Clinton Power Station
8401 Power Road
Clinton, IL 61727

Exelon Generation

U-604457

10 CFR 50.55a

November 21, 2018

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Clinton Power Station Third Ten-Year Interval Inservice Testing Program Plan Revision 9

In accordance with the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code), Subsection ISTA-3200(a), "Administrative Requirements," attached for your information is a copy of Revision 9 of the Inservice Testing (IST) Program for the third ten-year interval. The third ten-year interval IST Program Plan complies with the requirements of the ASME OM Code 2004 Edition. The third ten-year interval began on July 1, 2010 and concludes on June 30, 2020.

There are no regulatory commitments contained within this letter.

If you have any questions or require additional information, please contact Mr. Dale Shelton, Regulatory Assurance Manager, at (217) 937-2800.

Sincerely,

Bradley Kapellas
Plant Manager
Clinton Power Station

NAS/lm

cc: Regional Administrator, Region III, USNRC
Senior Resident Inspector, Clinton Power Station, USNRC
NRR Project Manager, Clinton Power Station, USNRC

A047
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Clinton Power Station
Unit 1
Docket Number 50-461
8401 Power Road
Clinton, Il. 61727
April 24, 1987

# Inservice Testing (IST) Program
# Program Plan

## 3rd Ten-Year Interval

07/01/10– 06/30/20

**Revision 9**
**7/12/2018**

## REVISION RECORD

| Effective Date | Revision Description | Sign & Date | | |
|---|---|---|---|---|
| | | Prepared: Site IST | Reviewed: Corporate IST | Approved; Programs Manager |
| *09/21/2010* | Revision 1<br>• Revised Attachment 16 by replacing the test table for the Reactor Core Isolation Cooling System. This change was made to update the table for valves 1E51-F061 and 1E51-F062 to reflect the change in testing requirements resulting from implementation of CMP-13 and CMP-14, respectively.<br>• Revised CSJ-116 in Attachment 5 to remove valves 1PS043A and 1PS043B from the valve listing at the top of the page. | Ted Danley | John Dore | Steve Clary |
| *05/24/2011* | Revision 2<br>• Revised Attachment 16 to add vacuum breakers 1SX350A/B that were installed by ECs 369622 and 369868.<br>• Revised Attachment 16 to show the test frequency for 1C41-F001A/B and 1E12-F064A/B from Y2 to 3M due to their risk ranking being changed from low to medium in Rev. 12 of NSED Standard MS-07.00, MOV Periodic Verification Program Scope.<br>• Revised the format for Attachment 14. Removed Deferral Just. Heading because it is not applicable to pumps. Removed information regarding physical location of the pumps to allow a better presentation of the information and the location information is not required.<br>• Made non-technical changes identified in ATIs 01163088-02, 01011851-26 and 01011851-27. Corrected format, typographical errors, replace non-standard/defined acronyms with standard/defined acronyms. This revision did not change any of the testing requirements for any of the components in the IST Program. Due to the extent of the changes, no revision bars were used. | Ted Danley | John Dore | Gary Mosley |
| *05/11/2012* | Revision 3 (Editorial)<br>• Revised CSJ-117 to clarify a packing leak "that requires immediate repair were to occur" in basis for justification for not exercising valves 1B21-F016 and 1B21-F019 quarterly(IR 01343842)<br>• Made non-technical change identified in IR 1132711-12 to add title to Attachment 11: "Corporate Technical Position" | Tom Parrent | N/A | Shane Mohundro |

| Effective Date | Revision Description | Sign & Date | | |
|---|---|---|---|---|
| | | Prepared: Site IST Engineer | Reviewed: Corporate IST Engineer | Approved; Engr. Programs Manager |
| *05/03/2013* | Revision 4<br>(This is a major revision therefore no rev bars were used)<br>• Enhancement to Weaknesses in Descriptions and References in CSJs per AR 1343842-03<br>• Removed 1E51-F046 and 1SX209 from program per ECs 390555 and 392017.<br>• Added 1SX350A/B to CMP-15.<br>• Enhanced the Program Plan to follow the standard template format per AR 1404141-02.<br>• Fixed typo in CSJ-107 referring to OM-10 per AR 1451486-02.<br>• Revise CSJ-114 to an RFJ based on AR 1385038-16.<br>• Enhance CSJ-115 per AR 1385038-17.<br>• Enhance CSJ-116 per AR 1385038-18.<br>• Enhance RFJ-001 per AR 1385038-19. | Fred Sarantakos | Marcellus Ruff | Shane Mohundro |
| *6/27/2014* | Revision 5<br>• Created CSJ-118 for 1SX346A/B. | Fred Sarantakos | Marcellus Ruff | Christian Small |
| *2/8/2016* | Revision 6 (editorial)<br>• Cleaned up information contained on the cover page. | Fred Sarantakos | NA | Greg Boyd |
| *10/21/2016* | Revision 7<br>• Added Relief requests 2203 and 2204 | Fred Sarantakos | Marcellus Ruff | Mark Tomey |
| *6/16/2017* | Revision 8<br>• Added CMP-16 moved the 1DO001A/B | Fred Sarantakos | Marcellus Ruff | Mark Tomey |
| | Revision 9<br>(This is a major revision therefore no rev bars were used)<br>• Added Relief Request for OMN-20<br>• Updated CSJ-101 justification<br>• Removed 1PS037 and 1PS038 from the program under EC 621856<br>• Updated NUREG 1482 references | Fred Sarantakos<br>7/12/18 | Marcellus Ruff<br>9/11/18 | Steve O'Riley<br>9/11/2018 |

## TABLE OF CONTENTS

## 1.0 INTRODUCTION

### 1.1 Purpose

The purpose of this Inservice Testing (IST) Program Plan is to provide a summary description of the Clinton IST Program in order to document its compliance with the requirements of 10 CFR 50.55a(f) for the 3rd 10-year IST interval and to provide requirements for the performance and administration of assessing the operational readiness of those pumps and valves with specific functions that are required to:

- Shutdown the reactor to the safe shutdown condition,
- Maintain the safe shutdown condition, or
- Mitigate the consequences of an accident.

### 1.2 Scope

This Inservice Testing Program Plan identifies all of the testing performed on the components included in the Clinton Power Station (CPS) Unit 1 Inservice Testing (IST) Program for the 3rd ten-year IST interval, which began on July 1, 2010 and is scheduled to end on June 30, 2020.

The Code of Federal Regulations, 10 CFR 50.55a(f)(4), requires that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the inservice test requirements set forth in the ASME OM Code and addenda that are incorporated by reference in paragraph 10 CFR 50.55a(b)(3) for the initial and each subsequent 120-month interval.

Based on the start date identified above, the IST Program for the 3rd ten-year interval is required by 10 CFR 50.55a(f)(4)(ii) to comply with the requirements of the ASME OM Code-2004 no addenda Code for Operation and Maintenance of Nuclear Power Plants, except where relief from such requirements has been granted in writing by the NRC.

The scope of the OM Code is defined in paragraph ISTA-1100 as applying to:

(a) pumps and valves that are required to perform a specific function in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident;

(b) pressure relief devices that protect systems or portions of systems that perform on or more of the functions listed in (a), above; and

(c) dynamic restraints (snubbers) used in systems that perform one or more of the functions listed in (a).

**NOTE:** This IST Program Plan addresses only those components included in (a) and (b) above. Dynamic restraints (snubbers) are addressed in a separate test program.

In order to determine the scope of the IST Program at CPS, an extensive scope evaluation was performed. This scope evaluation determined all of the functions required to be performed by all ASME Class 1, 2 and 3 systems in shutting down the reactor to the safe shutdown condition, in maintaining the safe shutdown condition or in mitigating the consequences of an accident. The determination of those functions

was accomplished by a thorough review of licensing bases documents such as the UFSAR/FSAR, Plant Technical Specifications and Technical Specification Bases documents, etc. Next, a component-by-component review was performed to determine what function each pump and valve in the system was required to perform in order to support the safety function(s) of the system or subsystem. The results of these efforts are documented in the Station's IST Bases Document. In addition to a description of each component's safety function(s), the Bases Document identifies the tests and examinations that are performed on each component to provide assurance that they will be operationally ready to perform those safety function(s). The Bases Document identifies those ASME Class 1, 2, and 3 pumps and valves that are in the scope of the IST Program, including those that do and those that do not have required testing. It also identifies those ASME Class 1, 2 and 3 pumps and valves that are outside the scope of the IST Program on the basis that they are not required to perform any specific safety function.

As stated at the beginning of this Section, the scope of this IST Program Plan is to identify all of the testing performed on those components within the scope of the IST Program. This is accomplished primarily by means of the IST Pump and IST Valve Tables contained in Attachments 14 and 15. The remaining Sections and Attachments of this document provide support information to that contained in the Tables. Components that do not require testing are not included in the IST Program Plan document.

In addition to those components that are required to perform specific safety function(s), the scope evaluation often determines that there are also ASME Safety Class 1, 2 and 3 components that are not required to perform a licensing-based safety function but which, nonetheless, may be relied upon to operate to perform a function with some significance to safety. It may also identify non-ASME Safety Class pumps or valves that have a safety function or may be relied upon to operate to perform a function with some significance to safety. None of these components are required by 10 CFR 50.55a to be included in the IST Program. However, such components may require testing in a manner which demonstrates their ability to perform their functions commensurate with their importance to safety per the applicable portions of 10 CFR 50, Appendix A or B. One option is to include pumps or valves that fit these conditions in the IST Program as augmented components.

CPS is licensed with cold shutdown as the safe shutdown condition. Therefore, the scope of the IST Program must include, as a minimum, all of those ASME Class 1, 2, and 3 pumps and valves which are required to shut down the Reactor to the cold shutdown condition, maintain the cold shutdown condition, or mitigate the consequences of an accident.

1.3 Discussion

A summary listing of all the pumps and valves that are tested in accordance with the IST Program is provided in the IST Pump and IST Valve Tables contained in Attachments 14 and 15. The Pump and Valve Tables also identify each test that is performed on each component, the frequency at which the test is performed, and any Relief Request or Technical Position applicable to the test. For valves, the Valve Table also identifies any Cold Shutdown Justification or Refueling Outage

Justification that is applicable to the required exercise tests. Additional information is provided for both pumps and valves. All of the data fields included in the IST Pump and Valve Tables are listed and described in Sections 2 and 3 of this document.

Following Sections 2 and 3 are several Attachments which provide information referenced in the Pump and Valve Tables.
Attachment 1 includes a system listing.

Attachment 2 provides an index of the Pump Relief Requests that apply to any of the pumps in the IST Program for this ten-year interval.

Attachment 3 includes a copy of each of those Relief Requests.

Attachment 4 provides an index of the Valve Relief Requests that apply to any of the valves in the IST Program for this ten-year interval.

Attachment 5 includes a copy of each of those Relief Requests.

Attachment 6 contains the Safety Evaluation Report(s) (SER) that document approval of the Relief Requests contained in Attachments 3 and 5. It also includes Requests for Additional Information (RAIs) received from the NRC regarding the Relief Requests and the responses provided by Exelon.

Attachment 7 includes a list of the ASME OM Code Cases that are being invoked for this ten-year interval.

Attachment 8 provides an index of Cold Shutdown Justifications that apply to the exercise testing of any valves in the IST Program for this ten-year interval.

Attachment 9 includes a copy of each of those Cold Shutdown Justifications.

Attachment 10 provides an index of Refueling Outage Justifications that apply to the exercise testing of any valves in the IST Program for this ten-year interval.

Attachment 11 includes a copy of each of those Refueling Outage Justifications.

Attachment 12 provides an index of Technical Positions that apply to the IST Program for this ten-year interval. Technical Positions provide detailed information regarding how Exelon satisfies certain ASME OM Code requirements, particularly when the Code requirement may be ambiguous or when multiple options for implementation may be available. Technical Positions do not take exception to or provide alternatives to Code requirements.

Attachment 13 includes a copy of each Technical Position listed in Attachment 12.

As described previously, Attachments 14 and 15 include the IST Pump and Valve Tables with their listed P&IDs.

Attachment 16 provides a listing of Check Valve Condition Monitoring (CVCM) Program Plans. These plans are maintained in their own controlled document.

This IST Program Plan is a quality-related document and is controlled and maintained in accordance with approved Exelon Corporate Engineering and Records Management procedures.

1.4 References

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

1.4.2 ASME OM Code-2004 no addenda Code for Operation and Maintenance of Nuclear Power Plant Components.

1.4.3 Clinton Technical Specification

1.4.4 Exelon Corporation Administrative Procedure ER-AA-321, Administrative Requirements for Inservice Testing

## 2.0 INSERVICE TESTING PLAN FOR PUMPS

2.1 Pump Inservice Testing Plan

The Inservice Test (IST) Program for pumps at Clinton Power Station (CPS), Unit 1, is based on the following:

- American Society of Mechanical Engineers (ASME) OM Code-2004 Edition no addenda, Code for Operation and Maintenance of Nuclear Plants."
- Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"
- NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants"

The pumps included in this program are all ASME Class 1, 2 or 3 pumps provided with an emergency power source that are required to perform a specific function in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident.

This program plan documents compliance with the requirements of OM Code Subsection ISTB with the exception of specific relief requests contained in Attachment 3.

The hydraulic circuit and location/type of measurement for the required test parameters are specified in station procedures per the requirements of ISTB-9200.

2.2 IST Plan Pump Table Description

The pumps included in the CPS Inservice Testing Program are listed in Attachment 14. The information contained in that table identifies those pumps required to be tested to the requirements of the ASME OM Code, the parameters measured, associated Relief Requests and comments, and other applicable information. The

column headings for the Pump Table are listed below with an explanation of the content of each column.

