux Steam	PERF	None	QTR
1MS-25	OFD-122A-1.2	G3	CK	MS Line A TO AS Check	MAINT	None	RF
2MS-25	OFD-122A-2.2	G3	CK	MS Line A to AS Check	MAINT	None	RF
3MS-25	OFD-122A-3.2	G3	CK	MS Line A to AS Check	MAINT	None	RF
1MS-26	OFD-122A-1.2	D5	EMO	Steam Header "B" Turbine Bypass	PERF	None	S/D
2MS-26	OFD-122A-2.2	D5	EMO	Steam Header "B" Turbine Bypass	PERF	None	S/D
3MS-26	OFD-122A-3.2	D5	EMO	Steam Header "B" Turbine Bypass	PERF	None	S/D
1MS-28	OFD-122A-1.2	F8	PST	Turbine Bypass Control "C"	PERF	None	S/D
2MS-28	OFD-122A-2.2	F8	PST	Turbine Bypass Control "C"	PERF	None	S/D
3MS-28	OFD-122A-3.2	F8	PST	Turbine Bypass Control "C"	PERF	None	S/D
1MS-31	OFD-122A-1.2	D8	PST	Turbine Bypass Control "D"	PERF	None	S/D
2MS-31	OFD-122A-2.2	D8	PST	Turbine Bypass Control "D"	PERF	None	S/D
3MS-31	OFD-122A-3.2	D8	PST	Turbine Bypass Control "D"	PERF	None	S/D
1MS-33	OFD-122A-1.2	E3	EMO	MS Line "B" to Aux Steam	PERF	None	QTR
2MS-33	OFD-122A-2.2	E3	EMO	MS Line "B" to Aux Steam	PERF	None	QTR
3MS-33	OFD-122A-3.2	E3	EMO	MS Line "B" to Aux Steam	PERF	None	QTR
1MS-34	OFD-122A-1.2	F3	CK	Main Steam Line B to AS Checl	MAINT	None	RF
2MS-34	OFD-122A-2.2	F3	CK	MS Line B to AS Check	MAINT	None	RF
3MS-34	OFD-122A-3.2	E3	CK	MS Line B to AS Check	MAINT	None	RF
1MS-35	OFD-122A-1.3	L2	EMO	Main Steam to FDW Turbine "A"	PERF	None	S/D
2MS-35	OFD-122A-2.3	L2	EMO	Main Steam to FDW Turbine "A"	PERF	None	S/D
3MS-35	OFD-122A-3.3	L2	EMO	Main Steam to FDW Turbine "A"	PERF	None	S/D
1MS-36	OFD-122A-1.3	F2	EMO	Main Stm to FDW Turbine "B" and CSAE'S	PERF	None	S/D
2MS-36	OFD-122A-2.3	F2	EMO	Main Stm to FDW Turbine "B" and CSAE'S	PERF	None	S/D
3MS-36	OFD-122A-3.3	F2	EMO	Main Stm to FDW Turbine "B" and CSAE'S	PERF	None	S/D
1MS-47	OFD-122A-1.3	E4	EMO	MAIN STEAM TO CSAES_	PERF	None	S/D
2MS-47	OFD-122A-2.3	E4	EMO	MAIN STEAM TO CSAES_	PERF	None	S/D
3MS-47	OFD-122A-3.3	D4	EMO	MS TO CSAE	PERF	None	S/D
1MS-76	OFD-122A-1.1	C10	EMO	MS Line "B" to SSRH 1A1 & 1A2	PERF	None	S/D
2MS-76	OFD-122A-2.1	I10	EMO	MS Line "B" to SSRH 2A1 & 2A2	PERF	None	S/D
3MS-76	OFD-122A-3.1	I10	EMO	MS Line "B" to SSRH 3A1 & 3A2	PERF	None	S/D
1MS-79	OFD-122A-1.1	I10	EMO	MS Line to SSRH B1 & B2	PERF	None	S/D
2MS-79	OFD-122A-2.1	C10	EMO	MS Line to SSRH 2B1 & 2B2	PERF	None	S/D
3MS-79	OFD-122A-3.1	C10	EMO	MS Line to SSRH 3B1 & 3B2	PERF	None	S/D
1MS-82	OFD-122A-1.4	I2	EMO	MS Line "A" to EFDW Turbine	PERF	None	QTR
2MS-82	OFD-122A-2.4	I2	EMO	MS Line "A" to EFDW Turbine	PERF	None	QTR
3MS-82	OFD-122A-3.4	I2	EMO	MS Line "A" to EFDW Turbine	PERF	None	QTR
1MS-83	OFD-122A-1.4	H2	CK	MS Line "A" to EFDW Pump Turbine Check	PERF	None	QTR
2MS-83	OFD-122A-2.4	H2	CK	MS Line "A" to EFDW Turbine Pump Check	PERF	None	QTR
3MS-83	OFD-122A-3.4	H2	CK	MS Line "A" to EFDW Pump Turbine Check	PERF	None	QTR
1MS-84	OFD-122A-1.4	G2	EMO	MS Line "B" to EFDW Turbine	PERF	None	QTR
2MS-84	OFD-122A-2.4	G2	EMO	MS Line "B" to EFDW Turbine	PERF	None	QTR
3MS-84	OFD-122A-3.4	G2	EMO	MS Line "B" to EFDW Turbine	PERF	None	QTR
1MS-85	OFD-122A-1.4	G2	CK	MS Line "B" to EFDW Pump Turbine Check	PERF	None	QTR
2MS-85	OFD-122A-2.4	G2	CK	MS Line "B" to EFDW Turbine Pump Check	PERF	None	QTR
3MS-85	OFD-122A-3.4	G2	CK	MS Line "B" to EFDW Pump Turbine Check	PERF	None	QTR
1MS-87	OFD-122A-1.4	H3	AOV	MS to Emerg FDW Turbine Control	PERF	None	QTR
2MS-87	OFD-122A-2.4	H3	AOV	MS to Emerg FDW Turbine Control	PERF	None	QTR
3MS-87	OFD-122A-3.4	H3	AOV	MS to Emerg FDW Turbine Control	PERF	None	QTR
1MS-91	OFD-122A-1.4	H5	CK	MS to EFPT Supply Check	PERF	None	QTR
2MS-91	OFD-122A-2.4	H5	CK	MS to EFPT Supply Check	PERF	None	QTR
3MS-91	OFD-122A-3.4	H5	CK	MS to EFPT Supply Check	PERF	None	QTR

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
1MS-92	OFD-122A-1.4	H6	RV	Main Steam to EFDWT Supply Relief			
2MS-92	OFD-122A-2.4	H6	RV	Main Steam to EFDWT Supply Relief			
3MS-92	OFD-122A-3.4	H6	RV	Main Steam to EFDWT Supply Relief			
1MS-93	OFD-122A-1.4	H7	AOV	EFPT Supply Trip Valve	PERF	None	QTR
2MS-93	OFD-122A-2.4	H7	AOV	EFPT Supply Trip Valve	PERF	None	QTR
3MS-93	OFD-122A-3.4	H7	AOV	EFPT Supply Trip Valve	PERF	None	QTR
1MS-94	OFD-122A-1.4	H8	SPR	Emerg FDWT Stop Valve	PERF	None	QTR
2MS-94	OFD-122A-2.4	H8	SPR	Emerg FDWT Stop Valve	PERF	None	QTR
3MS-94	OFD-122A-3.4	H8	SPR	Emerg FDWT Stop Valve	PERF	None	QTR
1MS-95	OFD-122A-1.4	H9	CTR	Emerg FDWT Governor Valve	PERF	None	QTR
2MS-95	OFD-122A-2.4	H9	CTR	Emerg FDWT Governor Valve	PERF	None	QTR