**OM Group A Pumps**

The ASME OM Code defines Group A pumps as those pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations. CPS considers the following Unit 1 pumps as being categorized as Group A:

- Residual Heat Removal (RHR) Pumps A and B
- Control Room HVAC Chilled Water Pumps A and B
- RHR Loop B/C Water Leg Pump
- LPCS and RHR Loop A Water Leg Pump
- HPCS Water Leg Pump
- RCIC Water Leg Pump
- Fuel Pool Cooling Pumps A and B
- Diesel Fuel Oil Transfer Pumps

**OM Group B Pumps**

The ASME OM Code defines Group B pumps as those pumps in standby systems that are not operated routinely except for testing. CPS considers the following pumps as being categorized as Group B:

- Residual Heat Removal (RHR) Pump C
- Low Pressure Core Spray (LPCS) Pump
- High Pressure Core Spray (HPCS) Pump
- Standby Liquid Control (SLC) Pumps A and B
- Reactor Core Isolation Cooling (RCIC) Pump
- Shutdown Service Water Pumps A, B, and C

The pumps included in the Clinton Nuclear Power Station IST Plan are listed in Attachment 14. The information contained in these tables identifies those pumps required to be tested to the requirements of the OM Code, the testing parameters and frequency of testing, and associated relief requests and remarks. The headings on the pump tables in Attachment 14 are described below. Note not all abbreviations line up directly with the ones found in the ER-AA-321-1002.

| | |
|---|---|
| Pump EIN | The unique identification number for the pump, as designated on the System P&ID or Flow Diagram |
| Description | The descriptive name for the pump. |

| | |
|---|---|
| Class | The ASME Safety Class (i.e., 1, 2 or 3) of the pump. Non-ASME Safety Class pumps are designated "N/A". |
| P&ID | The Piping and Instrumentation Diagram or Flow Drawing on which the pump is shown |
| P&ID Coor. | The P&ID Coordinate location of the pump. |
| Pump Type | An abbreviation used to designate the type of pump:<br>C Centrifugal<br>PD Positive Displacement<br>VLS Vertical Line Shaft |
| Driver | The type of driver with which the pump is equipped.<br>A Air-motor<br>D Diesel<br>M Motor (electric)<br>T Turbine (steam) |
| Nominal Speed | The nominal speed of the pump in revolutions per minute. |
| Group | A or B, as defined in Reference 1.4.2. |
| Test Type | Lists if the pump has a Group A, B, or Comprehensive test. |
| Test | Lists of each of the test parameters which are required to be measured for pumps. These include:<br>N Speed (for variable speed pumps, only)<br>DP Differential Pressure<br>PD Discharge Pressure (positive displacement pumps)<br>Q Flow Rate<br>V Vibration |
| Freq | An abbreviation which designates the frequency at which the associated test is performed:<br>M3 Quarterly (92 Days)<br>Y2 Once every 2 years<br>**NOTE:** All tests are performed at the frequencies specified by Code unless specifically documented by a Relief Request. |
| Relief Request | Identifies the number of the Relief Request applicable to the specified test. |
| Deferred Just. | Provides the deferral justification identification number |

applicable to the pump or test.

Tech Pos — Provides the Technical Position identification number applicable to the pump or test.

Comments — Any appropriate reference or explanatory information (e.g., technical positions, etc.)

## 3.0 INSERVICE TESTING PLAN FOR VALVES

3.1 Valve Inservice Testing Plan

The Inservice Test (IST) Program for valves at Clinton Power Station (CPS), Unit 1, is based on the following:

- American Society of Mechanical Engineers (ASME) OM Code-2004 Edition, Code for Operation and Maintenance of Nuclear Plants."
- Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"
- NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants"
- Implementation of ASME OM Code Case OMN-1 in accordance with applicable Corrective Maintenance Procedures (CMPs). (See Valve Relief Request No. 2201)

The valves included in this program are all ASME Class 1, 2 or 3 required to perform a specific function in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident. The pressure-relief devices covered are those for protecting systems or portions of systems which perform one or more of the three aforementioned functions at CPS. Exemptions are listed in ISTC-1200.

This plan identifies the test intervals and parameters to be measured, and documents compliance with the requirements of ISTA and ISTC with the exception of the specific relief requests contained in Attachment 5.

Where quarterly frequency requirements for valve testing have been determined to be impracticable, Cold Shutdown or Refuel Outage Justifications have been identified and written. These justifications are provided in Attachments 9 and 11 respectively.

**Manual Valves**

Although ISTC-3540 permits manual valves to be full-stroke exercised at least once every 5 years; pursuant to 10 CFR 50.55a(b)(3)(vi), manual valves within the

IST program scope that perform an active safety function shall be exercised through a complete cycle at least once every 2 years. Exercise testing shall be considered acceptable if valve stem travel exhibits unrestricted movement with no abnormal resistance or binding through one complete cycle. Where practical, process parameters may be utilized to verify obturator movement. However, where process parameters are utilized to verify obturator movement it is not necessary to be performed simultaneous to manual exercising. This testing methodology is consistent with the discussion provided in NUREG-1482, Revision 2, Section 4.4.3. If a valve fails to exhibit the required change of obturator position, the valve shall immediately be declared inoperable.

The use of a valve persuader (cheater) for additional mechanical advantage will not invalidate the test, as it is recognized that larger valves may exhibit increased packing friction and/or increased friction associated with the disk to seat interface. In addition, a valve persuader may be used for personnel safety depending on a valve's service application (i.e. main steam).

**AOV Valves**

Typically, AOVs have solenoid valves that control the flow of air to the air operator. These solenoid valves are considered skid mounted. They are exercised when the AOV is exercised.

**Check Valves**

ASME OM Code-2004 no addenda requires each check valve to be exercise tested in both the open and closed directions regardless of their safety function. Additionally, periodic partial stroke exercising is no longer a Code requirement.

Category C check valves shall be exercised nominally every 3 months, except as provided by ISTC-3522 and ISTC-5221. During operation at power, each check valve shall be exercised or examined in a manner that verifies obturator travel by using the methods in ISTC-5221. Each check valve exercise test shall include an open and closed test. Open and closed tests need only be performed at an interval when it is practicable to perform both tests. Test order (e.g. whether the open test precedes the closed test) shall be determined by CPS.

CPS check valve surveillance testing will be in accordance with the following interpretation: (1) if a check valve can be tested in both directions at the same frequency, then that is the required frequency (e.g., if the valve can be tested in both the open and closed directions on a quarterly frequency, then the Code-required frequency for bidirectional testing is quarterly, (2) if a check valve is not able to be tested in both directions at the same frequency, then the Code-required frequency is the less frequent of the two frequencies (e.g., if a valve can be tested in the open direction quarterly but can only be tested in the closed direction on a refueling outage frequency, then the Code-required frequency for bidirectional testing is the refueling outage frequency).

Credit can only be taken for a check valve exercise test when it can be tested in both directions. Therefore, the testing frequency is not dependent on safety vs. non-safety direction

**Check Valve Condition Monitoring**

As an alternative to the requirements of paragraphs ISTC-3510, ISTC-3520, ISTC-3530, ISTC-3550, and ISTC-5221, CPS-1 may establish a Check Valve Condition Monitoring (CVCM) Program per ISTC-5222. The purpose of this program is to both (a) improve check valve performance and to (b) optimize testing, examination, and preventive maintenance activities in order to maintain the continued acceptable performance of a select group of check valves. CPS may implement this program on a valve or a group of similar valves basis.

- Examples of candidates for (a) improved valve performance and (b) optimization of testing, examination, and preventive maintenance activities are provided in footnotes to ISTC-5222.

The CVCM program shall be implemented in accordance with Appendix II, "Check Valve Condition Monitoring Program", of OM-2004. An administrative procedure and site implementing procedures will perform the specified tests identified in the individual Check Valve Condition Monitoring (CVCM) Program Plans.

If the Appendix II CVCM Program for a valve or group of valves is discontinued then the requirements of ISTC-3510, ISTC-3520, ISTC-3530, ISTC-3550, and ISTC-5221 shall apply.

3.2 IST Plan Valve Table Description

The valves included in the Clinton Nuclear Station Inservice Testing Program are listed in Attachment 15. The information contained in that table identifies those valves required to be tested to the requirements of the ASME OM Code, the testing methods and frequency of testing, associated Relief Requests, comments, and other applicable information. The column headings for the Valve Table are delineated below with an explanation of the content of each column. Note not all abbreviations line up directly with the ones found in the ER-AA-321-1002.

| | |
|---|---|
| Valve EIN | A unique identifier for the valve. Each EIN is preceded with a Unit designator for the valve:<br>0 Common Unit<br>1 Unit 1<br>2 Unit 2 |
| Description | The descriptive name for the valve [use PIMS, Passport, etc. names for consistency]. |
| Size | The nominal size of the valve in inches. |

Valve Type

An abbreviation used to designate the body style of the valve:

| | |
|---|---|
| 3W | 3-Way |
| 4W | 4-Way |
| BAL | Ball |
| BTF | Butterfly |
| CK | Check |
| DIA | Diaphragm |
| GA | Gate |
| GL | Globe |
| PLG | Plug |
| RPD | Rupture Disk |
| RV | Relief |
| SCK | Stop-Check |
| SHR | Shear (SQUIB) |
| EFC | Excess Flow Check Valve |

Actu Type

An abbreviation which designates the type of actuator on the valve. Abbreviations used are:

| | |
|---|---|
| AO | Air Operator |
| DF | Dual Function (Self and Power) |
| EXP | Explosive |
| HO | Hydraulic Operator |
| M | Manual |
| MO | Motor Operator |
| SA | Self-Actuating |
| SAP | Self-Actuated Pilot |
| SO | Solenoid Operator |

P&ID

The Piping and Instrumentation Diagram or Flow Drawing on which the valve is shown.

Sheet/Coord

The Sheet number and coordinates on the P&ID or Flow Diagram where the valve is shown.

Class

The ASME Safety Class (i.e., 1, 2 or 3) of the valve. Non-ASME Safety Class valves are designated by "N/A".

Positions
Norm/Safe

Abbreviations used to identify the normal, fail, and safety-related positions for the valve. Abbreviations used are:

| | |
|---|---|
| AI | As Is |
| C | Closed |
| CKL | Closed/Actuator Key Locked |
| D | De-energized |
| D/E | De-energized or Energized |
| E | Energized |
| LC | Locked Closed |
| LO | Locked Open |
| LT | Locked Throttled |
| O | Open |
| O/C | Open or Closed |
| OKL | Open/Actuator Key Locked |
| SYS | System Condition Dependent |
| T | Throttled |

Category

The code category (or categories) as defined in paragraph ISTC-1300.

| | |
|---|---|
| A | Seat Leakage Limited |
| B | Seat Leakage Not Required |
| C | Self-Actuating Valves |
| D | Single Use Valves |

Act/Pass

"A" or "P", used to designate whether the valve is active or passive in fulfillment of its safety function. The terms "active valves" and "passive valves" are defined in Reference 1.4.2.

Testing
Requirements

- Test Type

A listing of abbreviations used to designate the types of testing which are required to be performed on the valve based on its category and functional requirements. Abbreviations used are:

| | |
|---|---|
| BDC | Bidirectional Check Valve test (non-safety related closure test) |
| BDO | Bidirectional Check Valve test (non-safety related open test) |
| CC | Check Valve Exercise Test - Closed |
| CO | Check Valve Exercise Test - Open |
| CP | Check Valve Partial Exercise Test |
| DI | Disassembly and Inspect |

| | |
|---|---|
| DIA | Diagnostic Test (PI/Stroke Time) |
| DT | Category D Test |
| ET | Manual Valve Exercise |
| EX | Full Exercise without stroke timing |
| FC | Fail-Safe Exercise Test - Closed |
| FO | Fail-Safe Exercise Test - Open |
| LT[1] | Leak Rate Test |
| OPR | Routing Operator Rounds (condition monitoring) |
| PI | Position Indication Verification Test |
| PIV | Seat leakage rate test (high pressure water) |
| RT | Relief Valve Test |
| SC | Exercise Closed (without stroke-timing) |
| SD | De-energize |
| SE | Energize |
| SO | Exercise Open (without stroke-timing) |
| SP | Partial Exercise (Cat. A or B) |
| STC | Exercise/Stroke-Time Closed |
| STO | Exercise/Stroke-Time Open |

[1] A third letter, following the "LT" designation for leakage rate test, may be used to differentiate between the tests. For example, Appendix J leak tests will be designated as "LTJ", low pressure (non-Appendix J) leak tests as "LTL", and high pressure leak tests as "LTH".

- Test Freq — An abbreviation which designates the frequency at which the associated test is performed. Abbreviations used are:

| | |
|---|---|
| AJ | Per Appendix J |
| CMP | Per Check Valve Condition Monitoring Program |
| CS | Cold Shutdown |
| M[*x*] | Once Every *x* Months |
| M3 | Quarterly |
| MOV | Program frequency |
| OP | Operating Activities |
| RR | Refuel Outage |
| R[*x*] | Once Every *x* Refuel Outages |
| S2 | Explosive Charge Sample |
| SA | Sample Disassemble & Inspect |
| TS | Per Technical Specification Requirements |
| Y[*X*] | Once Every *X* Years |

- Relief Request — Identifies the number of the Relief Request applicable to the specified test.

- Deferred Just. — Deferred Test Justification. This section refers to Cold Shutdown Justifications and Refuel Outage Justifications.

  A Cold Shutdown Justification number is listed when the testing frequency coincides with Cold Shutdowns instead of being performed quarterly. Cold Shutdown Justification numbers for valves are prefixed with "CSJ".

  A Refuel Outage Justification number is listed when the testing frequency coincides with Refuel Outages instead of being performed quarterly or during Cold Shutdowns. Refuel Outage Justification numbers for valves are prefixed with "RFJ".

- Tech. Pos. — Provides the Technical Position identification number applicable to the pump or test.

Comments — Any appropriate reference or explanatory information (e.g., technical positions, etc.).

## SECTION 4.0
## ATTACHMENTS

# ATTACHMENT 1
# SYSTEM LISTING

Revision 9
7/12/2018

| SYS NO. | SYSTEM NAME |
|---|---|
| CC | Component Cooling Water |
| CM | Containment Monitoring |
| CY | Cycled Condensate |
| DG | Diesel Generator - Electrical/Mechanical |
| DO | Diesel Fuel Oil |
| FC | Fuel Pool Cooling and Clean-up |
| FH | Fuel Handling & Transfer |
| FP | Fuel Pool Cooling |
| FW | Feedwater |
| HG | Containment Combustible Gas Control |
| HP | High Pressure Core Spray |
| IA | Instrument Air |
| IS | MSIV Leakage Control |
| LD | Leak Detection |
| LP | Low Pressure Core Spray |
| MC | Makeup Condensate |
| MS | Main Steam |
| NB | Nuclear Boiler Process Inst |
| PS | Process Sampling/PASS |
| RA | Breathing Air |
| RD | Control Rod Drive |
| RE | Cnmt, Aux & Fuel Bldg Equipment Drains |
| RF | Cnmt, Aux & Fuel Bldg Floor Drains |
| RG | Refrigeration Gas |
| RH | Residual Heat Removal |
| RI | Reactor Core Isolation Cooling |
| RR | Reactor Recirculation |
| RT | Reactor Water Cleanup |
| SA | Service Air |
| SC | Standby Liquid Control |
| SF | Suppression Pool Cleanup |
| SM | Suppression Pool Makeup |
| SX | Shutdown Service Water |
| VC | Main Control Room HVAC |
| VP | Drywell Cooling HVAC |
| VQ | Drywell Purge HVAC |
| VR | Containment Building HVAC |
| WO | Chilled Water |
| WX | Solid Radwaste Reprocessing |

# ATTACHMENT 2
# PUMP RELIEF REQUEST INDEX

**Revision 9**
**7/12/2018**

| Relief Request # | Description | Date Submitted | Date Approved | Remarks |
|---|---|---|---|---|
| 3201 | Flow Rate Measurement for Water Leg Pumps | 6/16/09 | 6/10/10 | Includes RAI 3201-001 submitted 3/31/2010 |
| 3202 | Alternative to the Testing Frequencies (OMN-20) | 7/26/16 | 2/21/17 | No RAIs |

# ATTACHMENT 3
# PUMP RELIEF REQUESTS

Revision 9
7/12/2018

## PUMP RELIEF REQUEST 3201

Proposed Alternative In Accordance with 10CFR50.55a(a)(3)(i)

1. **ASME Code Component(s) Affected**

   1E12-C003, Residual Heat Removal (RHR) Loop B/C Waterleg Pump

   (Class 2)

   1E21-C002, Low Pressure Core Spray (LPCS) and RHR A Waterleg Pump (Class 2)

   1E51-C003, Reactor Core Isolation Cooling (RCIC) Waterleg Pump

   (Class 2)

2. **Applicable Code Edition and Addenda**

   American Society of Mechanical Engineers (ASME), "Code for Operation and Maintenance of Nuclear Power Plants," 2004 Edition (ASME OM Code-2004).

3. **Applicable Code Requirement**

   Table ISTB-3000-1 specifies the parameters to be measured during IST.

   ISTB-3300, "Reference Values," paragraph (e)(2) states, "Reference values shall be established within ±20% of pump design flow for a Group A test, if practicable. If not practicable, the reference point flow rate shall be established at the highest practical flow rate."

   ISTB-3400, "Frequency of Inservice Tests," states, "An inservice test shall be run on each pump as specified in Table ISTB-3400-1." Table ISTB-3400-1, "Inservice Test Frequency," specifies that a Group A pump test shall be performed on a quarterly frequency.

   ISTB-5121 requires that Group A tests shall be conducted with the pump operating at a specified reference point. ISTB 5121(b) requires that the resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to its reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.

   Group A pumps are pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations.

4. **Reason for Request**

   The waterleg pumps are continuously-running pumps whose safety function is to keep their supported system's pump discharge header piping in a filled condition. This function prevents water hammer and the delay of flow to the reactor upon the supported system's pump start. The actual output and hydraulic performance of the waterleg pumps are not critical to their safety function, as long as the waterleg pumps are capable of maintaining their associated system's pump discharge piping full of water. The amount of flow delivered by each waterleg pump is dependent upon each supported system's leakage rate.

The suction pressure for these waterleg pumps is essentially constant; however, quarterly monitoring of discharge pressure and bearing vibration in accordance with Position 9, "Pump Testing Using Minimum-Flow Return Lines With or Without Flow Measuring Devices," of Generic Letter (GL) 89-04, "Guidance On Developing Acceptable Inservice Testing Programs," dated April 3, 1989, will be performed to monitor for pump degradation and to assess pump performance (Reference 1). The flowrate for each of these waterleg pumps varies little during normal operation, and testing of these pumps at a predetermined reference point as described in ISTB-5121(b) is not necessary to detect pump degradation or to establish that these pumps can perform their safety function.

The proposed alternative provides an acceptable level of quality and safety.

5. **Proposed Alternative and Basis for Use**

The CPS waterleg pumps will be monitored for degradation on a quarterly basis by observing pump discharge pressure and bearing vibration during normal operating conditions. This testing will be performed without varying the resistance of the system as discussed in ISTB-5121(b). These parameters will then be evaluated and trended to assess the pump's performance. The measurement and trending of these parameters under these conditions will provide satisfactory indication of the operational readiness of the pumps and detect degraded performance. These waterleg pumps will be full flow tested every 24 months in conjunction with the comprehensive pump test performed in accordance with the requirements specified in ISTB-5123, "Comprehensive Test Procedure."

In addition to this quarterly testing, each of these waterleg pump's supported system pump discharge headers have sensors that continuously monitor header pressure, and provide an alarm in the main control room when their low pressure setpoint is reached. This will provide indication that the associated waterleg pump is no longer performing its safety function, and allow CPS operators to respond according to station procedures. Moreover, these pumps are currently being monitored under the CPS Vibration Monitoring Program, which is not currently required by any Federal, state or industry mandate. Because rotating equipment faults that can be detected by vibration monitoring will show up any time the equipment is operating, returning these pumps to a fixed set of operating conditions is not necessary to detect such faults. Lastly, each of these waterleg pump's supported system pump discharge header is verified to be filled with water on a monthly basis in accordance with Surveillance Requirements (SRs) in the CPS Technical Specifications (TS). Any indication that the supported system's pump discharge header piping is not filled with water would provide timely indication that the associated waterleg pump's performance has degraded.

In summary, using the provisions of this relief request as an alternative to the requirements of ISTB-3300(e)(2), ISTB-3400, and ISTB-5121(b), provides a reasonable alternative to the ASME OM Code requirements, and an acceptable level of quality and safety. The actual output and hydraulic performance of the waterleg pumps are not critical to their safety function, as long as the pumps are capable of maintaining their

supported system's pump discharge header piping full of water. Alarms would promptly alert plant operators whenever the waterleg pumps do not maintain the piping pressure above a set alarm level. In addition, vibration data trending toward unacceptable values would indicate degradation in pump performance, and allow time for CPS personnel to plan and take corrective actions before the pumps fail.

Therefore, the proposed alternative provides a reasonable assurance of operational readiness of the subject waterleg pumps because (1) discharge pressure and bearing vibration are measured and trended, (2) alarms are present in the Main Control Room, which provide continuous monitoring for degradation in the pressure of the supported system's pump discharge header, and (3) monthly venting of supported system's pump discharge header piping according to CPS TS will verify that the associated waterleg pump is performing its safety function.

6. **Duration of Proposed Alternative**
   The proposed alternative identified in this relief request shall be utilized during the Third 10-Year IST Interval

7. **Precedents**
   In Reference 2, the Perry Nuclear Power Plant submitted Request Number PR-1, Revision 0, to request relief from quarterly testing waterleg pumps associated with the Residual Heat Removal, Low Pressure Core Spray, High Pressure Core Spray, and Reactor Core Isolation Cooling systems. This request is similar to that request approved by the NRC in a safety evaluation report dated August 9, 1999 (Reference 3).

8. **References**
   
   1. Generic Letter 89-04, "Guidance On Developing Acceptable Inservice Testing Programs," dated April 3, 1989
   2. Letter from Mr. M. Bezilla (First Energy Nuclear Operating Company) to U. S. NRC, "Eight Separate In-Service Testing Program 10 CFR 50.55a Requests in Support of the Third Ten-Year Interval," dated November 18, 2008. (Accession Number ML083370198)
   3. Letter from U. S. NRC, "Safety Evaluation of the Inservice Testing Program Second Ten-Year Interval for Pumps and Valves – Perry Nuclear Power Plant (TAC MA3328), dated August 9, 1999
   

## RAIs for Relief Request 3201

### RAI 3201-001

Please provide the rated flow and differential pressure for each waterleg pump.

**Response:**

The rated flows and rated differential pressures associated with the subject waterleg pumps are contained in Table 1 below.

**Table 1:** Rated Flow and Rated Differential Pressure for Waterleg Pumps

| Pump | Rated Flow (gpm) | Rated Differential Pressure (ft) |
|---|---|---|
| 1E12-C003, Residual Heat Removal (RHR) Loop B/C Waterleg Pump | 43 | 199 |
| 1E21-C002, Low Pressure Core Spray (LPCS) and RHR A Waterleg Pump | 43 | 199 |
| 1E51-C003, Reactor Core Isolation Cooling (RCIC) Waterleg Pump | 50 | 130 |

### *RAI 3201-002*

*Do pressure taps exist in the waterleg pumps' suction and discharge piping where pump suction and discharge pressure can be measured for calculation of differential pressure?*

**Response:**

Yes. The systems associated with the subject waterleg pumps have been designed with suction pressure instruments on the pump suction headers, and flow and pressure instruments on the pump discharge headers to allow for testing. These instruments are isolated during normal plant operation via closed isolation valves and are only placed into service to support waterleg pump testing. Relief Request 3201 proposes in part, to detect degradation in waterleg pump readiness by recording the associated main system discharge pressure on a quarterly basis. As a point of clarification, the waterleg pump discharge pressure as discussed in this relief request is the main system header pressure resulting from the pressure head supplied by the waterleg pumps. The recorded header pressure will be compared to pressures observed in previous tests, and changes in pressure will be evaluated to determine the cause. Relief is requested due to the impact that traditional waterleg pump testing has on the plant without a compensating increase in the level of quality or safety.

The Low Pressure Core Spray (LPCS) waterleg pump (i.e., 1E21-C002) services the LPCS system piping and Loop A of Residual Heat Removal (RHR) system, and 1E12-C003 services RHR Loops B and C. Traditional testing of the RHR and LPCS waterleg pumps requires declaring portions of the RHR and LPCS systems inoperable.

Testing of 1E21-C002 as described in the 2004 American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requires disabling the main LPCS pump motor, rendering the LPCS System inoperable. Additionally, RHR Loop A is required to be isolated from 1E21-C002, and an abnormal

alignment is required to maintain the discharge header pressurized and full of water. A similar alignment is required for testing 1E12-C003, rendering RHR C inoperable during the test.

Testing the Reactor Core Isolation Cooling (RCIC) waterleg pump currently requires the RCIC system to be declared inoperable due to the system configuration changes that are necessary to perform the surveillance.

The RHR and LPCS waterleg pump surveillances will be performed with the suppression pool as the suction source. Suppression pool level at Clinton Power Station (CPS) is maintained within limits according to CPS Technical Specifications Section 3.6.2.2. A review of plant data showed that the suppression pool level over the past year was maintained within a five-inch band. Therefore, the pumps' suction pressures are essentially constant, allowing waterleg pump readiness to be confirmed by monitoring the supported system's main header pressure. Changes in the supported system's main header pressure identified during testing will be evaluated to determine if they are a result of a change in the associated waterleg pump's performance.

The RCIC waterleg pump (i.e., 1E51-C003) surveillance will be performed with the RCIC Storage tank as the suction source for 1E51-C003. RCIC storage tank volume is also controlled. A review of the past year's plant data showed that the RCIC tank water level was maintained within a band of approximately five inches. As such, 1E51-C003 suction pressure is essentially a constant. The readiness of 1E51-C003 will be confirmed by monitoring the main RCIC system header pressure. Changes in the RCIC system's main header pressure between tests will be evaluated to determine if they are a result of a change in pump performance.

According to the testing methodology proposed in Relief Request 3201, changes in supported system's main header pressure will be evaluated to determine if they are a result of changes in the waterleg pump performance. Testing the waterleg pumps in this manner ensures a level of quality and safety equivalent to the testing methodologies described in the ASME OM Code. Moreover, the waterleg pumps will be tested in accordance with traditional testing methodologies during the biennial comprehensive pump testing that will be performed in accordance with the ASME OM Code.

In summary, performing the waterleg pump surveillances on a quarterly frequency in accordance with traditional IST pump surveillance methodologies places the unit in a higher risk state without a compensating increase in quality or safety. The testing methodology proposed in Relief Request 3201 would provide an acceptable level of quality and safety without placing the unit in an elevated state of risk.

***RAI 3201-003***

*Are there throttle valves in the waterleg pumps' discharge piping that can be used to set differential pressure?*

**Response:**

Yes.

***RAI 3201-004***

*Are there any flow rate meters, orifices, or other measurement devices installed in the system for measurement of waterleg pump flow rate?*

**Response:**

Yes.

***RAI 3201-005***

*Have any attempts been made to use portable ultrasonic flow instruments to measure waterleg pump flow rates? If not, explain why not.*

**Response:**

No. As previously discussed, the systems were designed and built to allow for waterleg pump testing.

***RAI 3201-006***

*Is there flow instrumentation in the main header piping? If so, explain why this instrumentation can or cannot be used to measure the waterleg pump flow.*

**Response:**

Yes. The flow instrumentation ranges for the main system headers are as follows:

- RHR: 0 - 7000 gpm
- LPCS: 0 - 8000 gpm
- RCIC: 0 – 800 gpm

The ranges for these instruments are not suitable for measuring the low flow rates at which the waterleg pumps are tested.

***RAI 3201-007***

*At what pressure does each low header pressure annunciator alarm? For each of these values, state what percentage it is of the respective waterleg pump operating differential pressure.*

**Response:**

As shown in Table 2 below, Control Room annunciator alarms are based on pressure. The alarm setpoints were compared to the normal operating pressure of their associated headers, and shown as a percentage of that normal operating pressure. As previously discussed, the suction pressures for the waterleg pumps are essentially constant; therefore it is appropriate to consider control room alarm setpoints in relation to normal pump discharge/associate system header pressure versus as a percentage of pump differential pressure.

**Table 2:** Waterleg Pump Parameters Including Control Room Alarm Setpoint as a Percentage of Normal Discharge Pressure

| System | ATM | Alarm Setpoint (psig) | ATM | Normal Operating Pressure (psig) | Alarm Setpoint as Percentage of Normal Operating Pressure (%) |
|---|---|---|---|---|---|
| RHR "A" | E12-N654A | 58.4 | 1E12-N653A | ~ 94 | 62.1 |
| RHR "B" | E12-N654B | 57.8 | 1E12-N653B | ~ 88 | 65.7 |
| RHR "C" | E12-N654C | 21.6 | 1E12-N653C | ~ 91 | 23.7 |
| LPCS | E21-N654 | 35 | 1E21-N654 | ~ 94 | 37.2 |
| RCIC | E51-N652 | 39 | 1E51-N654 | ~ 55 | 70.9 |

**DESCRIPTION AND ASSESSMENT OF THE PROPOSED ALTERNATIVE TO THE ASME CODE**
**Request in Accordance with**
**10 CFR 50.55a(z)(2)**
**Alternative Due To Hardship Without a Compensating Increase in Quality and Safety**

1.0 DESCRIPTION

The request is to adopt a proposed alternative to the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code by adoption of approved Code Case OMN-20, "Inservice Test Frequency."

2.0 ASSESSMENT

Technical Evaluation of the Proposed Alternative to the OM Code

Section IST of Division 1 of the OM Code, which is incorporated by reference in 10 CFR 50.55a(a), specifies component test frequencies based either on elapsed time periods (e.g., quarterly, 2 years) or on the occurrence of a plant condition or event (e.g., cold shutdown, refueling outage).

ASME Code Case OMN-20, "Inservice Test Frequency," has been approved for use by the ASME OM committee as an alternative to the test frequencies for pumps and valves specified in ASME OM, Division 1, Section IST, 2009 Edition through OMa-2011 Addenda, and all earlier editions and addenda of ASME OM Code.