3MS-95	OFD-122A-3.4	H9	CTR	Emerg FDWT Governor Valve	PERF	None	QTR
1MS-102	OFD-122B-1.1	J3	EHO	MS Stop Valve 4	PERF/OPS	None	Q/SD
2MS-102	OFD-122B-2.1	J3	EHO	MS Stop Valve 4	PERF/OPS	None	Q/SD
3MS-102	OFD-122B-3.1	J3	EHO	MS Stop Valve 4	PERF/OPS	None	Q/SD
1MS-103	OFD-122B-1.1	J4	EHO	MS Stop Valve 3	PERF/OPS	None	Q/SD
2MS-103	OFD-122B-2.1	J4	EHO	MS Stop Valve 3	PERF/OPS	None	Q/SD
3MS-103	OFD-122B-3.1	J4	EHO	MS Stop Valve 3	PERF/OPS	None	Q/SD
1MS-104	OFD-122B-1.1	J4	EHO	MS Stop Valve 2	PERF/OPS	None	Q/SD
2MS-104	OFD-122B-2.1	J4	EHO	MS Stop Valve 2	PERF/OPS	None	Q/SD
3MS-104	OFD-122B-3.1	J4	EHO	MS Stop Valve 2	PERF/OPS	None	Q/SD
1MS-105	OFD-122B-1.1	J5	EHO	MS Stop Valve 1	PERF/OPS	None	Q/SD
2MS-105	OFD-122B-2.1	J5	EHO	MS Stop Valve 1	PERF/OPS	None	Q/SD
3MS-105	OFD-122B-3.1	J5	EHO	MS Stop Valve 1	PERF/OPS	None	Q/SD
1MS-153	OFD-122A-1.1	J10	MAN	MS Line "A" Atmos Dump Blk Vlv Bypass	PERF	None	S/D
2MS-153	OFD-122A-2.1	J10	MAN	MS Line "A" Atmos Dump Blk Bypass	PERF	None	S/D
3MS-153	OFD-122A-3.1	J10	MAN	MS Line "A" Atmos Dump Blk Bypass	PERF	None	S/D
1MS-154	OFD-122A-1.1	J10	MAN	MS Line "A" Atmos Dump Isol Vlv	PERF	None	S/D
2MS-154	OFD-122A-2.1	J10	MAN	MS Line "A" Atmos Dump Isol Vlv	PERF	None	S/D
3MS-154	OFD-122A-3.1	J10	MAN	MS Line "A" Atmos Dump Isol Vlv	PERF	None	S/D
1MS-155	OFD-122A-1.1	D10	MAN	MS Line "B" Atmos Dump Blk Vlv	PERF	None	S/D
2MS-155	OFD-122A-2.1	D10	MAN	MS Line "B" Atmos Dump Blk Vlv	PERF	None	S/D
3MS-155	OFD-122A-3.1	D10	MAN	MS Line "B" Atmos Dump Blk Vlv	PERF	None	S/D
1MS-156	OFD-122A-1.1	E10	MAN	MS Line "B" Atmos Dump Isol Vlv	PERF	None	S/D
2MS-156	OFD-122A-2.1	E10	MAN	MS Line "B" Atmos Dump Isol Vlv	PERF	None	S/D
3MS-156	OFD-122A-3.1	E10	MAN	MS Line "B" Atmos Dump Isol Vlv	PERF	None	S/D
1MS-161	OFD-122A-1.1	J9	MAN	MS Line "A" Atmos Dump Blk Vlv Byp	PERF	None	S/D
2MS-161	OFD-122A-2.1	J9	MAN	MS Line "A" Atmos Dump Blk Vlv Byp	PERF	None	S/D
3MS-161	OFD-122A-3.1	J9	MAN	MS Line "A" Atmos Dump Blk Vlv Byp	PERF	None	S/D
1MS-162	OFD-122A-1.1	K9	MAN	MS Line "A" Atmos Dump Control Vlv	PERF	None	S/D
2MS-162	OFD-122A-2.1	K9	MAN	MS Line "A" Atmos Dump Control Vlv	PERF	None	S/D
3MS-162	OFD-122A-3.1	K9	MAN	MS Line "A" Atmos Dump Control Vlv	PERF	None	S/D
1MS-163	OFD-122A-1.1	E9	MAN	MS Line "B" Atmos Dump Blk Vlv Byp	PERF	None	S/D
2MS-163	OFD-122A-2.1	E9	MAN	MS Line "B" Atmos Dump Blk Vlv Byp	PERF	None	S/D
3MS-163	OFD-122A-3.1	E9	MAN	MS Line "B" Atmos Dump Blk Vlv Byp	PERF	None	S/D
1MS-164	OFD-122A-1.1	E9	MAN	MS Line "A" Atmos Dump Control Vlv	PERF	None	S/D
2MS-164	OFD-122A-2.1	E9	MAN	MS Line "B" Atmos Dump Control Vlv	PERF	None	S/D
3MS-164	OFD-122A-3.1	E9	MAN	MS Line "B" Atmos Dump Control Vlv	PERF	None	S/D
1N-106	OFD-127B-1.2	E4	MAN	LP N2 Heater Outlet	PERF	RF	None
1N-107	OFD-127B-1.2	F4	MAN	LP N2 Heater Bypass	PERF	RF	None
1N-129	OFD-127B-1.2	G7	CK	Core Flood Tank "A" Supply Check	PERF	RF	RF
2N-129	OFD-127B-2.2	G7	CK	Core Flood Tank "A" Supply Check	PERF	RF	RF
3N-129	OFD-127B-3.2	G7	CK	Core Flood Tank "A" Supply Check	PERF	RF	RF
1N-131	OFD-127B-1.2	J7	CK	Core Flood Tank "B" Supply Check	PERF	RF	RF
2N-131	OFD-127B-2.2	J7	CK	Core Flood Tank "B" Supply Check	PERF	RF	RF
3N-131	OFD-127B-3.2	J7	CK	Core Flood Tank "B" Supply Check	PERF	RF	RF

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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
1N-246	OFD-127B-1.2	E10	CK	LP HDR Check Valve	PERF	RF	None
2N-246	OFD-127B-2.2	E10	CK	LP HDR Check Valve	PERF	RF	None
3N-246	OFD-127B-3.2	E10	CK	LP HDR Check Valve	PERF	RF	None
1N-247	OFD-127B-1.2	E10	MAN	Penetration 49 Vent	PERF	RF	None
2N-247	OFD-127B-2.2	E10	MAN	Penetration 53 Vent	PERF	RF	None
3N-247	OFD-127B-3.2	E10	MAN	Penetration 53 Vent	PERF	RF	None
2N-263	OFD-127B-2.2	E7	MAN	Penetration Isolation LP Hdr	PERF	RF	None
3N-263	OFD-127B-3.2	E7	MAN	Penetration Isolation LP header	PERF	RF	None
1PR-1	OFD-116A-1.1	F3	EMO	RB Purge Outlet	PERF	RF	S/D
2PR-1	OFD-116A-2.1	G3	EMO	RB Purge Outlet	PERF	RF	S/D
3PR-1	OFD-116A-3.1	G3	EMO	RB Purge Outlet	PERF	RF	S/D
1PR-2	OFD-116A-1.1	F5	PST	RB Purge Outlet	PERF	RF	S/D
2PR-2	OFD-116A-2.1	G5	PST	RB Purge Outlet	PERF	RF	S/D
3PR-2	OFD-116A-3.1	G5	PST	RB Purge Outlet	PERF	RF	S/D
1PR-5	OFD-116A-1.1	D5	PST	RB Purge Inlet	PERF	RF	S/D
2PR-5	OFD-116A-2.1	D5	PST	RB Purge Inlet	PERF	RF	S/D
3PR-5	OFD-116A-3.1	D5	PST	RB Purge Inlet	PERF	RF	S/D
1PR-6	OFD-116A-1.1	D3	EMO	RB Purge Inlet	PERF	RF	S/D