Code Case OMN-20 is not referenced in the latest revision of Regulatory Guide 1.192 (August 2014) as an acceptable OM Code Case to comply with 10 CFR 50.55a(f) requirements as allowed by 10 CFR 50.55a(b)(6). The proposed alternative is to use Code Case OMN-20 to extend or reduce the IST frequency requirements for the Braidwood Station, Units 1 and 2, third; Clinton Power Station, Unit 1, third; LaSalle County Station, Units 1 and 2, third and fourth; Limerick Generating Station, Units 1 and 2, third; Nine Mile Point Nuclear Station, Unit 1, fourth; Nine Mile Point Nuclear Station, Unit 2, third; Peach Bottom Atomic Power Station, Units 2 and 3, fourth; R.E. Ginna Nuclear Power Plant fifth 10-Year IST interval or until OMN-20 is incorporated into the next revision of Regulatory Guide 1.192.

ASME Code Components Affected

The Code Case applies to pumps and valves specified in ASME OM, Division 1, Section IST, 2009 Edition through OMa-2011 Addenda and all earlier editions and addenda of ASME OM Code. Frequency extensions may also be applied to accelerated test frequencies (e.g., pumps in Alert Range) as specified in OMN-20.

For pumps and valves with test periods of two years or less, the test frequency allowed by OMN-20 and the current TS Inservice Testing Program (as modified by SR 3.0.2, or equivalent, and EGM 2012-001) are the same. For pumps and valves with test frequencies greater than two years, OMN-20 allows the test frequency to be extended by

six months. The current TS Inservice Testing Program does not allow extension of test frequencies that are greater than two years.

Applicable Code Edition and Addenda

ASME Code Case OMN-20 applies to ASME OM, Division 1, Section IST, 2009 Edition through OMa-2011 Addenda and all earlier editions and addenda of ASME OM Code.

The Clinton Power Station, Unit 1, Code Edition and Addenda that are applicable to the program interval are the ASME OM Code 2004 Edition, no Addenda. The Clinton Power Station, Unit 1, current interval ends June 30, 2020.

Applicable Code Requirement

This request is made in accordance with 10 CFR 50.55a(z)(2), and proposes an alternative to the requirements of 10 CFR 50.55a(f), which requires pumps and valves to meet the test requirements set forth in specific documents incorporated by reference in 10 CFR 50.55a(a). ASME Code Case OMN-20 applies to Division 1, Section IST of the ASME OM Code and associated addenda incorporated by reference in 10 CFR 50.55a(a).

Reason for Request

The IST Program controls specified in Section 5.5, or equivalent, of TS provide: a) a table specifying certain IST frequencies; b) an allowance to apply SR 3.0.2, or equivalent, to inservice tests required by the OM Code and with frequencies of two years or less; c) an allowance to apply SR 3.0.3, or equivalent to inservice tests required by the OM Code; and d) a statement that, "Nothing in the ASME OM Code shall be construed to supersede the requirements of any TS." In Regulatory Issue Summary (RIS) 2012-10, "NRC Staff Position on Applying Surveillance Requirement 3.0.2 and 3.0.3 to Administrative Controls Program Tests," and Enforcement Guidance Memorandum (EGM) 2012-001, "Dispositioning Noncompliance with Administrative Controls Technical Specifications Programmatic Requirements that Extend Test Frequencies and Allow Performance of Missed Tests," the NRC stated that items b, c, and d of the TS IST Program were inappropriately added to the TS and may not be applied (although the EGM allows licensees to continue to apply those paragraphs pending a generic resolution of the issue).

In RIS 2012-10 and EGM 2012-001, the NRC stated that the current TS allowance to apply SR 3.0.2 and SR 3.0.3, or equivalent, to the Inservice Testing Program would no longer be permitted. In response, OMN-20, which provides allowances similar to SR 3.0.2, or equivalent, was approved and is proposed to be used as an alternative to the test periods specified in the OM code. The proposed alternative substitutes an approved Code Case for the existing TS requirements that the NRC has determined are not legally acceptable as a TS allowance. This proposed alternative provides an equivalent level of safety as the existing TS allowance, while maintaining consistency with 10 CFR 50.55a and the ASME OM Code.

Proposed Alternative and Basis for Use

The proposed alternative is OMN-20, "Inservice Test Frequency," which addresses testing periods for pumps and valves specified in ASME OM Division 1, Section IST, 2009 Edition through OMa-2011 Addenda, and all earlier editions and addenda of the ASME OM Code. This request is being made in accordance with 10 CFR 50.55a(z)(2), in that the existing requirements are considered a hardship without a compensating increase in quality and safety for the following reasons:

1) For IST testing periods up to and including two years, Code Case OMN-20 provides an allowance to extend the IST testing periods by up to 25%. The period extension is to facilitate test scheduling and considers plant operating conditions that may not be suitable for performance of the required testing (e.g., performance of the test would cause an unacceptable increase in the plant risk profile due to transient conditions or other ongoing surveillance, test or maintenance activities). Period extensions are not intended to be used repeatedly, merely as an operational convenience to extend test intervals beyond those specified. The test period extension and the statements regarding the appropriate use of the period extension are equivalent to the existing TS SR 3.0.2, or equivalent, allowance and the statements regarding its use in the SR 3.0.2, or equivalent, Bases. Use of the SR 3.0.2, or equivalent, period extension has been a practice in the nuclear industry for many decades and elimination of this allowance would place a hardship on Braidwood Station, Units 1 and 2; Clinton Power Station, Unit 1; LaSalle County Station, Units 1 and 2; Limerick Generating Station, Units 1 and 2; Nine Mile Point Nuclear Station, Units 1 and 2; Peach Bottom Atomic Power Station, Units 2 and 3; and R.E. Ginna Nuclear Power Plant when there is no evidence that the period extensions affects component reliability.

2) For IST testing periods of greater than two years, OMN-20 allows an extension of up to six months. The ASME OM Committee determined that such an extension is appropriate. The six-month extension will have a minimal impact on component reliability considering that the most probable result of performing any inservice test is satisfactory verification of the test acceptance criteria. As such, pumps and valves will continue to be adequately assessed for operational readiness when tested in accordance with the requirements specified in 10 CFR 50.55a(f) with the frequency extensions allowed by Code Case OMN-20.

3) As stated in EGM 2012-001, if an Inservice Test is not performed within its frequency, SR 3.0.3, or equivalent, will not be applied. The effect of a missed Inservice Test on the Operability of TS equipment will be assessed under the licensee's Operability Determination Program.

Duration of Proposed Alternative

The proposed alternative is requested for the current 10-Year IST interval or until Code Case OMN-20 is incorporated into a future revision of Regulatory Guide 1.192, referenced by a future revision of 10 CFR 50.55a, whichever occurs first.

Precedents

The NRC approved the use of OMN-20 for North Anna on March 27, 2014 (ML14084A407); Byron Station, Units 1 and 2, on February 26, 2016 (ML16022A135); Calvert Cliffs Nuclear Power Plant, Units 1 and 2, on September 24, 2014 (ML14247A555); Dresden Nuclear Power Station, Units 2 and 3, on October 31, 2013 (ML13297A515); Quad Cities Nuclear Power Station, Units 1 and 2, on February 13, 2013 (ML13042A348); and Three Mile Island Nuclear Station, Unit 1, on August 15, 2013 (ML13227A024).

# ATTACHMENT 4
# VALVE RELIEF REQUEST INDEX

**Revision 9**
**7/12/2018**

| Relief Request # | Description | Date Submitted | Date Approved | Remarks |
|---|---|---|---|---|
| 2201 | Use of Code Case OMN-1 | 6/16/09 | 6/10/10 | No RAIs |
| 2202 | Relief From 5-Year Test Interval for Safety Relief Valves | 6/16/09 | 6/10/10 | Includes RAI 2202-001 submitted 3/31/2010 |
| 2203 | Defining "refuel only" outage valve testing | 12/1/14 | 7/15/15 | Includes RAIs 2203-001 to 2203-004 submitted 3/26/2015 and 6/3/2015 |
| 2204 | Setting OMN-1 Valve Exercise tests on 2Y frequencies | 12/1/14 | 7/15/15 | Includes RAI 2204-001 submitted 3/26/2015 |

**ATTACHMENT 5**
**VALVE RELIEF REQUESTS**

**Revision 9**
**7/12/2018**

## VALVE RELIEF REQUEST 2201

Proposed Alternative In Accordance with 10CFR50.55a(a)(3)(i)

1. **ASME Code Component(s) Affected**
   All ASME Class 1, 2, and 3 motor-operated valves (MOVs) currently included in the Clinton Power Station (CPS) MOV Testing Program.

2. **Applicable Code Edition and Addenda**
   American Society of Mechanical Engineers (ASME), "Code for Operation and Maintenance of Nuclear Power Plants," 2004 Edition (ASME OM Code-2004).

3. **Applicable Code Requirement**
   ISTA-3130(b) requires that code cases be applicable to the edition and addenda specified in the test plan.

   ISTC-3100 requires that any motor operated valve (MOV) that has undergone maintenance that could affect its performance after the preservice test be tested in accordance with ISTC-3310.

   ISTC-3310 requires that a new reference value be determined or the previous reference value be reconfirmed by an inservice test after a MOV has been replaced, repaired, or has undergone maintenance that could affect the valve's performance.

   ISTC-3510 requires that active Category A and B MOVs be exercised nominally every 3 months.

   ISTC-3521 requires that active Category A and B MOVs be exercised during cold shutdowns if it is not practicable to exercise the valves at power, or that active Category A and B MOVs be exercised during refueling outages if it is not practicable to exercise the valves during cold shutdowns.

   ISTC-3700 requires that valves with remote position indicators be observed locally at least once every 2 years to verify that valve operation is accurately indicated.

   ISTC-5120 requires that MOVs be stroke-time tested when exercised in accordance with ISTC-3510.

4. **Reason for Request**

In accordance with 10 CFR 50.55a(a)(3)(i), relief is requested from the requirements of the OM Code, Subsection ISTC-3000, excluding ISTC-3600, "Leak Testing Requirements," and the requirements of Subsection ISTC-5120. The proposed alternative would provide an acceptable level of quality and safety.

5. **Proposed Alternative and Basis for Use**

EGC proposes to adopt the requirements of Code Case OMN-1 as revised in the 2006 Addenda to the ASME OM Code-2004 in lieu of the performance of stroke time testing and position indication testing as described by ASME OM ISTC 2004. The provision to allow for motor control center testing, as contained in Section 6.1 of Code Case OMN-1, is excluded from this request.

The NRC amended its regulations to incorporate by reference the 2004 Edition of the ASME Code for Operation and Maintenance of Nuclear Power Plants on September 10, 2008. In the latest 10 CFR 50.55(a)(b), it states in part, that Regulatory Guide (RG) 1.192, "Operating and Maintenance Code Case Acceptability, ASME Code", has been approved for incorporation by reference. In RG 1.192, it states within Table 2, "Conditionally Acceptable OM Code Cases," that the alternative rules of ASME Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants," Revision 0, when applied in conjunction with the provisions for leakage rate testing in ISTC-3600, may be applied with the following provisions:

1. The adequacy of the diagnostic test interval for each valve must be evaluated and adjusted as necessary but not later than 5 years or three refueling outages (whichever is longer) from initial implementation of ASME Code Case OMN-1.

2. When extending the exercise test intervals for high risk MOVs beyond a quarterly frequency, licensees shall ensure that the potential increase in core damage frequency and risk associated with the extension is small and consistent with the intent of the Commission's Safety Goal Policy Statement.

3. When applying risk insights as part of the implementation of OMN-1, licensees must categorize MOVs according to their safety significance using the methodology described in Code Case OMN-3, "Requirements for Safety Significance Categorization of Components Using Risk Insights for Inservice Testing of LWR Power Plants," with the conditions discussed in this regulatory guide or use other MOV risk-ranking methodologies accepted by the NRC on a plant-specific or industry-wide basis with the conditions in the applicable safety evaluations.

This conditional acceptance of OMN-1, Revision 0, per RG 1.192 is applicable in lieu of the provisions for stroke-time testing in Subsection ISTC of ASME OM Code-2004. Since RG 1.192 was last published, Code Case OMN-1 has been updated/modified to address and incorporate all of the original RG 1.192 listed provisions. EGC proposes to adopt the requirements of Code Case OMN-1, Revision 1, as presented in the ASME

OMb Code, "Addenda to ASME OM Code-2004, Code for Operation and Maintenance of Nuclear Power Plants," for 2006, in lieu of the performance of stroke time testing and position indication testing as described by ASME OM Code Subsection ISTC of the 2004 Edition.

The CPS MOV testing program was developed as a result of NRC Generic Letter (GL) 89-10, "Safety Related Motor Operated Valve Testing and Surveillance," and GL 96-05, "Periodic Verification of Design Basis Capability of Safety Related Motor Operated Valves," utilizing Topical Report MPR-1807, "Joint BWR, Westinghouse and Combustion Engineering Owners' Group Program on Motor-Operated Valve (MOV) Periodic Verification," Revision 2. CPS is currently utilizing MPR-2524-A, "Joint Owners' Group (JOG) Motor Operated Valve Periodic Verification Program Summary," (November 2006) as guidance for the MOV Program. The adoption of OMN-1 will consolidate testing between the station's IST and MOV Programs.

Section 4.2.5 "Alternatives to Stroke-Testing," of NUREG-1482, "Guidance for Inservice Testing at Nuclear Power Plants," Revision 1, states in part that as an alternative to MOV stroke-time testing, ASME developed Code Case OMN-1, which provides periodic exercising and diagnostic testing for use in assessing the operational readiness of MOVs, may be used. Section 4.2.5 recommends that licensees implement ASME Code Case OMN-1 as an alternative to the MOV stroke-time testing. The periodic exercising and diagnostic testing requirements in OMN-1 provide an improved method for assessing the operational readiness of MOVs.

Application of code cases is addressed in 10 CFR 50.55a(b)(6) through references to RG 1.192, which lists acceptable and conditionally acceptable code cases for implementation in IST programs. RG 1.192, Table 2, conditionally approves the use of Code Case OMN-1 and states that the code case is applicable to the 2000 Addenda and earlier editions and addenda of the Code. There is no technical reason for prohibiting the use of Code Case OMN-1 with ASME OM Code-2004. Therefore, Code Case OMN-1 provides an acceptable level of quality and safety for testing of MOVs and is an acceptable alternative for use in CPS IST program. This conclusion is consistent with the NRC position in NUREG-1482, Revision 1, and RG 1.192.

Code Case OMN-1 was revised in the 2006 Addenda to the ASME OM Code-2004. Most of the revisions are enhancements such as clarification of valve remote position indication requirements and ball/plug/diaphragm valve test requirements, and the expansion of risk-informed provisions. However, there was one significant revision in Section 6.1, "Acceptance Criteria," that states that motor control center (MCC) testing is acceptable if correlation with testing at the MOV has been established. MCC diagnostic testing was not specifically addressed in the original version of OMN-1. Historically, diagnostic testing of MOVs has been conducted using at-the-valve tests. Although there may be potential benefits of testing conducted at the MCC, the ASME OM Code does not address any method for the correlation of MCC-based measurements to diagnostic test measurements conducted at-the-valve. For these reasons, EGC has excluded the provision for MCC testing from this relief request. Therefore, the MCC test

method will not be used as an acceptance criterion to determine the operational readiness of MOVs.