2PR-6	OFD-116A-2.1	D3	EMO	RB Purge Inlet	PERF	RF	S/D
3PR-6	OFD-116A-3.1	D3	EMO	RB Purge Inlet	PERF	RF	S/D
1PR-7	OFD-116C-1.1	G3	EMO	RB Radiation Monitor	PERF	RF	QTR
2PR-7	OFD-116C-2.1	G3	EMO	RB Radiation Monitor	PERF	RF	QTR
3PR-7	OFD-116C-3.1	G3	EMO	RB Radiation Monitor	PERF	RF	QTR
1PR-8	OFD-116C-1.1	K3	AOV	RB Radiation Monitor	PERF	RF	QTR
2PR-8	OFD-116C-2.1	K3	AOV	RB Radiation Monitor	PERF	RF	QTR
3PR-8	OFD-116C-3.1	K3	AOV	RB Radiation Monitor	PERF	RF	QTR
1PR-9	OFD-116C-1.1	D2	EMO	RB Radiation Monitor	PERF	RF	QTR
2PR-9	OFD-116C-2.1	D2	EMO	RB Radiation Monitor	PERF	RF	QTR
3PR-9	OFD-116C-3.1	D2	EMO	RB Radiation Monitor	PERF	RF	QTR
1PR-10	OFD-116C-1.1	C4	AOV	RB Radiation Monitor	PERF	RF	QTR
2PR-10	OFD-116C-2.1	C4	AOV	RB Radiation Monitor	PERF	RF	QTR
3PR-10	OFD-116C-3.1	C4	AOV	RB Radiation Monitor	PERF	RF	QTR
1PR-15	OFD-116B-1.1	I11	EMO	PR Fan A Discharge	PERF	None	QTR
2PR-15	OFD-116B-2.1	I11	EMO	PR Fan A Discharge	PERF	None	QTR
3PR-15	OFD-116B-3.1	I11	EMO	PR Fan A Discharge	PERF	None	QTR
1PR-19	OFD-116B-1.1	E11	EMO	PR Fan B Discharge	PERF	None	QTR
2PR-19	OFD-116B-2.1	E11	EMO	PR Fan B Discharge	PERF	None	QTR
3PR-19	OFD-116B-3.1	E11	EMO	PR Fan B Discharge	PERF	None	QTR
1PR-20	OFD-116B-1.1	G8	AOV	PR Fan Suction Tie	PERF	None	RF
2PR-20	OFD-116B-2.1	G8	AOV	PR Fan Suction Tie	PERF	None	RF
3PR-20	OFD-116B-3.1	G8	AOV	PR Fan Suction Tie	PERF	None	RF
1PR-23	OFD-116C-1.1	J4	MAN	RB Sample Inlet Penet 60 Test	PERF	RF	None
3PR-23	OFD-116C-3.1	J4	MAN	RB Sample Inlet Penet 60 Test	PERF	RF	None
1PR-24	OFD-116C-1.1	J4	MAN	RB Sample Inlet (60)	PERF	RF	None
2PR-24	OFD-116C-2.1	J3	MAN	RB Sample PX (60)	PERF	RF	None
1PR-25	OFD-116C-1.1	C4	MAN	RB Hydrogen Purge Return (60)	PERF	RF	None
2PR-25	OFD-116C-2.1	C4	MAN	RB Hydrogen Purge Penet (61)	PERF	RF	None
3PR-25	OFD-116C-3.1	C4	MAN	RB Hydrogen Purge Return (61)	PERF	RF	None
1PR-27	OFD-116A-1.1	H5	MAN	RB Purge Exhaust Penet 20 Test	PERF	RF	None
2PR-27	OFD-116A-2.1	H5	MAN	RB Exhaust Penet 20 Test	PERF	RF	None
3PR-27	OFD-116A-3.1	H5	MAN	RB Purge Exhaust Penet 20 Test	PERF	RF	None
1PR-28	OFD-116A-1.1	H5	MAN	RB Purge Exhaust Penet 20 Test	PERF	RF	None
1PR-29	OFD-116A-1.1	C5	MAN	RB Purge Supply Penet 19 Test	PERF	RF	None
2PR-29	OFD-116A-2.1	C5	MAN	RB Supply Penet 19 Test	PERF	RF	None
3PR-29	OFD-116A-3.1	C5	MAN	RB Purge Supply Penet 19 Test	PERF	RF	None
1PR-30	OFD-116A-1.1	C5	MAN	RB Purge Supply Penet 19 Test	PERF	RF	None

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1PR-34	OFD-116B-1.1	I11	CK	R.B. Pene. Rm. Fan "A" Exhaust Check	PERF	None	QTR
2PR-34	OFD-116B-2.1	I11	CK	RC Penetration Rm Fan "A" Exhaust Check	PERF	None	QTR
3PR-34	OFD-116B-3.1	I11	CK	Penetration Room Fan Outlet Check	PERF	None	QTR
1PR-35	OFD-116B-1.1	E11	CK	R.B. Pene. Rm. Fan "B" Exhaust Check	PERF	None	QTR
2PR-35	OFD-116B-2.1	E11	CK	RB Penetration Rm Fan Exhaust "B" Check	PERF	None	QTR
3PR-35	OFD-116B-3.1	E11	CK	Penetration Fan Outlet Check	PERF	None	QTR
1PR-59	OFD-116C-1.1	H2	EMO	H2 Recombiner Inlet	PERF	RF	QTR
2PR-59	OFD-116C-2.1	H3	EMO	H2 Recombiner Inlet	PERF	RF	QTR
3PR-59	OFD-116C-3.1	H3	EMO	H2 Recombiner Inlet	PERF	RF	QTR
1PR-60	OFD-116C-1.1	D3	EMO	H2 Recombiner Outlet	PERF	RF	QTR
2PR-60	OFD-116C-2.1	D3	EMO	H2 Recombiner Outlet	PERF	RF	QTR
3PR-60	OFD-116C-3.1	D3	EMO	H2 Recombiner Outlet	PERF	RF	QTR
1PR-61	OFD-116C-1.1	F9	MAN	Hydrogen Recombiner Outlet	PERF	None	QTR
2PR-61	OFD-116C-2.1	E9	MAN	Hydrogen Recombiner Test	PERF	None	QTR
3PR-61	OFD-116C-3.1	E9	MAN	H2 Recombiner Outlet	PERF	None	QTR
1PR-68	OFD-116C-1.1	J3	MAN	Rad Monit Inlet Drain (60)	PERF	RF	None
2PR-68	OFD-116C-2.1	J3	MAN	Rad Block Inlet Drain (60)	PERF	RF	None
3PR-68	OFD-116C-3.1	J3	MAN	Rad Monit Inlet Drain (60)	PERF	RF	None
1PR-69	OFD-116C-1.1	J10	MAN	Radiation Monitor Inlet Block	PERF	None	QTR
2PR-69	OFD-116C-2.1	J10	MAN	Radiation Monitor Inlet Block	PERF	None	QTR
3PR-69	OFD-116C-3.1	J10	MAN	Radiation Monitor Inlet Block	PERF	None	QTR
1PR-70	OFD-116C-1.1	D10	MAN	Radiation Monitor Outlet Block	PERF	None	QTR
2PR-70	OFD-116C-2.1	D10	MAN	Radiation Monitor Outlet Block	PERF	None	QTR
3PR-70	OFD-116C-3.1	D10	MAN	Radiation Monitor Outlet Block	PERF	None	QTR
1PR-71	OFD-110A-1.3	K2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
2PR-71	OFD-110A-2.3	K2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
3PR-71	OFD-110A-3.3	K2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
1PR-72	OFD-110A-1.3	K2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