**Technical Position**

The following positions describe how EGC interprets and complies with the various requirements of OMN-1 (ASME OMb Code-2006).

1. OMN-1, Section 3.1 allows for the use of testing that was conducted prior to the implementation of OMN-1 if it meets the requirements of the Code Case. EGC intends to utilize the testing credited under its GL 89-10/96-05 responses to satisfy the requirement for a one-time test to verify the capacity of each individual or group of MOV's safety-related design basis requirements.

2. OMN-1, Section 3.2 requires that each MOV be tested during the preservice test period or before implementing inservice inspection. EGC intends to utilize the testing credited under its GL 96-05 response to satisfy this requirement.

3. OMN-1, Section 3.3(b) states that inservice tests shall be conducted in the as-found condition, and activities shall not be conducted if they might invalidate the as-found condition for inservice testing. CPS maintenance activities that would affect the as found condition of the valve, such as motor operator preventive maintenance or stem lubrication, are typically scheduled to occur in conjunction with the performance of the MOV Periodic Verification Testing, and are performed after as-found testing. Any other activities that could affect the as-found test results are not performed until after the as found testing has been conducted.

4. OMN-1 Section 3.3(c) requires the inservice test program to include a mix of static and dynamic MOV performance testing. CPS has utilized the JOG program's mix of static and dynamic MOV performance testing (i.e., MPR-2524-A) to develop its current MOV testing program. Additionally, CPS will continue to utilize the existing engineering standards, which are consistent with the JOG standards, to justify any changes to the mix of required MOV performance testing. The use of such an evaluation will serve to ensure CPS continues to meet this requirement.

5. OMN-1, Section 3.3(e) requires that Remote Position Indication shall be verified locally during inservice testing or maintenance activities. EGC will continue to verify the operability of each MOV's position indication system as part of each MOV's diagnostic test. In addition, the function of each MOV's position indication system will be verified during the performance of maintenance activities affecting remote position indication.

6. OMN-1, Section 3.3.1(b) requires MOV inservice testing to be conducted every 2 refueling cycles or 3 years (whichever is longer), if insufficient data exists to determine inservice test frequencies. CPS has sufficient MOV testing data to

justify its current testing frequencies, and therefore meets this requirement. If in the future, modification or replacement results in the necessity to re-baseline a valve or group of valves, the requirements of OMN-1, Section 3.3.1(b) or 3.7.2.2(c) as applicable, will be followed.

7. OMN-1, Section 6.4.4 requires that calculations for determining the MOV's functional margin are evaluated to account for potential performance-related degradation. The CPS MOV Program, including the corporate MIDAS Software (or similar updated product), takes into account performance-related degradation, to calculate valve margin.

8. The provision of motor control center testing contained in Section 6.1 ("Acceptance Criteria") is excluded from this request ("i.e., Motor control center testing is acceptable if correlation with testing at the MOV has been established").

6. **Duration of Proposed Alternative**

The proposed alternative identified in this relief request shall be utilized during the Third 10-Year IST Interval or until the NRC publishes the version of Code Case OMN-1 found in the 2006 addenda to ASME OM Code-2004 in a future revision of Regulatory Guide 1.192.

7. **Precedents**

Similar relief has been approved for LaSalle County Station, Units 1 and 2, Relief Request RV-02, in NRC Safety Evaluation Report, dated September 26, 2007 (Reference 1), and Peach Bottom Atomic Power Station, Units 2 and 3, Relief Request GVRR-1, in NRC Safety Evaluation, dated September 3, 2008 (Reference 2).

8. **References**

1. Letter from R. Gibbs (U.S. NRC) to C. M. Crane (EGC), "Relief Requests for the LaSalle County Station, Units 1 and 2, Third 10-Year Pump and Valve Inservice Testing Program (TAC Nos. MD5988, MD5989, MD5992, MD5993, MD5994, MD5995)," dated September 26, 2007

2. Letter from H. K. Chernoff (U.S. NRC) to C. G. Pardee (EGC), "Peach Bottom Atomic Power Station, Units 2 and 3 – Requests for Relief Associated with the Fourth Inservice Testing Interval (TAC Nos. MD7461 and MD7462)," dated September 3, 2008

## VALVE RELIEF REQUEST 2202

Proposed Alternative In Accordance with 10CFR50.55a(a)(3)(ii)

1. **ASME Code Component(s) Affected**

   Components:
   1B21-F041A, 1B21-F041B, 1B21-F041C, 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F041L, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D, 1B21-F047F, 1B21-F051B, 1B21-F051C, 1B21-F051D, 1B21-F051G

   Description: Clinton Power Station (CPS) Main Steam Line Safety Relief Valves (SRVs), Dikkers Valves Model G-471

2. **Applicable Code Edition and Addenda**
   American Society of Mechanical Engineers, "Code for Operation and Maintenance of Nuclear Power Plants," 2004 Edition (ASME OM Code-2004)

3. **Applicable Code Requirement**
   ASME OM Code mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," Section I-1320, "Test Frequencies, Class 1 Pressure Relief Valves," paragraph (a).

   This section states that all Class 1 pressure relief valves shall be tested at least once every 5 years starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested within each 5-year interval; however, a minimum of 20% of the valves from each valve group shall be tested within any 24-month interval. This 20% shall consist of valves that have not been tested during the current 5-year interval, if they exist. The test interval for any individual valve shall not exceed 5 years.

4. **Reason for Request**
   10 CFR 50.55a(f)(4) directs a licensee to meet inservice testing requirements for ASME Code Class 1 valves set forth in the ASME OM Code and addenda. The third 10-year inservice testing (IST) interval for CPS is based on the ASME OM Code-2004; specifically, Mandatory Appendix I, which contains requirements to augment the rules of Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants."

   ISTC-3200, "Inservice Testing," states that inservice testing shall commence when the valves are required to be operable to fulfill their required function(s). ISTC-5240, "Safety and Relief Valves," directs that safety and relief valves meet the inservice testing requirements set forth in Mandatory Appendix I of the ASME OM Code. Appendix I, Section I-1320 of the ASME OM Code states that Class 1 pressure relief

valves shall be tested at least once every 5 years, starting with initial electric power generation.

The Dikkers Model G-471 SRVs have shown exemplary test history at CPS, as described in Section 5 below. However, given the current 24-month operating cycle for CPS, Exelon Generation Company, LLC (EGC) is required to remove and test fifty percent (i.e., eight of 16) of the SRVs every refueling outage, so that all valves are removed and tested every two refueling outages. This ensures compliance with the ASME OM Code requirements for testing Class 1 pressure relief valves every five years. Approval of extending the test interval to 6.5 years would reduce the minimum number of SRVs tested at CPS over three refueling outages by eight.

Without relief, the incremental outage work due to the inclusion of the eight additional SRVs would be contrary to the principles of maintaining exposure to radiation as low as reasonably achievable (ALARA), in that the removal and replacement of an additional eight SRVs over three refueling outages will result in approximately 5.6 person-rem of additional cumulative radiation exposure. In addition, as discussed below, historical SRV test results for the Dikkers Model G-471 SRVs indicate that the CPS SRVs continue to perform well. Therefore, this additional cumulative radiation exposure represents a hardship for CPS without a compensating increase in the level of quality or safety.

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), EGC requests relief from the five-year test interval requirements of ASME OM Code, ISTC Appendix I Section I-1320, "Test Frequencies, Class 1 Pressure Relief Valves," paragraph (a), for the Dikkers Model G-471 SRVs at CPS. EGC requests that the test interval be increased from five years to 6.5 years. All other requirements of the ASME OM Code would be met. Compliance with the applicable requirements of the ASME OM Code for these SRVs results in hardship due to unnecessary personnel radiation exposure without a compensating increase in the level of quality or safety.

5. **Proposed Alternative and Basis for Use**

For the third 10-year IST interval at CPS, EGC proposes that ASME Class 1 pressure relief valves (i.e., Dikkers Model G-471 SRVs) shall be tested at least once every 6.5 years. A minimum of 20% of the pressure relief valves will be tested within any 24-month interval and this 20% shall consist of valves that have not been tested during the current 6.5 year interval, if they exist. The test interval for any individual valve shall not exceed 6.5 years.

All SRVs are located in the upper elevations of the CPS drywell. The major contributors to radiation exposure are the main steam lines, including the SRVs, along with High Pressure Core Spray system and Low Pressure Core Spray system piping passing through the area.

Removal of an installed SRV and installation of a replacement SRV requires installation of scaffolding, removal of insulation and various appurtenances on the SRV, and unbolting the SRV. Once unbolted, the SRV is maneuvered from its location in the

upper drywell and lowered to the first elevation and transported through the drywell and containment equipment hatches. Each SRV weighs approximately 3050 pounds, and due to its size, a crew of five to seven personnel is required to safely move each valve.

EGC has evaluated the historical cumulative radiation exposure at CPS for removal and replacement of SRVs from the last five CPS refueling outages. The work evolutions necessary to remove and replace these valves each refueling outage, which includes the removal and replacement of eight SRVs, are conducted under equivalent radiological conditions and with the same personnel requirements. This historical cumulative radiation exposure data is provided in Table 1.

**Table 1:** Cumulative Radiation Exposure

| Refueling Outage | RF-7 | C1R08 | C1R09 | C1R10 | C1R11 |
|---|---|---|---|---|---|
| Number of SRVs Replaced | 16 | 16 | 8 | 8 | 8 |
| Cumulative Person-Rem | 8.062 | 8.837 | 12.139 | 5.325 | 4.9 |

Based on this data, EGC has concluded that the expected cumulative radiation exposure to remove and replace a single SRV would be approximately 0.7 person-rem. The outage-specific variability of cumulative radiation exposure is attributed to the location of a particular valve relative to its respective radiation field, the physical configuration of surrounding equipment for a particular valve, and the impact of outage-specific plant configurations. Therefore, absent the requested relief, replacement of eight incremental SRVs would result in approximately 5.6 additional person-rem over three refueling outages.

The data from the IST history for SRVs at CPS from 2001 to present indicates that 37 of 40, or 92.5% of the SRVs tested have successfully passed the ASME OM Code as-found acceptance criteria of plus or minus 3%. A majority of the valves tested had been installed for two operating cycles. Historical data also indicates that the as-found set points for 28 of 40 tests remained within the as-left tolerance of plus or minus 1%.

The as-found test data for the three SRV failures indicates that two of the three SRV test failures did not decrease the level of quality or safety, in that the as-found setpoint for one SRV was within 0.004% of the acceptance criteria, and one SRV exceeded the acceptance criteria in a negative or more conservative direction. The three SRV failures that occurred were SRVs that were as-left setpoint tested using nitrogen by on-site personnel and then as-found setpoint tested by an off-site National Board Code Stamp-certified vendor using steam. CPS has since abandoned on-site nitrogen setpoint testing and refurbishment by on-site personnel, and opted to send the SRVs to a certified off-site vendor for as-found and as-left setpoint testing using steam. No failures

have been noted following the transition to steam as the test medium for as-found and as-left testing.

In addition to the historical test results, the current CPS reload ASME overpressure analysis assumes that two SRVs are out of service, and all of the operable SRVs open to relieve pressure at the upper ASME Code limit of 1375 psig. This value is greater than the plus 3% of the SRV setpoint. These conservative assumptions provide additional assurance that the requested relief from the ASME OM Code requirement for the subject SRVs would not result in a decrease in the level of quality or safety.

CPS currently utilizes a National Board Code Stamp-certified off-site vendor to perform as-found and as-left testing, inspection, and refurbishment of the SRVs. An EGC-approved and qualified procedure is used for disassembly and inspection of the SRVs. This procedure requires that each SRV be disassembled and inspected upon removal from service, independent of the as-found test results. The procedure identifies the critical components that are required to be inspected for wear and defects, and the critical dimensions that are required to be measured during the inspection. If components are found worn or outside of the specified tolerance(s), the components are either reworked to within the specified tolerances, or replaced. All parts that are defective, outside-of-tolerance, and all reworked/replaced components are identified, and EGC is notified of these components by the off-site vendor. The SRV is then reassembled, the as-left test is performed, and the SRV is returned to CPS.

The ASME OM Sub-Group on Relief Valves developed Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves." Code Case OMN-17 allows owners to extend the test interval for safety and relief valves from 60 months to 72 months plus a six-month grace period. This code case imposes a special maintenance requirement to disassemble and inspect each safety and relief valve to verify that parts are free from defects resulting from the time related degradation or service induced wear prior to the start of the extended test interval. The purpose of this maintenance is to reduce the potential for setpoint drift. As noted above, EGC utilizes a National Board Code Stamp-certified off-site vendor to perform as-found and as-left testing, inspection, and refurbishment of the Dikkers Model G-471 SRVs for CPS. EGC has verified that the approved and qualified procedure that is used by the off-site vendor for disassembly, inspection, repair, and testing of the SRVs satisfies the special maintenance requirement specified in Code Case OMN-17.

All currently installed SRVs at CPS were disassembled, inspected, repaired, and tested in accordance with the qualified procedure, prior to installation, to verify that parts were free from defects resulting from time-related degradation or maintenance-induced wear. Therefore, currently installed SRVs at CPS comply with Code Case OMN-17.

Furthermore, each SRV removed from service at CPS will continue to be disassembled, inspected, repaired, and tested in accordance with the qualified procedure prior to reinstallation. Upon approval of the proposed relief request, the test interval (i.e., the frequency for disassembly, inspection, repair, and testing) for any SRV shall not exceed 6.5 years (i.e., 72 months plus a six-month grace period).

Based upon the estimated cumulative radiation exposure to comply with the ASME OM Code, coupled with historical SRV test results for Dikkers Model G-471 SRVs at CPS, EGC has concluded that compliance with the ASME OM Code would result in hardship, without a compensating increase in the level of quality or safety.

EGC submitted Relief Request No. 2210 on November 3, 2008 (Reference 1) for the remainder of the Second CPS 10-Year IST interval. The circumstances and basis for this request do not differ from those provided in Reference 1.

6. **Duration of Proposed Alternative**

The proposed alternative identified in this relief request shall be utilized during the Third 10-Year IST Interval.

7. **Precedents**

In Reference 2, the NRC reviewed and approved relief requests for both Dresden Nuclear Power Station (DNPS), Units 2 and 3, and Quad Cities Nuclear Power Station (QCNPS), Units 1 and 2 to extend their main steam safety valve (MSSV) test interval duration for individual valves to 6.5 years for the remainder fourth 10-year IST interval. In Reference 3, the NRC reviewed and approved a relief request for Susquehanna Steam Electric Station (SSES), Units 1 and 2, to extend the MSSV test interval duration for individual valves to six years for the entire third 10-year IST interval. In Reference 4, the NRC reviewed and approved a relief request for Nine Mile Point Nuclear Power Station, Unit 2 (NMP2) to extend the MSSV test interval duration for individual valves to three refueling outages or approximately six years for the entire third 10-year IST interval. In all of these approvals, the NRC allowed for a total installed interval of at least six years.

In Reference 1, EGC requested relief for CPS similar to that approved in Reference 2. This request was for the Second CPS IST Interval.

This proposed relief request is consistent with the DNPS, QCNPS, SSES and NMP2 precedents, in that it will establish a test interval that would enable EGC to maintain a Dikkers Model G-471 SRV in service for three operating cycles, while also allowing adequate time to transport, test, and refurbish an SRV, at an external facility prior to reinstallation.

8. **References**


1) Letter from Mr. J. L. Hansen, (Exelon Generation Company, LLC) to the U. S. NRC, "Request for Relief from ASME OM Code 5-year Test Interval for Safety Relief Valves (Relief Request No. 2210)," dated November 3, 2008 (Accession Number ML083090066)

2) Letter from U. S. NRC to Mr. Charles G. Pardee (Exelon Generation Company, LLC), "Dresden Nuclear Power Station Units 2 and 3 – Relief Request No. RV-02C from 5-Year Test Interval for Main Steam Safety Valves (TAC Nos. MD8150 and MD8151) and Quad Cities Nuclear Power Station, Relief Requests No. RV-30E and

RV-30F from 5-Year Test Interval for Main Steam Safety Valves (TAC Nos. MD6682, MD6683, MD8241, and MD8242)," dated June 27, 2008

3) Letter from U. S. NRC to Mr. B. L. Shriver (PPL Susquehanna, LLC), "Susquehanna Steam Electric Station Units 1 and 2 -Third 10-year Interval Inservice Testing (IST) Program Plans (TAC Nos. MC3382, MC3383, MC3384, MC3385, MC3386, MC3387, MC3388, MC3389, MC4421, MC4422)," dated March 10, 2005

4) Letter from U. S. NRC to Mr. J. H. Mueller (Niagara Mohawk Power Corporation), "Nine Mile Point Nuclear Power Station, Unit No. 2 – Alternative to American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Regarding Inservice Testing of Main Steam Safety/Relief Valves (TAC No. MB0290)," dated April 17, 2001

***RAI 2202-001***

*Request No. 2202 proposes to extend the test interval for the main steam line safety relief valves to 6.5 years and references Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves," as a basis for extending the test interval. Code Case OMN-17 allows owners to extend the test interval for safety relief valves from 5 years with no grace period to 6 years plus a 6-month grace period. It is preferable to the NRC staff to be consistent with the provisions in Code Case OMN-17. Please discuss if a 6 year plus a six month grace period safety relief valve test interval is acceptable in lieu of a 6.5 year test interval with no grace period.*

**Response:**

Clinton Power Station (CPS) would consider a six year frequency with the allowance for a six month grace period an acceptable alternative to the 6.5 year frequency with no grace period that was proposed in 10 CFR 50.55a Request Number 2202. The six year interval with six month grace period will continue to reduce the number of Safety Relief Valves (SRVs) that are tested over three refueling outages and maintain the site's radiation exposure as low as reasonably achievable.

## VALVE RELIEF REQUEST 2203

Proposed Alternative In Accordance with 10 CFR 50.55a(a)(z)(1)

### 1. ASME Code Component(s) Affected

All ASME Class 1, 2, and 3 valves included in a Clinton Power Station (CPS) In-Service Testing (IST) Cold shutdown (CSJ) or Refuel Justification (RFJ).

### 2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers (ASME), "Code for Operation and Maintenance of Nuclear Power Plants," 2004 Edition (ASME OM Code-2004).

### 3. Applicable Code Requirement

**ISTC-3521 Category A and Category B Valves**
ISTC-3521(e) if exercising is not practicable during operation at power or cold shutdowns; it may be limited to fullstroke during refueling outages.

ISTC-3521(h) all valve testing required to be performed during a refueling outage shall be completed before returning the plant to operation at power.

**ISTC-3522 Category C Check Valves**
ISTC-3522(c) If exercising is not practicable during operation at power and cold shutdowns; it shall be performed during refueling outages.

ISTC-3522(f) All valve testing required to be performed during a refueling outage shall be completed before returning the plant to operation at power.

### 4. Reason for Request

In accordance with 10 CFR 50.55a(a)(3)(i), relief is requested from the requirements of the OM Code, Subsection ISTC-3521(e), ISTC-3521(h), ISTC-3522(c) and ISTC-3522(f). The proposed alternative would provide an acceptable level of quality and safety.

These sections require CSJ and RFJ valves to be tested each refueling outage. CPS is currently on a 24 fuel month cycle, thus, CSJ and RFJ valves are currently tested every 24 months. For financial reasons, CPS will be transitioning to a 12 month fuel cycle beginning in the Spring of 2015; performing a refueling outage every 12 months. CPS intends to alternately schedule one short outage that will focus primarily on refueling activities with minimal maintenance activities (i.e., "refueling only outages") and one more traditional refueling outage consisting of both refueling activities and maintenance activities (i.e., "refueling/maintenance outages"). Based on the above referenced code requirements,

CPS will be required to test all CSJ and RFJ valves every year. This in effect cuts the testing frequency of these valves in half (i.e., one year vs two years). This change in outage scheduling and its OM Code implications do not provide a compensating increase in level of quality or safety.

This relief request is being pursued to maintain the current (i.e., two year) testing frequency for the CPS CSJ and RFJ valves. This will allow CPS to maintain a minimal amount of testing during the "refueling only outage" and still maintain the same level of quality and safety by continuing the two year frequency that these valves have historically been tested at during the "refueling/maintenance outages."

## 5. Proposed Alternative and Basis for Use

CPS proposes to continue testing CSJ and RFJ valves every two years with the CSJ valves being tested during all cold shutdowns lasting longer than 48 hours and continuing until the plant is ready to return to operation at power per ISTC-3521(g) and ISTC-3522(e). Based on the current outage plans, CPS proposes treating the "refueling only outage" as a cold shutdown in accordance with OM Code requirements and not a refueling outage. This will maintain the current time between tests at every two years for the CSJ and RFJ valves.

By maintaining the current testing frequency, CPS maintains the current acceptable level of quality and safety with regards to the CPS RFJ valves. This change in outage schedules will also increase the level of quality and safety for the CPS CSJ valves due to the planned outage in between the "refueling/maintenance outages" that will provide time to perform some of the CSJ valve testing. This statement is supported by the years of testing these valves at a 24 month interval.

In summary, CPS is proposing to test all of its CSJ and RFJ valves every two years during the "refueling/maintenance outages" and continue testing the CSJ valves as time allows during the "refueling only outage" to satisfy the requirements of ISTC-3521(g) and ISTC-3522(e). This will maintain the current time between tests for the CSJ and RFJ valves at a maximum of two years.

## 6. Duration of Proposed Alternative

The proposed alternative identified in this relief request shall be utilized during the Third 10-Year IST Interval.

***RAI-2203-001***

*The requests state that the proposed alternatives are for the third IST interval at CPS. Provide the start and end date for the third IST interval.*

**Response:**

CPS is currently in the third IST interval. As documented in Reference 1, the third IST interval started on July 1, 2010 and will end on June 30, 2020.

***RAI-2203-002***

*ASME OM Code exercise test provides an opportunity for tracking and trending valve and accessory performance. It is recognized there is a possibility that not all valves listed on the CSJ list will be tested during a shorter "refueling only" outage. Section 3.1.1.1, "IST Cold Shutdown Testing," of NRC NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants," published October 2013, provides an acceptable method of scheduling valves for testing during a cold shutdown. Use of this method helps ensure that the selection of valves to be tested during a cold shutdown are diverse and not the same group of valves each time. Explain how the valves identified in the CSJ list will be selected for testing during the shorter "refueling only" outage.*

**Response:**

CPS currently maintains a list of all CSJ valves that are eligible for testing during an extended cold shutdown (i.e., greater than 48 hours). This list is provided to Operations and Outage Planning before each planned outage and within one shift in the case of a forced outage. From this list, Operations selects the valves to be tested during the course of the outage. Engineering coordinates with Operations to ensure testing of CSJ valves is consistent with the guidance provided in Section 3.1.1.1 of NUREG 1482, Revision 2. In addition to testing the CSJ valves during an extended cold shutdown, the CPS testing program currently requires that all valves on the CSJ list are tested each refueling outage to ensure all these valves are tested every two years. Once CPS transitions to annual refueling outages, the CPS testing program will continue to require testing of CSJ valves during extended cold shutdowns including the "refueling only outages." In addition, the CPS testing program will continue to require that all CSJ valves are tested during the "refueling/maintenance outages" ensuring that all of these valves are tested every 2 years. This in turn will reset the CSJ list.

***RAI-2203-003:***

*The OM Code requires exercise testing of valves at least once every 3 months; however, the OM Code permits the testing to be deferred to cold shutdown or refueling outages based on practicality. Operating experience indicates that valve reliability is higher with more frequent testing. The application indicates that a test interval of 24 months for RFJ valves "maintains the current acceptable level of quality and safety" for these valves. The application also indicates that testing of the CSJ valves during the "refueling only" outage will "increase the level of quality and safety for the CPS CSJ valves." However, the application does not describe the impact on the reliability of the valves given the intent of the OM code.*

*Justify that the CSJ and RFJ valves will be adequately reliable by comparing the reliability based on testing at 3-month, 1-year, and 2-year intervals. Provide additional justification why it is acceptable for valves on the RFJ list to maintain the current 2 year test interval.*

**Response:**

As noted above in the response to RAI 2, CPS intends to continue testing CSJ valves during all extended cold shutdowns (i.e., longer than 48 hours). Since EGC intends to treat the "refueling only outages" as a cold shutdown in accordance with OM code requirements, CSJ valves will be tested during the "refueling only outages" just as they are tested during any other cold shutdown. Based on this approach, the CSJ valves will continue to be tested at a frequency that will ensure reliability in accordance with the OM code requirements.

As noted in the question, the OM Code permits the testing of valves to be deferred to cold shutdown or refueling outages based on practicality. The CPS valves currently classified as RFJ valves have been tested each refueling outage in accordance with the requirements of the OM Code. In support of the response to this question, EGC has reviewed the test history for the RFJ valves to determine if test failures would indicate that more frequent testing of these valves would ensure more reliable performance.

After reviewing the test history for all 70 current RFJ valves for the past 6 refueling outages (i.e., 2003 (C1R09) – 2013 (C1R14)), a total of 11 unsatisfactory tests were identified involving 7 different valves. The valves that had an unsatisfactory test are listed in the table below organized by the outage that the failure occurred in. The other 63 valves have satisfactory test history that supports their continued testing on a 2 year test interval. Of the 7 valves that experienced an unsatisfactory test, 4 valves experienced one failure, 2 valves experienced two failures, and 1 valve was found to have experienced three failures. By virtue of no reoccurring failures, it has been demonstrated that the corrective actions taken with the 4 single failure valves have fixed their issues. The reactor pressure excess flow check valve 1CM067, which experienced a failure in C1R14 (2013), was replaced with a new valve.

Low Pressure Coolant Injection testable check valve (i.e., 1E12-F041B) has experienced 2 failures, one on its open test and one on its close test. The open test issue found the packing gland out of alignment. This was repaired in C1R14 (2013). In C1R11 (2008) the closed test found the clearances between the disk and the valve body to be out of tolerance. The disk hole was re-bored to align the disk and body in C1R11. No repeat close test failure has occurred since C1R11.

High Pressure Core Spray System testable check valve (i.e., 1E22-F005) had back to back failures of its check closed test, one in C1R11 and again in C1R12 (2010). Each time, repair work orders where completed. In C1R11 the valve was disassembled, no issues noted, the valve was reassembled, and passed its post-maintenance testing (PMT). In C1R12 it was disassembled and noted there were out of tolerance gaps between the valve disk and body. This was corrected under the repair work order and no repeat failure has occurred since C1R12.

Reactor Core Isolation Cooling System testable check valve (i.e., 1E51-F066) has experienced multiple failures with the last two in consecutive outages. This valve is in a position to be tested during "refueling only outages" in addition to "refueling/maintenance outages." Until four consecutive years of tests are passed, this valve will be tested each refueling outage (i.e., 1 year test interval).

Based on test data review, CPS concludes it has adequate justification to support 2 year test interval RFJ valve testing for all current RFJ valves with the exception of 1E51-F066.

| Valve (RFJ#) | Test Failure Outage (test type) |
|---|---|
| 1E12-F041B (RFJ-005) | C1R11 (CC) |
| 1E22-F005 (RFJ-005) | C1R11 (CC) |
| 1E51-F066 (RFJ-002) | C1R11 (CC) |
| 1B21-F032A (RFJ-003) | C1R11 (CC) |
| 1E21-F006 (RFJ-005) | C1R12 (CC) |
| 1E22-F005 (RFJ-005) | C1R12 (CC) |
| 1B21-F032B (RFJ-003) | C1R12 (CC) |
| 1E51-F066 (RFJ-002) | C1R13 (CC) |
| 1CM067 (RFJ-013) | C1R14 (CC) |
| 1E51-F066 (RFJ-002) | C1R14 (CC) |
| 1E12-F041B (RFJ-005) | C1R14 (CO) |

CC = Check Valve Exercise Test - Closed
CO = Check Valve Exercise Test – Open

***RAI-2203-004***
*Describe how testing will change if an RFJ valve that is tested once every 2 years fails a test. The response should specify changes in test frequency and the number of consecutive passed tests required to return the valve to a 2-year test interval (i.e., information similar to what was provided for the RCIC system testable check valve above).*

**EGC Response**
Testing for RFJ valves that fail under the proposed relief will not change from the process currently used. Currently, if a RFJ valve were to fail, it would be tested during the next outage (i.e., 24 months later). During the proposed "refueling only outage" there is no intent to perform maintenance on CSJ/RFJ valves other than stroking the valves as required (i.e., those valves classified as CSJ). If a valve were to fail during stroking, corrective action would be implemented, a post-maintenance test would be performed prior to returning the valve to service, and any required increase in testing frequency would be implemented to align with refueling/maintenance outages. There would be no change in test frequency and no defined number of consecutive successful tests required to return to a 24 month frequency. History shows that a 24 month testing frequency has been acceptable for these valves. During "refueling only outages," testing certain CSJ/RFJ valves would incur system unavailability and possibly increased shutdown risk. The RCIC testable check valve, 1E51F066, is an exception since this valve is within part of the reactor pressure vessel (RPV) piping that is removed during RPV disassembly and therefore the opportunity exists to perform the test without causing system unavailability or increased shutdown risk to perform the testing.

## VALVE RELIEF REQUEST 2204

Proposed Alternative In Accordance with 10 CFR 50.55a(a)(z)(1)

### 1. ASME Code Component(s) Affected

All ASME Class 1, 2, and 3 motor-operated valves (MOVs) currently included in the Clinton Power Station (CPS) MOV Testing Program.