2PR-72	OFD-110A-2.3	K2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
3PR-72	OFD-110A-3.3	K2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
1PR-73	OFD-110A-1.3	J2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
2PR-73	OFD-110A-2.3	J2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
3PR-73	OFD-110A-3.3	J2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
1PR-74	OFD-110A-1.3	I2	SOV	H2 Analyzer "A" SAmple Select	PERF	None	QTR
2PR-74	OFD-110A-2.3	I2	SOV	H2 Analyzer "A" SAmple Select	PERF	None	QTR
3PR-74	OFD-110A-3.3	I2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
1PR-75	OFD-110A-1.3	H2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
2PR-75	OFD-110A-2.3	H2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
3PR-75	OFD-110A-3.3	H2	SOV	H2 Analyzer "A" Sample Select	PERF	None	QTR
1PR-76	OFD-110A-1.3	E2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
2PR-76	OFD-110A-2.3	F2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
3PR-76	OFD-110A-3.3	F2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
1PR-77	OFD-110A-1.3	E2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
2PR-77	OFD-110A-2.3	F2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
3PR-77	OFD-110A-3.3	F2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
1PR-78	OFD-110A-1.3	E2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
2PR-78	OFD-110A-2.3	E2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
3PR-78	OFD-110A-3.3	E2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
1PR-79	OFD-110A-1.3	D2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
2PR-79	OFD-110A-2.3	D2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
3PR-79	OFD-110A-3.3	D2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
1PR-80	OFD-110A-1.3	C2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
2PR-80	OFD-110A-2.3	C2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
3PR-80	OFD-110A-3.3	C2	SOV	H2 Analyzer "B" Sample Select	PERF	None	QTR
1PR-81	OFD-110A-1.3	J6	SOV	H2 Analyzer "A" Sample Select	PERF	RF	QTR
2PR-81	OFD-110A-2.3	J6	SOV	H2 Analyzer "A" Sample Select	PERF	RF	QTR

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3PR-81	OFD-110A-3.3	J6	SOV	H2 Analyzer "A" Sample Select	PERF	RF	QTR
1PR-84	OFD-110A-1.3	K6	SOV	H2 Analyzer "A" Return	PERF	RF	QTR
2PR-84	OFD-110A-2.3	K6	SOV	H2 Analyzer "A" Return	PERF	RF	QTR
3PR-84	OFD-110A-3.3	K6	SOV	H2 Analyzer "A" Return	PERF	RF	QTR
1PR-87	OFD-110A-1.3	E6	SOV	H2 Analyzer "B" Inlet	PERF	RF	QTR
2PR-87	OFD-110A-2.3	E6	SOV	H2 Analyzer "B" Inlet	PERF	RF	QTR
3PR-87	OFD-110A-3.3	E6	SOV	H2 Analyzer "B" Inlet	PERF	RF	QTR
1PR-90	OFD-110A-1.3	F6	SOV	H2 Analyzer "B" Return	PERF	RF	QTR
2PR-90	OFD-110A-2.3	F6	SOV	Hydrogen Analyzer "B" Return	PERF	RF	QTR
3PR-90	OFD-110A-3.3	F6	SOV	H2 Analyzer "B" Return	PERF	RF	QTR
1RC-1	OFD-100A-1.2	H10	SOV	Pressuizer spray control	PERF	None	S/D
2RC-1	OFD-100A-2.2	H10	SOV	Pressuizer spray control	PERF	None	S/D
3RC-1	OFD-100A-3.2	H10	SOV	Pressurizer spray control valve	PERF	None	S/D
1RC-4	OFD-100A-1.2	J9	EMO	Block Valve for PORV	PERF	None	QTR
2RC-4	OFD-100A-2.2	J9	EMO	Block Valve for PORV	PERF	None	QTR
3RC-4	OFD-100A-3.2	J9	EMO	Block Valve for PORV	PERF	None	QTR
1RC-5	OFD-110A-1.1	I3	EMO	Pressure Steam Sample	PERF	RF	QTR
2RC-5	OFD-110A-2.1	I3	EMO	Pressurizer Steam Sample	PERF	RF	QTR
3RC-5	OFD-110A-3.1	I3	EMO	Pressurizer Sample	PERF	RF	QTR
1RC-6	OFD-110A-1.1	H3	EMO	Pressure Sample	PERF	RF	QTR
2RC-6	OFD-110A-2.1	H3	EMO	Pressurizer Sample	PERF	RF	QTR
3RC-6	OFD-110A-3.1	H3	EMO	Pressurizer Sample	PERF	RF	QTR
1RC-7	OFD-110A-1.1	I6	PST	Pressure Sample	PERF	RF	QTR
2RC-7	OFD-110A-2.1	I6	PST	Pressurizer Sample	PERF	RF	QTR
3RC-7	OFD-110A-3.1	I6	PST	Pressurizer Sample	PERF	RF	QTR
1RC-49	OFD-110A-1.1	J5	MAN	Pressure Sample Penet 1 Vent	PERF	RF	None
2RC-49	OFD-110A-2.1	J5	MAN	Loop "B2" Drain PX (58)	PERF	RF	None
3RC-49	OFD-110A-3.1	J5	MAN	Loop "B2" Drain Px(58)	PERF	RF	None
1RC-50	OFD-110A-1.1	I5	MAN	Pressure Sample Penet 1 Drain	PERF	RF	None
2RC-50	OFD-110A-2.1	I5	MAN	Press Sample Penet (58) Drain	PERF	RF	None
3RC-50	OFD-110A-3.1	I5	MAN	Pressure Sample Penet 58 Drain	PERF	RF	None
1RC-51	OFD-110A-1.1	J5	MAN	Pressure Sample Penet 1 PX	PERF	RF	None
2RC-51	OFD-110A-2.1	J5	MAN	Press Sample Penet (58) Drain	PERF	RF	None
1RC-66	OFD-100A-1.2	J9	RV	Power Operated Relief Valve (PORV)	MAINT		
2RC-66	OFD-100A-2.2	J9	RV	PORV (Power Operated Relief Valve)	MAINT		
3RC-66	OFD-100A-3.2	J9	RV	PORV (Power Operated Relief Valve)	MAINT		
1RC-67	OFD-100A-1.2	J8	RV	Pressurizer Relief	MAINT		
2RC-67	OFD-100A-2.2	J8	RV	Pressurizer Relief Valve	MAINT		
3RC-67	OFD-100A-3.2	J8	RV	Pressurizer Relief Valve	MAINT		
1RC-68	OFD-100A-1.2	J7	RV	Pressurizer Relief	MAINT		
2RC-68	OFD-100A-2.2	J7	RV	Pressurizer Relief Valve	MAINT		
3RC-68	OFD-100A-3.2	J7	RV	Pressurizer Relief Valve	MAINT		
1RC-155	OFD-100A-1.1	I4	SOV	Loop "A" High Point Vent	PERF	None	S/D
2RC-155	OFD-100A-2.1	J4	SOV	Loop "A" High Point Vent	PERF	None	S/D
3RC-155	OFD-100A-3.1	J4	SOV	Loop "A" High Point Vent	PERF	None	S/D
1RC-156	OFD-100A-1.1	J4	SOV	Loop "A" High Point Vent Block	PERF	None	S/D
2RC-156	OFD-100A-2.1	J4	SOV	Loop "A" High Point Vent Block Valve	PERF	None	S/D
3RC-156	OFD-100A-3.1	J4	SOV	Loop "A" High Point Vent Block Valve	PERF	None	S/D
1RC-157	OFD-100A-1.1	I12	SOV	Loop "B" High Point Vent	PERF	None	S/D
2RC-157	OFD-100A-2.1	I11	SOV	Loop "B" High Point Vent	PERF	None	S/D
3RC-157	OFD-100A-3.1	I12	SOV	Loop "B" High Point Vent	PERF	None	S/D
1RC-158	OFD-100A-1.1	I11	SOV	Loop "B" High Point Vent Block	PERF	None	S/D
2RC-158	OFD-100A-2.1	I11	SOV	Loop "B" High Point Vent Block Valve	PERF	None	S/D
3RC-158	OFD-100A-3.1	I11	SOV	Loop "B" High Point Vent Block Valve	PERF	None	S/D
1RC-159	OFD-100A-1.1	I9	SOV	Reactor Vessel Head Vent	PERF	None	S/D
2RC-159	OFD-100A-2.1	I9	SOV	Reactor Vessel Head Vent	PERF	None	S/D

ILRT = Tested only during ILRT outages
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S/D = Tested during cold shutdowns and refueling outages
QTR = Tested quarterly
Q/SD= Partial stroked quarterly and full stroked at cold shutdown and refueling
Q/RF = Partial stroked quarterly and full stroked at refueling
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VALVE	OFD	COOR	TYPE	FUNCTION	RESP	LEAK TEST	STROKE TEST
3RC-159	OFD-100A-3.1	I9	SOV	RV Head Vent	PERF	None	S/D
1RC-160	OFD-100A-1.1	I9	SOV	Reactor Vessel Head Vent Block	PERF	None	S/D
2RC-160	OFD-100A-2.1	I9	SOV	Reactor Vessel Head Vent Block Valve	PERF	None	S/D
3RC-160	OFD-100A-3.1	I9	SOV	RV Head Vent Block Valve	PERF	None	S/D
1RC-164	OFD-110A-1.4	G4	SOV	Post Accident Sample Valve	PERF	RF	QTR
2RC-164	OFD-110A-2.4	G4	SOV	PALS Sample Valve	PERF	RF	QTR
3RC-164	OFD-110A-3.4	G4	MAN	PALS Sample Valve	PERF	RF	QTR
1RC-165	OFD-110A-1.4	G4	SOV	Post Accident Sample Valve	PERF	RF	QTR
2RC-165	OFD-110A-2.4	G4	SOV	PALS Sample Valve	PERF	RF	QTR
3RC-165	OFD-110A-3.4	G4	MAN	PALS Sample Valve	PERF	RF	QTR
1SF-60	OFD-104A-1.1	D3	MAN	Canal Fill Penetration (56) BLOCK	PERF	ILRT	None
3SF-60	OFD-104A-3.1	C5	MAN	Canal Fill Penetration (56) Block	PERF	ILRT	None
1SF-61	OFD-104A-1.1	D3	MAN	Canal Fill Penetration (56) BLOCK	PERF	ILRT	None
2SF-61	OFD-104A-1.1	D12	MAN	Canal Fill Penetration (56) Block	PERF	ILRT	None
3SF-61	OFD-104A-3.1	C4	MAN	Canal Fill Penetration (56) Block	PERF	ILRT	None
1SF-72	OFD-104A-1.1	J3	MAN	Transfer Tube "A" Drain to Sump	PERF	RF	None
2SF-72	OFD-104A-1.1	J12	MAN	Transfer "A" Drain to Sump	PERF	RF	None
3SF-72	OFD-104A-3.1	J4	MAN	Transfer Tube "A" Drain to Sump	PERF	RF	None
1SF-73	OFD-104A-1.1	J3	MAN	Transfer Tube "B" Drain to Sump	PERF	RF	None
2SF-73	OFD-104A-1.1	J12	MAN	Transfer Tube "B" Drain to Sump	PERF	RF	None
3SF-73	OFD-104A-3.1	J5	MAN	Transfer Tube "B" Drain to Sump	PERF	RF	None
1SF-74	OFD-104A-1.1	I3	MAN	Transfer Tube Drain Block	PERF	RF	None
2SF-74	OFD-104A-1.1	I12	MAN	Transfer Tube Drain Block	PERF	RF	None
3SF-74	OFD-104A-3.1	I5	MAN	Transfer Tube Drain Block	PERF	RF	None
1SF-76	OFD-104A-1.1	D3	MAN	Penetration 56 Drain	PERF	ILRT	None
2SF-76	OFD-104A-1.1	D12	MAN	Penetration 56 Drain	PERF	ILRT	None
3SF-76	OFD-104A-3.1	C4	MAN	Penetration 56 Drain	PERF	ILRT	None
2SF-81	OFD-104A-1.1	D12	MAN	Canal Fill Penetration (56) Block	PERF	ILRT	None
1SF-82-SSF	OFD-101A-1.5	F2	EMO	RC Makeup Pump Suction	PERF	RF	QTR
2SF-82-SSF	OFD-101A-2.5	F2	EMO	RC Makeup Pump Suction	PERF	RF	QTR
3SF-82-SSF	OFD-101A-3.5	F2	EMO	RC Makeup Pump Suction	PERF	RF	QTR
2SF-87	OFD-104A-1.1	D12	MAN	PENETRATION 56 VENT	PERF	ILRT	None
3SF-87	OFD-104A-3.1	D4	MAN	PENETRATION 56 VENT	PERF	ILRT	None
1SF-97-SSF	OFD-104A-1.1	K3	EMO	RC Makeup Pump Suction	PERF	RF	QTR
2SF-97-SSF	OFD-104A-1.1	K12	EMO	RC Makeup Pump Suction	PERF	RF	QTR
3SF-97-SSF	OFD-104A-3.1	K3	EMO	SFP to RC Makeup Pump Suction	PERF	RF	QTR