### 2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers (ASME), "Code for Operation and Maintenance of Nuclear Power Plants," 2004 Edition (ASME OM Code-2004) with the 2006 addenda version of OMN-01.

### 3. Applicable Code Requirement

**CODE CASE OMN-1 (2006 addenda)**
Subsection 3.6.1 Normal Exercising Requirements:
All MOVs, within the scope of this Code Case, shall be full-cycle exercised at least once per refueling cycle with the maximum time between exercises to be not greater than 24 months. Full-cycle operation of an MOV, as a result of normal plant operations or Code requirements, may be considered an exercise of the MOV, if documented. If full-stroke exercising of an MOV is not practical during plant operation or cold shutdown, full-stroke exercising shall be performed during the plant's refueling outage.

### 4. Reason for Request

In accordance with 10 CFR 50.55a(a)(3)(i), relief is requested from the requirements of OM Code Case OMN-01, Subsection 3.6.1. The proposed alternative would provide an acceptable level of quality and safety.

Subsection 3.6.1 requires the applicable valves to be tested each refueling outage not to exceed 24 months. CPS is currently on a 24 month fuel cycle, thus, the applicable valves are currently being tested every 24 months. For financial reasons, CPS will be transitioning to a 12 month fuel cycle beginning in the Spring of 2015; performing a refueling outage every 12 months. CPS intends to alternately schedule one short outage that will focus primarily on refueling activities with minimal maintenance activities (i.e., "refueling only outages") and one more traditional refueling outage consisting of both refueling activities and maintenance activities (i.e., "refueling/maintenance outages"). Based on the above referenced code case requirements, CPS will be required to test all valves every 12 months. This in effect cuts the allowable testing frequency of these valves in half (i.e., 12 months vs 24 months). This change in outage scheduling and its OM Code implications do not provide a compensating increase in level of quality or safety.

This relief request is being pursued to maintain the current (i.e., 24 month) exercise frequency for the CPS valves covered by OMN-01. This will allow CPS to maintain a minimal amount of testing during the "refueling only outage" and still maintain the same level of quality and safety by continuing the 24 month frequency that these valves have historically been tested at during the "refueling/maintenance outage."

## 5. Proposed Alternative and Basis for Use

CPS proposes to continue performing the exercise tests required by Subsection 3.6.1 of OMN-01 for the applicable valves every 24 months, as opposed to the required once per refueling cycle not to exceed 24 months.

By maintaining the current testing frequency at once every 24 months, CPS maintains the current acceptable level of quality and safety with regards to valves covered by OMN-01. This statement is supported by the years of testing these valves at a 24 month interval.

In summary, CPS is proposing to perform the exercise test for all of the valves covered by OMN-01 every 24 months. This will maintain the current time between tests at two years.

## 6. Duration of Proposed Alternative

The proposed alternative identified in this relief request shall be utilized during the Third 10-Year IST Interval.

***RAI-2204-001***

*The requests state that the proposed alternatives are for the third IST interval at CPS. Provide the start and end date for the third IST interval.*

**Response:**

CPS is currently in the third IST interval. As documented in Reference 1, the third IST interval started on July 1, 2010 and will end on June 30, 2020.

**ATTACHMENT 6**
**RELIEF REQUEST RAIs AND SERs**

**Revision 9**
**7/12/2018**

**UNITED STATES**
**NUCLEAR REGULATORY COMMISSION**
**WASHINGTON, D.C. 20555-0001**

June 10, 2010

Mr. Michael J. Pacilio
President and Chief Nuclear Officer
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 - SAFETY EVALUATION OF RELIEF REQUEST NOS. 2201, 2202, AND 3201, FOR THE THIRD 10-YEAR INSERVICE TESTING INTERVAL (TAC NOS. ME1546, ME1705, ME1709)

Dear Mr. Pacilio:

By letter dated June 16, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091690167), as supplemented by letter dated March 31, 2010 (ADAMS Accession No. ML100900387), Exelon Generation Company, LLC (EGC, the licensee), submitted Relief Requests (RR) Nos. 2201, 2202, and 3201 to the Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) requirements for the third 10-year inservice testing (IST) program interval at Clinton Power Station (CPS), Unit No. 1.

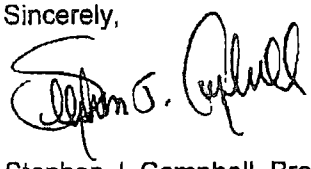
Specifically, for RR Nos. 2201 and 3201, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(i), the licensee requested to use the proposed alternatives on the basis that the alternatives provide an acceptable level of quality and safety. For RR 2202, pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee requested to use the proposed alternative on the basis that complying with current ASME OM Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The NRC staff has determined that proposed alternatives RR Nos. 2201 and 3201 provide an acceptable level of quality and safety and that proposed alternative RR No. 2202 provides reasonable assurance that the main steamline safety relief valves are operationally ready. Accordingly, the NRC staff concludes that the licensee had adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(3)(i) for alternative RR Nos. 2201 and 3201 and 10 CFR 50.55a(3)(ii) for alternative RR No. 2202. Therefore, the NRC authorizes alternative RR Nos. 2201, 2202, and 3201 at CPS for the third 10-year IST program interval, which begins on June 15, 2010, and ends on June 14, 2020. All other ASME OM Code requirements for which relief was not specifically requested and approved remain applicable.

A copy of the Safety Evaluation is enclosed. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact the Project Manager, Nicholas J. DiFrancesco, at 301-415-1115.

Sincerely,



Stephen J. Campbell, Branch Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUESTS NOS. 2201, 2202, AND 3201 REGARDING

COMPONENT TESTING OF ASME CLASS 1, 2, AND 3 MOTOR-OPERATED VALVES,

ASME CLASS 1 MAIN STEAMLINE SAFETY RELIEF VALVES,

AND ASME CLASS 2 WATERLEG PUMPS

EXELON GENERATION COMPANY, LLC

CLINTON POWER STATION, UNIT NO. 1

DOCKET NO. 50-461

## 1.0 INTRODUCTION

By letter dated June 16, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML091690167), as supplemented by letter dated March 31, 2010 (ADAMS Accession No. ML100900387), Exelon Generation Company, LLC (EGC, the licensee), submitted Relief Requests (RR) Nos. 2201, 2202, and 3201 to the Nuclear Regulatory Commission (NRC) the use of alternatives to certain American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) requirements for the third 10-year inservice testing (IST) program interval at Clinton Power Station (CPS), Unit No. 1.

Specifically, for RR 2201 and RR 3201, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(i), the licensee requested to use the proposed alternatives on the basis that the alternatives provide an acceptable level of quality and safety. For RR 2202, pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee requested to use the proposed alternative on the basis that complying with current ASME OM Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

## 2.0 REGULATORY EVALUATION

*Title 10 of the Code of Federal Regulations* (10 CFR) 50.55a, requires that IST of certain ASME Code Class 1, 2, and 3 pumps and valves be performed at 120-month (10-year) IST program intervals in accordance with the specified ASME Code and applicable addenda incorporated by reference in the regulations, except where alternatives have been authorized or relief has been requested by the licensee and granted by the NRC pursuant to paragraphs (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In accordance with 10 CFR 50.55a(f)(4)(ii), licensees are required to

comply with the requirements of the latest edition and addenda of the ASME Code incorporated by reference in the regulations 12 months prior to the start of each 120-month IST program interval. In accordance with 10 CFR 50.55a(f)(4)(iv), IST of pumps and valves may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in 10 CFR 50.55a(b), subject to NRC approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions and addenda are met. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to ASME Code requirements which are acceptable. Further guidance is given in GL 89-04, Supplement 1, and NUREG-1482, Revision 1, "Guidance for Inservice Testing at Nuclear Power Plants." ASME OM code cases that are approved for use by the NRC are listed in Regulatory Guide (RG) 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code" dated June 2003.

The CPS third 10-year IST interval begins on June 15, 2010, and ends on June 14, 2020. The program was developed in accordance with the 2004 Edition of the ASME OM Code.

## 3.0 TECHNICAL EVALUATION

The NRC's findings with respect to authorizing the proposed alternatives to the ASME OM Code are given, as follows:

### 3.1 The Licensee's Alternative RR No. 2201

ISTA-3130(b), "Application of Code Cases," states that code cases be applicable to the edition and addenda specified in the test plan.

ISTC-3100(a), "Preservice Testing," states that any valve that has undergone maintenance that could affect its performance after the preservice test be tested in accordance with ISTC-3310, "Effects of Valve Repair, Replacement, or Maintenance on Reference Values."

ISTC-3310 requires that a new reference value shall be determined or the previous reference value reconfirmed by an IST after a valve has been replaced, repaired, or has undergone maintenance that could affect the valve's performance.

ISTC-3510, "Exercising Test Frequency," requires that active Category A and Category B, motor-operated valves (MOVs) shall be exercised nominally every 3 months.

ISTC-3521, "Exercising Requirements - Category A and Category B Valves," requires that Category A and B MOVs be exercised during cold shutdowns if it is not practicable to exercise the valves at power, or that active Category A and B MOVs be exercised during refueling outages if it is not practicable to exercise the valves during cold shutdowns.

ISTC-3700, "Position Verification Testing," states that valves with remote position indicators shall be observed locally at least once every 2 years to verify that valve operation is accurately indicated.

ISTC-5121(a), "Motor-Operated Valves-Valve Stroke Testing," states that active valves shall have their stroke times measured when exercised in accordance with ISTC-3500, "Valve Testing Requirements."

The licensee proposes to adopt the requirements of Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing on Certain Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants," Revision 1, as revised in the 2006 Addenda to the 2004 Edition of the ASME OM Code in lieu of the performance of stroke time testing and position indication testing as described by Section ISTC of the 2004 Edition of the ASME OM Code. The provision to allow for motor control center (MCC) testing, as contained in Section 6.1, "Acceptance Criteria", of the ASME Code Case OMN-1, is excluded from this request. The licensee is proposing this alternative testing for all ASME Class 1, 2, and 3 MOVs currently included in the CPS MOV Testing Program.

The NRC amended its regulations to incorporate by reference the 2004 Edition of the ASME OM Code on September 10, 2008. In the latest 10 CFR 50.55a(b), it states in part, that RG 1.192, "Operating and Maintenance Code Case Applicability, ASME Code," has been approved for incorporation by reference. In RG 1.192, as stated in Table 2, "Conditionally Acceptable OM Code Cases," the licensee may use the alternative rules of ASME Code Case OMN-1, Revision 0, when applied in conjunction with the provisions for leakage rate testing in ISTC-3600, "Leak Testing Requirements," and must apply all the stated provisions.

This conditional acceptance of OMN-1, Revision 0, per RG 1.192 is applicable in lieu of the provisions for stroke-time testing in Subsection ISTC of ASME OM Code-2004. Since RG 1.192 was last published, Code Case OMN-1 has been updated/modified to address and incorporate all of the original RG 1.192 listed provisions. The licensee proposes to adopt the requirements of Code Case OMN-1, Revision 1, as presented in the ASME OMb Code, "Addenda to ASME OM Code-2004, Code for Operation and Maintenance of Nuclear Power Plants," for 2006, in lieu of the performance of stroke time testing and position indication testing as described by Subsection ISTC of the 2004 Edition of the ASME OM Code.

The CPS MOV testing program was developed as a result of NRC GL 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," and GL 96-05, "Periodic Verification of Design Basis Capability of Safety-Related Motor-Operated Valves," utilizing Topical Report MPR-1807, "Joint BWR, Westinghouse and Combustion Engineering Owners Group Program on Motor-Operated Valve Periodic Verification," Revision 2. CPS is currently utilizing MPR-2524-A, "Joint Owners' Group Motor-Operated Valve Periodic Verification Program Summary," (November 2006) as guidance for the MOV program. The adoption of Code Case OMN-1 will consolidate testing between the station's IST and MOV programs.

3.1.1 NRC Staff Evaluation

Section 4.2.5, "Alternatives to Stroke-Testing," of NUREG-1482, states in part that as an alternative to MOV stroke-time testing, ASME developed Code Case OMN-1, which provides periodic exercising and diagnostic testing for use in assessing the operational readiness of MOVs, may be used. Section 4.2.5 recommends that licensees implement ASME Code Case OMN-1 as an alternative to the MOV stroke-time testing. The periodic exercising and diagnostic testing requirements in Code Case OMN-1 provide an improved method for assessing the operational readiness of MOVs.

Application of code cases is addressed in 10 CFR 50.55a(b)(6) through references to RG 1.192, which lists acceptable and conditionally acceptable code cases for implementation in IST programs. RG 1.192, Table 2, conditionally approves the use of Code Case OMN-1 and states that the code case is applicable to the 2000 Addenda and earlier editions and addenda of the Code. There is no technical reason for prohibiting the use of Code Case OMN-1 with the 2004 Edition of the Code. This is consistent with the NRC staff position in NUREG-1482, and

RG 1.192. Code Case OMN-1 was revised in the 2006 Addenda to the ASME OM Code. Most of the revisions are enhancements; however, there was one significant revision in Section 6.1 that states that MCC testing is acceptable if correlation with testing at the MOV has been established. MCC diagnostic testing was not specifically addressed in the original version of OMN-1. Historically, diagnostic testing of MOVs has been conducted using at-the-valve tests. The ASME OM Code does not address a method for the correlation of MCC based measurements to diagnostic test measurements conducted at-the-valve. EGC has excluded the provision for MCC testing from this relief request. Therefore, the MCC test method will not be used as an acceptance criterion to determine the operational readiness of MOVs.

The NRC staff finds that the 2006 Addenda of Code Case OMN-1 provides an acceptable level of quality and safety for testing of MOVs and is an acceptable alternative for use in CPS's IST Program, except for Section 6.1 of this Code Case.

3.1.2 Conclusion

Based on the above evaluation, the NRC staff concludes that the licensee's proposed alternative to the Code MOV testing, in accordance with Code Case OMN-1, as revised in the 2006 Addenda to the ASME OM Code, with the exception that the MCC test method will not be used, is authorized pursuant to 10 CFR 50.55a (a)(3)(i) on the basis that the alternative provides an acceptable level of quality and safety. This alternative is authorized for the third 10-year IST interval, which begins on June 15, 2010, and ends on June 14, 2020.

3.2 The Licensee's Alternative RR No. 2202

ASME OM Code Mandatory Appendix I, Paragraph I-1320(a), "Test Frequencies, Class 1 Pressure Relief Valves," 2004 Edition requires that Class 1 pressure relief valves be tested at least once every 5 years. The licensee proposed an alternative test interval to the 5-year test interval requirement in Mandatory Appendix I, Section I-1320(a) for CPS main steam safety relief valves (SRVs) 1B21-F041A, 1B21-F041B, 1B21-F041C, 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F041L, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D, 1B21-F047F, 1B21-F051B, 1B21-F051C, 1B21-F051D, and 1B21-F051G.