1SF-98-SSF	OFD-104A-1.1	K3	MAN	SFP to RC Makeup Pump Vent (11)	PERF	RF	None
2SF-98-SSF	OFD-104A-1.1	K12	MAN	SFP to RC Makeup Pump Vent (11)	PERF	RF	None
3SF-98-SSF	OFD-104A-3.1	K3	MAN	SFP to RC Makeup Vent (11)	PERF	RF	None
1SF-99-SSF	OFD-101A-1.5	E2	MAN	SFP to RC Makeup Pump Drain (11)	PERF	RF	None
2SF-99-SSF	OFD-101A-2.5	E2	MAN	SFP to RC Makeup Pump Drain (11)	PERF	RF	None
3SF-99-SSF	OFD-101A-3.5	F2	MAN	SFP to RC Makeup Drain (11)	PERF	RF	None
1SSH-22	OFD-122B-1.1	I6	RV	Main Stop Valve Steam Leak Offs Relief			
2SSH-22	OFD-122B-2.1	I6	RV	Main Stop Valve Steam Leak Offs Relief			
3SSH-22	OFD-122B-3.1	I6	RV	Main Stop Valve Steam Leak Offs Relief			
1V-186	OFD-121C-1.1	I14	EMO	Main Condenser Vacuum Breaker	PERF	None	S/D
2V-186	OFD-121C-2.1	I14	EMO	Main Condenser Vacuum Breaker	PERF	None	S/D
3V-186	OFD-121C-3.1	I14	EMO	Main Condenser Vacuum Breaker	PERF	None	S/D
U1 RV CHECKS	N/A		CK	Eight Interval RV Checks	MAINT	None	RF
U2 RV CHECKS	N/A		CK	Eight Internal RV Checks	MAINT	None	RF
U3 RV CHECKS	N/A		CK	Eight Internal RV Checks	MAINT	None	RF

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PUMP ID		DESCRIPTION	FLOW DIAGRAM	FREQ	UNIT STATUS	INLET PRESSURE	DELTA PRESSURE	FLOW	VIBRATION	OIL LEVEL	BEARING TEMP	SHAFT SPEED
ON1BS PU0001	1A	REACTOR BUILDING SPRAY PUMP	OFD-103A-1.1	QTR	PWR/HS	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1BS PU0002	1B	REACTOR BUILDING SPRAY PUMP	OFD-103A-1.1	QTR	PWR/HS	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON2BS PU0001	2A	REACTOR BUILDING SPRAY PUMP	OFD-103A-2.1	QTR	PWR/HS	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON2BS PU0002	2B	REACTOR BUILDING SPRAY PUMP	OFD-103A-2.1	QTR	PWR/HS	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3BS PU0001	3A	REACTOR BUILDING SPRAY PUMP	OFD-103A-3.1	QTR	PWR/HS	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3BS PU0002	3B	REACTOR BUILDING SPRAY PUMP	OFD-103A-3.1	QTR	PWR/HS	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON0CCWPU0002		SSF AUXILIARY SERVICE WATER PUMP	OFD-133A-2.5	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON0CCWPU0005		SSF DIESEL ENGINE SERVICE WATER PUMP	OFD-133A-2.5	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON0CCWPU0010		SSF SUBMERSIBLE PUMP	OFD-133A-2.5	2YR	N/A	N/A	X	X	N/A	N/A	N/A	N/A
ON0CCWPU0011		SSF SUBMERSIBLE PUMP (SPARE)	OFD-133A-2.5	2YR	N/A	N/A	X	X	N/A	N/A	N/A	N/A
ON0CCWPU0003	A	SSF HVAC SERVICE WATER PUMP	OFD-133A-2.5	QTR	N/A	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON0CCWPU0004	B	SSF HVAC SERVICE WATER PUMP	OFD-133A-2.5	QTR	N/A	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1CS PU0005	1	CONCENTRATED BORIC ACID TRANSFER PUMP	OFD-106A-1.2	QTR	N/A	GRP-1,RP-4	GRP-2	GRP-2	GRP-5	RP-4	GRP-6	N/A
ON1CS PU0003	1A	RC BLEED TRANSFER PUMP	OFD-106A-1.1	QTR	N/A	GRP-1,RP-3	GRP-4	X	GRP-5	N/A	GRP-6	N/A
ON1CS PU0004	1B	RC BLEED TRANSFER PUMP	OFD-106A-1.1	QTR	N/A	GRP-1,RP-3	GRP-4	X	GRP-5	N/A	GRP-6	N/A
ON2CS PU0005	2	CONCENTRATED BORIC ACID TRANSFER PUMP	OFD-106A-2.2	QTR	N/A	GRP-1,RP-4	GRP-2	GRP-2	GRP-5	RP-4	GRP-6	N/A
ON2CS PU0003	2A	RC BLEED TRANSFER PUMP	OFD-106A-2.1	QTR	N/A	GRP-1,RP-3	GRP-4	X	GRP-5	N/A	GRP-6	N/A
ON2CS PU0004	2B	RC BLEED TRANSFER PUMP	OFD-106A-2.1	QTR	N/A	GRP-1,RP-3	GRP-4	X	GRP-5	N/A	GRP-6	N/A
ON3CS PU0005	3A	CONCENTRATED BORIC ACID TRANSFER PUMP	OFD-106A-3.2	QTR	N/A	GRP-1,RP-4	GRP-2	GRP-2	GRP-5	RP-4	GRP-6	N/A
ON3CS PU0003	3A	RC BLEED TRANSFER PUMP	OFD-106A-3.1	QTR	N/A	GRP-1,RP-3	GRP-4	X	GRP-5	N/A	GRP-6	N/A
ON3CS PU0006	3B	CONCENTRATED BORIC ACID TRANSFER PUMP	OFD-106A-3.2	QTR	N/A	GRP-1,RP-4	GRP-2	GRP-2	GRP-5	RP-4	GRP-6	N/A
ON3CS PU0004	3B	RC BLEED TRANSFER PUMP	OFD-106A-3.1	QTR	N/A	GRP-1,RP-3	GRP-4	X	GRP-5	N/A	GRP-6	N/A
ON1FDWPU0003	1	TURBINE DRIVEN EMERGENCY FEEDWATER PUMP	OFD-121D-1.1	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	X
ON1FDWPU0004	1A	MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	OFD-121D-1.1	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1FDWPU0005	1B	MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	OFD-121D-1.1	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON2FDWPU0003	2	TURBINE DRIVEN EMERGENCY FEEDWATER PUMP	OFD-121D-2.1	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	X
ON2FDWPU0004	2A	MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	OFD-121D-2.1	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON2FDWPU0005	2B	MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	OFD-121D-2.1	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3FDWPU0003	3	TURBINE DRIVEN EMERGENCY FEEDWATER PUMP	OFD-121D-3.1	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	X

X - PARAMETERS TO MONITORED
GRP# - REFERENCES GNR-PMP-(#)
RP# - REFERENCES RR=PMP-(#)
PWR/HS - SYSTEM ALIGNMENTS CANNOT BE PERFORMED
FOR TESTING AT COLD SHUTDOWN

PUMP ID		DESCRIPTION	FLOW DIAGRAM	FREQ	UNIT STATUS	INLET PRESSURE	DELTA PRESSURE	FLOW	VIBRATION	OIL LEVEL	BEARING TEMP	SHAFT SPEED
ON3FDWPU0004	3A	MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	OFD-121D-3.1	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3FDWPU0005	3B	MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	OFD-121D-3.1	QTR	N/A	X	GRP-4	X	GRP-5	X	GRP-6	N/A
ON0FO PU0005		SSF DIESEL ENGINE FUEL OIL TRANSFER PUMP	OFD-135A-1.2	QTR	N/A	X	GRP-4	GRP-4	GRP-5	N/A	GRP-6	N/A
ON1HPIPU0005	1	SSF RC MAKEUP PUMP	OFD-101A-1.5	QTR	N/A	X	GRP-2	X	GRP-5	X	GRP-6	N/A
ON1HPIPU0001	1A	HIGH PRESSURE INJECTION PUMP	OFD-101A-1.3	QTR	PWR/HS	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1HPIPU0002	1B	HIGH PRESSURE INJECTION PUMP	OFD-101A-1.3	QTR	PWR/HS	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1HPIPU0003	1C	HIGH PRESSURE INJECTION PUMP	OFD-101A-1.3	QTR	PWR/HS	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON2HPIPU0005	2	SSF RC MAKEUP PUMP	OFD-101A-2.5	QTR	N/A	X	GRP-2	X	GRP-5	X	GRP-6	N/A
ON2HPIPU0001	2A	HIGH PRESSURE INJECTION PUMP	OFD-101A-2.3	QTR	PWR/HS	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON2HPIPU0002	2B	HIGH PRESSURE INJECTION PUMP	OFD-101A-2.3	QTR	PWR/HS	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON2HPIPU0003	2C	HIGH PRESSURE INJECTION PUMP	OFD-101A-2.3	QTR	PWR/HS	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3HPIPU0005	3	SSF RC MAKEUP PUMP	OFD-101A-3.5	QTR	N/A	GRP-1	GRP-2	X	RP-1	X	GRP-6	N/A
ON3HPIPU0001	3A	HIGH PRESSURE INJECTION PUMP	OFD-101A-3.3	QTR	PWR/HS	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3HPIPU0002	3B	HIGH PRESSURE INJECTION PUMP	OFD-101A-3.3	QTR	PWR/HS	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3HPIPU0003	3C	HIGH PRESSURE INJECTION PUMP	OFD-101A-3.3	QTR	PWR/HS	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1LPIPU0001	1A	LOW PRESSURE INJECTION PUMP	OFD-102A-1.2	QTR	RP-2	GRP-1,RP-2	GRP-4,RP-2	RP-2	GRP-5,RP-2	X	GRP-6	N/A
ON1LPIPU0002	1B	LOW PRESSURE INJECTION PUMP	OFD-102A-1.2	QTR	RP-2	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1LPIPU0003	1C	LOW PRESSURE INJECTION PUMP	OFD-102A-1.2	QTR	RP-2	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON2LPIPU0001	2A	LOW PRESSURE INJECTION PUMP	OFD-102A-2.2	QTR	RP-2	GRP-1,RP-2	GRP-4,RP-2	RP-2	GRP-5,RP-2	X	GRP-6	N/A
ON2LPIPU0002	2B	LOW PRESSURE INJECTION PUMP	OFD-102A-2.2	QTR	RP-2	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON2LPIPU0003	2C	LOW PRESSURE INJECTION PUMP	OFD-102A-2.2	QTR	RP-2	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3LPIPU0001	3A	LOW PRESSURE INJECTION PUMP	OFD-102A-3.2	QTR	RP-2	GRP-1,RP-2	GRP-4,RP-2	RP-2	GRP-5,RP-2	X	GRP-6	N/A
ON3LPIPU0002	3B	LOW PRESSURE INJECTION PUMP	OFD-102A-3.2	QTR	RP-2	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3LPIPU0003	3C	LOW PRESSURE INJECTION PUMP	OFD-102A-3.2	QTR	RP-2	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1LPSPU0001	1A	LOW PRESSURE SERVICE WATER PUMP	OFD-124A-1.1	QTR	N/A	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1LPSPU0002	1B	LOW PRESSURE SERVICE WATER PUMP	OFD-124A-1.1	QTR	N/A	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON1LPSPU0003	1C	LOW PRESSURE SERVICE WATER PUMP	OFD-124A-1.1	QTR	N/A	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3LPSPU0001	3A	LOW PRESSURE SERVICE WATER PUMP	OFD-124A-3.1	QTR	N/A	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A
ON3LPSPU0002	3B	LOW PRESSURE SERVICE WATER PUMP	OFD-124A-3.1	QTR	N/A	GRP-1	GRP-4	X	GRP-5	X	GRP-6	N/A

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UNIT	DESCRIPTION	PUMP ID	PROCEDURE	FREQUENCY
SSF	SSF AUXILIARY SERVICE WATER PUMP	ON0CCWPU0002	PT/0/A/0400/05	Quarterly
SSF	A SSF HVAC SERVICE WATER PUMP	ON0CCWPU0003	PT/0/A/0400/06	Quarterly
SSF	B SSF HVAC SERVICE WATER PUMP	ON0CCWPU0004	PT/0/A/0400/06	Quarterly
SSF	SSF DIESEL ENGINE SERVICE WATER PUMP	ON0CCWPU0005	PT/0/A/0400/04	Quarterly
SSF	SSF SUBMERSIBLE PUMP	ON0CCWPU0010	PT/0/A/0400/15	Two Year
SSF	SSF DIESEL ENGINE FUEL OIL TRANSFER PUMP	ON0FO PU0005	PT/0/A/0400/03	Quarterly
1	A REACTOR BUILDING SPRAY PUMP	ON1BS PU0001	PT/1/A/0204/07	Quarterly
1	B REACTOR BUILDING SPRAY PUMP	ON1BS PU0002	PT/1/A/0204/07	Quarterly
1	A RC BLEED TRANSFER PUMP	ON1CS PU0003	PT/1/A/0251/17	Quarterly
1	B RC BLEED TRANSFER PUMP	ON1CS PU0004	PT/1/A/0251/17	Quarterly
1	CONCENTRATED BORIC ACID TRANSFER PUMP	ON1CS PU0005	PT/1/A/0251/03	Quarterly
1	TURBINE DRIVEN EMERGENCY FEEDWATER PUMP	ON1FDWPU0003	PT/1/A/0600/12	Quarterly
1	A MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	ON1FDWPU0004	PT/1/A/0600/13A	Quarterly
1	B MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	ON1FDWPU0005	PT/1/A/0600/13A	Quarterly
1	A HIGH PRESSURE INJECTION PUMP	ON1HPIPU0001	PT/1/A/0202/11	Quarterly
1	B HIGH PRESSURE INJECTION PUMP	ON1HPIPU0002	PT/1/A/0202/11	Quarterly
1	C HIGH PRESSURE INJECTION PUMP	ON1HPIPU0003	PT/1/A/0202/11	Quarterly
1	SSF RC MAKEUP PUMP	ON1HPIPU0005	PT/1/A/0400/07	Quarterly
1	A LOW PRESSURE INJECTION PUMP	ON1LPIPU0001	PT/1/A/0203/06A,B	Quarterly
1	B LOW PRESSURE INJECTION PUMP	ON1LPIPU0002	PT/1/A/0203/06A,B	Quarterly
1	C LOW PRESSURE INJECTION PUMP	ON1LPIPU0003	PT/1/A/0203/06A,B	Quarterly
1	A LOW PRESSURE SERVICE WATER PUMP	ON1LPSPU0001	PT/1/A/0251/01	Quarterly
1	B LOW PRESSURE SERVICE WATER PUMP	ON1LPSPU0002	PT/1/A/0251/01	Quarterly
1	C LOW PRESSURE SERVICE WATER PUMP	ON1LPSPU0003	PT/1/A/0251/01	Quarterly
1	A SPENT FUEL POOL COOLING PUMP	ON1SF PU0001	PT/1/A/0251/02	Quarterly
1	B SPENT FUEL POOL COOLING PUMP	ON1SF PU0002	PT/1/A/0251/02	Quarterly
1	C SPENT FUEL POOL COOLING PUMP	ON1SF PU0003	PT/1/A/0251/02	Quarterly
2	AUXILIARY SERVICE WATER PUMP	ON0CCWPU0001	PT/2/A/0251/10	Quarterly
2	A REACTOR BUILDING SPRAY PUMP	ON2BS PU0001	PT/2/A/0204/07	Quarterly
2	B REACTOR BUILDING SPRAY PUMP	ON2BS PU0002	PT/2/A/0204/07	Quarterly
2	A RC BLEED TRANSFER PUMP	ON2CS PU0003	PT/2/A/0251/17	Quarterly
2	B RC BLEED TRANSFER PUMP	ON2CS PU0004	PT/2/A/0251/17	Quarterly
2	CONCENTRATED BORIC ACID TRANSFER PUMP	ON2CS PU0005	PT/2/A/0251/03	Quarterly
2	TURBINE DRIVEN EMERGENCY FEEDWATER PUMP	ON2FDWPU0003	PT/2/A/0600/12	Quarterly
2	A MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	ON2FDWPU0004	PT/2/A/0600/13A	Quarterly
2	B MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	ON2FDWPU0005	PT/2/A/0600/13A	Quarterly
2	A HIGH PRESSURE INJECTION PUMP	ON2HPIPU0001	PT/2/A/0202/11	Quarterly
2	B HIGH PRESSURE INJECTION PUMP	ON2HPIPU0002	PT/2/A/0202/11	Quarterly
2	C HIGH PRESSURE INJECTION PUMP	ON2HPIPU0003	PT/2/A/0202/11	Quarterly
2	SSF RC MAKEUP PUMP	ON2HPIPU0005	PT/2/A/0400/07	Quarterly
2	A LOW PRESSURE INJECTION PUMP	ON2LPIPU0001	PT/2/A/0203/06A,B	Quarterly
2	B LOW PRESSURE INJECTION PUMP	ON2LPIPU0002	PT/2/A/0203/06A,B	Quarterly
2	C LOW PRESSURE INJECTION PUMP	ON2LPIPU0003	PT/2/A/0203/06A,B	Quarterly
3	A REACTOR BUILDING SPRAY PUMP	ON3BS PU0001	PT/3/A/0204/07	Quarterly
3	B REACTOR BUILDING SPRAY PUMP	ON3BS PU0002	PT/3/A/0204/07	Quarterly
3	A RC BLEED TRANSFER PUMP	ON3CS PU0003	PT/3/A/0251/17	Quarterly
3	B RC BLEED TRANSFER PUMP	ON3CS PU0004	PT/3/A/0251/17	Quarterly
3	A CONCENTRATED BORIC ACID TRANSFER PUMP	ON3CS PU0005	PT/3/A/0251/03	Quarterly
3	B CONCENTRATED BORIC ACID TRANSFER PUMP	ON3CS PU0006	PT/3/A/0251/03	Quarterly
3	TURBINE DRIVEN EMERGENCY FEEDWATER PUMP	ON3FDWPU0003	PT/3/A/0600/12	Quarterly
3	A MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	ON3FDWPU0004	PT/3/A/0600/13A	Quarterly
3	B MOTOR DRIVEN EMERGENCY FEEDWATER PUMP	ON3FDWPU0005	PT/3/A/0600/13A	Quarterly
3	A HIGH PRESSURE INJECTION PUMP	ON3HPIPU0001	PT/3/A/0202/11	Quarterly
3	B HIGH PRESSURE INJECTION PUMP	ON3HPIPU0002	PT/3/A/0202/11	Quarterly
3	C HIGH PRESSURE INJECTION PUMP	ON3HPIPU0003	PT/3/A/0202/11	Quarterly
3	SSF RC MAKEUP PUMP	ON3HPIPU0005	PT/3/A/0400/07	Quarterly
3	A LOW PRESSURE INJECTION PUMP	ON3LPIPU0001	PT/3/A/0203/06A,B	Quarterly
3	B LOW PRESSURE INJECTION PUMP	ON3LPIPU0002	PT/3/A/0203/06A,B	Quarterly
3	C LOW PRESSURE INJECTION PUMP	ON3LPIPU0003	PT/3/A/0203/06A,B	Quarterly
3	A LOW PRESSURE SERVICE WATER PUMP	ON3LPSPU0001	PT/3/A/0251/01	Quarterly
3	B LOW PRESSURE SERVICE WATER PUMP	ON3LPSPU0002	PT/3/A/0251/01	Quarterly
3	A SPENT FUEL POOL COOLING PUMP	ON3SF PU0001	PT/3/A/0251/02	Quarterly
3	B SPENT FUEL POOL COOLING PUMP	ON3SF PU0002	PT/3/A/0251/02	Quarterly
3	C SPENT FUEL POOL COOLING PUMP	ON3SF PU0003	PT/3/A/0251/02	Quarterly