The SRVs are Dikkers Model G-471 design. The licensee proposed in RR 2202 to test the SRVs on a 72-month plus a six-month grace period interval. The licensee stated that it would refurbish each SRV prior to the start of the extended test interval. Critical components will be inspected for wear and defects, and critical dimensions will be measured. Worn, defective, and out-of-specification parts will be repaired or replaced.

Specifically, pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee proposed the alternative on the basis that complying with the ASME OM Code 5-year SRV test interval would result in hardship or unusual difficulty due to unnecessary personnel radiation exposure without a compensating increase in the level of quality and safety. A minimum of 24 SRVs have to be removed and tested over three refueling outages on a 5-year test interval. Extending the test interval to 72 months with a 6-month grace period would reduce the minimum number of SRVs tested over three refueling outages by eight. The licensee estimates that removal and replacement of an additional eight SRVs over three refueling outages would result in additional radiation exposure of approximately 5.6 person-rem if the proposed alternative is not authorized. The licensee also indicated that as-found SRV set pressure test data demonstrates the current maintenance practices have been effective.

3.2.1 NRC Staff Evaluation

The ASME published Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves," in the 2009 Edition of the OM Code. Code Case OMN-17 allows extension of the test frequency for SRVs from 5 years to 72 months with a 6-month grace period. The code case imposes a special maintenance requirement to disassemble and inspect each SRV to verify that parts are free from defects resulting from the time-related degradation or maintenance-induced wear prior to the start of the extended test interval. The NRC staff recognizes that although Mandatory Appendix I, Paragraph I-1320(a) of the ASME OM Code does not require that SRVs be routinely refurbished when tested on a 5-year interval, routine refurbishment provides additional assurance that set-pressure drift during subsequent operation is minimized. Consistent with the special maintenance requirement in Code Case OMN-17, the licensee stated that each SRV will be refurbished prior to the start of each 72-month test interval. Critical components will be inspected for wear and defects, and the critical dimensions will be measured during the inspection. Components will be reworked to within the specified tolerance or replaced if found to be worn or outside of specified tolerances.

The NRC staff finds that extending the test interval for main steamline SRVs 1B21-F041A, 1B21-F041B, 1B21-F041C, 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F041L, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D, 1B21-F047F, 1B21-F051B, 1B21-F051C, 1B21-F051D, and 1B21-F051G to 72 months with a 6-month grace period is acceptable. Extending the test interval should not adversely affect the operational readiness of the SRVs because the SRVs will be disassembled and inspected prior to the start of the extended test interval. This additional maintenance is beyond what is required by OM Code Mandatory Appendix I when testing SRVs on a 5-year interval, and justifies extension of the test interval for up to 72 months plus a 6-month grace period while providing an acceptable level of quality and safety. Extending the test interval will also reduce radiation exposure due to the reduction in the number of SRVs that are removed and replaced during the third 10-year inservice test interval. EGC notes that this change will reduce station radiation exposure by approximately 5.6 person-rem over a period of three refueling outages.

3.2.2 Conclusion

As set forth above, the NRC staff determines that the alternative in RR 2202 is acceptable for CPS main steam SRVs 1B21-F041A, 1B21-F041B, 1B21-F041C, 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F041L, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D, 1B21-F047F, 1B21-F051B, 1B21-F051C, 1B21-F051D, and 1B21-F051G. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(a)(3)(ii), and is in compliance with the OM Code requirements. Therefore, the NRC staff authorizes the alternative in RR 2202 for main steam SRVs 1B21-F041A, 1B21-F041B, 1B21-F041C, 1B21-F041D, 1B21-F041F, 1B21-F041G, 1B21-F041L, 1B21-F047A, 1B21-F047B, 1B21-F047C, 1B21-F047D, 1B21-F047F, 1B21-F051B, 1B21-F051C, 1B21-F051D, and 1B21-F051G at CPS for third 10-year IST program interval which begins on June 15, 2010, and ends on June 14, 2020.

3.3 The Licensee's Alternative RR No. 3201

ISTB-3400, "Frequency of Inservice Tests," requires that an inservice test shall be run on each pump as specified in Table ISTB-3400-1. Table ISTB-3400-1 specifies that a Group A pump test shall be performed quarterly.

ISTB-3300(e)(2), "Reference Values," states that reference values shall be established within ± 20 percent of pump design flow for the Group A test, if practicable. If not practicable, the reference point flow rate shall be established at the highest practical flow rate.

ISTB-5121, "Group A Test Procedure," requires that Group A tests shall be conducted with the pump operating at a specified reference point. ISTB-5121(b) requires that the resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to its reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.

The licensee requested relief from the requirements of ISTB-3400, ISTB-3300(e)(2), and ISTB-5121 for quarterly Group A testing for the following pumps:

| Pump | Description | Class | Category |
|---|---|---|---|
| 1E12-C003 | Residual Heat Removal System (RHR) Loop B/C Waterleg Pump | 2 | Group A |
| 1E21-C002 | Low Pressure Core Spray (LPCS) and RHR A Waterleg Pump | 2 | Group A |
| 1E51-C003 | Reactor Core Isolation Cooling (RCIC) Waterleg Pump | 2 | Group A |

The waterleg pumps are continuously-running pumps whose safety function is to keep their supported system's pump discharge header piping in a filled condition. This function prevents water hammer and the delay of flow to the reactor upon the supported system's pump start. The actual output and hydraulic performance of the waterleg pumps are not critical to their safety function, as long as the waterleg pumps are capable of maintaining their associated system's pump discharge full of water. The amount of flow delivered by each waterleg pump is dependent upon each supported system's leakage rate.

LPCS and RHR A waterleg pump 1E21-C002 services the LPCS system piping and Loop A of the RHR system. RHR Loop B/C waterleg pump 1E12-C003 services RHR loops B and C. Traditional testing of these waterleg pumps requires declaring portions of the RHR and LPCS systems inoperable. Traditional testing of RCIC waterleg pump 1E51-C003 requires the RCIC system to be declared inoperable due to the system configuration changes that are necessary to perform the surveillance test.

The suction pressure for these waterleg pumps is essentially constant because the suppression pool and the RCIC storage tank (suction water sources) levels over the past year were maintained within a 5-inch band. This allows the waterleg pumps' readiness to be confirmed by monitoring the supported system's main header pressure. Quarterly monitoring of discharge pressure and bearing vibration in accordance with Position 9, "Pump Testing Using Minimum-Flow Return Lines With or Without Flow Measuring Devices," of GL 89-04, "Guidance On Developing Acceptable Inservice Testing Programs," dated April 3, 1989, will be performed to monitor for pump degradation and to assess pump performance. The flow rate for each of these waterleg pumps varies little during normal operation, and testing of these pumps at a predetermined reference point as described in ISTB-5121(b) is not necessary to detect pump degradation or to establish that these pumps can perform their safety function. The rated flows

for pumps 1E12-C003, 1E21-C002, and 1E51-C003 are 43 gallons per minute (gpm), 43 gpm, and 50 gpm respectively.

Instead of performing a quarterly Group A test, the CPS waterleg pumps will be monitored for degradation on a quarterly basis by observing pump discharge pressure and bearing vibration during normal operating conditions. This testing will be performed without varying the resistance of the system as discussed in ISTB-5121(b). These parameters will then be evaluated and trended to assess the pumps' performance. The measurement and trending of these parameters under these conditions will provide satisfactory indication of the operational readiness of the pumps and detect degraded performance. These waterleg pumps will be full flow tested every 24 months in conjunction with the comprehensive pump test performed in accordance with the requirements specified in ISTB-5123, "Comprehensive Test Procedure."

In addition to this quarterly testing, each of these waterleg pump's supported system pump discharge headers have sensors that continuously monitor header pressure, and provide an alarm in the main control room when their low pressure setpoint is reached. This will provide indication that the associated waterleg pump is no longer performing its safety function, and allow CPS operators to respond accordingly to station procedures. Moreover, these pumps are currently being monitored under the CPS Vibration Monitoring Program, which is not currently required by any Federal, state, or industry mandate. Because rotating equipment faults that can be detected by vibration monitoring will show up any time the equipment is operating, returning these pump to a fixed set of operating conditions is not necessary to detect such faults. Lastly, each of these waterleg pump's supported system pump discharge header is verified to be filled with water on a monthly basis in accordance with Surveillance Requirements in the CPS Technical Specifications. Any indication that the supported system's pump discharge header piping is not filled with water would provide timely indication that the associated waterleg pump's performance has degraded.

3.3.1 NRC Staff Evaluation

The RHR, LPCS, and RCIC waterleg pumps are continuously operating pumps. Their safety function is to keep their respective discharge header piping in a filled condition to prevent water hammer upon the start of the pump for the supported system(s). The actual output and hydraulic performance of the waterleg pumps are not critical to the safety function, as long as the pumps are capable of maintaining the discharge header piping full of water.

In lieu of an OM Code-required Group A test and flow measurement, the licensee proposes to monitor the pump discharge header pressures and bearing vibrations on a quarterly basis. In addition to this, there are alarms on the headers that would promptly alert plant operators of a low pressure condition indicative of a waterleg pump malfunction or any other condition that allows pressure to degrade (e.g., excessive leakage beyond waterleg pump make-up capabilities). The low pressure alarm will provide an early detection of a low header pressure. Also, CPS technical specification SR 3.5.1.1 requires verification every 31 days that the respective RHR/LPCS/RCIC headers are filled with water from the main pump discharge valve to the injection valve. The continuous monitoring of discharge header pressure in the control room and monthly (more frequent than quarterly) verification that the headers are filled with water will provide reasonable assurance that the waterleg pumps are operable, or that the system leakage has not exceeded the capacity of the waterleg pumps. In addition, the quarterly vibration measurement of the pump bearings meets the Code requirements and will provide the required test results reflecting the mechanical condition of the pumps. The proposed alternative

will therefore provide reasonable assurance of the operational readiness of the RHR/LPCS/RCIC waterleg pumps 1E12-C003, 1E21-C002, and 1E51-C003.

3.3.2 Conclusion

Based on the above evaluation, the NRC staff concludes that the licensee's proposed alternative to the Code Group A testing requirements, for waterleg pumps 1E12-C003, 1E21-C002, and 1E51-C003, is authorized pursuant to 10 CFR 50.55a(a)(3)(i), on the basis that the alternative provides an acceptable level of quality and safety. The licensee's proposed alternative provides reasonable assurance of the operational readiness of these waterleg pumps. The alternative is authorized at CPS for the third 10-year IST program interval, which begins on June 15, 2010, and ends on June 14, 2020.

4.0 CONCLUSION

As set forth above, the NRC staff has determined that proposed alternatives RR Nos. 2201 and 3201 provide an acceptable level of quality and safety and proposed alternative RR No. 2202 provides reasonable assurance that the main steamline SRVs are operationally ready. Accordingly, the NRC staff concludes that the licensee had adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(3)(i) for alternative RR Nos. 2201 and 3201 and 10 CFR 50.55a(3)(ii) for alternative RR No. 2202. Therefore, the NRC authorizes alternative RR Nos. 2201, 2202, and 3201 at CPS for the third 10-year IST program interval, which begins on June 15, 2010 and ends on June 14, 2020. All other ASME OM Code requirements for which relief was not specifically requested and approved remain applicable.

Principal Contributors: Russell Lake, NRR
Steven Tingen, NRR
Robert Wolfgang, NRR

Date: June 10, 2010

A copy of the Safety Evaluation is enclosed. All other ASME Code, Section XI requirements for which relief was not specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact the Project Manager, Nicholas J. DiFrancesco, at 301-415-1115.

Sincerely,

/RA/

Stephen J. Campbell, Branch Chief
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosure:
Safety Evaluation

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| DATE | 06/15/10 | 06/03/10 | 05/07/10 via email | 06/10/10 |

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 15, 2015

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT NO. 1 - REQUESTS FOR ALTERNATIVES FROM ASME OM CODE REQUIRED FREQUENCY (TAC NOS. MF5344 AND MF5345)(RS-14-291 AND RS-14-292)

Dear Mr. Hanson:

By two letters dated December 1, 2014, as supplemented by letters dated March 26 and June 3, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML14335A540, ML14335A541, ML15085A458 and ML15154A957, respectively), Exelon Generation Company, LLC (EGC; the licensee), submitted alternatives to the required refueling outage frequency for cold shutdown justification valves and refueling justification valves, and motor-operated valves (MOV) at Clinton Power Station, Unit 1 (CPS).

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review of relief requests (RRs) 2203 and 2204. The details of the NRC staff's review are included in the enclosed safety evaluation. Accordingly, RRs 2203 and 2204 are authorized pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.55a(z)(1), based on the NRC staff's determination that the proposed alternatives provide an acceptable level of quality and safety.

Therefore, the NRC staff authorizes the proposed alternatives in RRs 2203 and 2204 for the third 10-year IST program interval, which began on July 1, 2010 and is currently scheduled to conclude on June 30, 2020.

If you have any questions, please contact Ms. Eva A. Brown, at 301-415-2315 or via e-mail at eva.brown@nrc.gov.

Sincerely,

Benjamin G. Beasley, Acting Branch Chief
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosure:
Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

# RELATED TO ALTERNATIVE VALVE TEST FREQUENCY

# RELIEF REQUESTS 2203 AND 2204

# EXELON GENERATION COMPANY, LLC

# CLINTON POWER STATION, UNIT NO. 1

# DOCKET NO. 50-461

## 1.0 INTRODUCTION

By two letters dated December 1, 2014, as supplemented by letters dated March 26, and June 3, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML14335A540, ML14335A541, ML15085A458 and ML15154A957, respectively), Exelon Generation Company, LLC (EGC, the licensee), submitted alternatives to the required refueling outage frequency for cold shutdown justification and refueling justification valves, and motor operated valves (MOV) at Clinton Power Station Unit, 1 (CPS). The alternatives are necessary due to the licensee transitioning the refueling outage (RFO) periodicity from 24 to 12 months. Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.55a(z)(1), the licensee proposed alternatives for relief requests (RRs) 2203 and 2204 on the basis that the alternatives provide an acceptable level of quality and safety.

## 2.0 REGULATORY EVALUATION

Section 50.55a(z)(1) to 10 CFR requires that inservice testing (IST) of certain American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code) Class 1, 2, and 3 valves be performed in accordance with the specified ASME OM Code and applicable addenda incorporated by reference in the regulations, except where alternatives have been authorized or relief has been requested by the licensee and granted by the U.S. Nuclear Regulatory Commission (NRC) pursuant to paragraphs (z)(1) or (z)(2) of 10 CFR 50.55a. In proposing alternatives, a licensee must demonstrate that the proposed alternatives provide an acceptable level of quality and safety (10 CFR 50.55a(z)(1)) or that compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety (10 CFR 50.55a(z)(2)).

Section 50.55a(f) to 10 CFR requires, in part, that IST of certain ASME Code Class 1, 2, and 3 components must meet the requirements of the ASME OM Code and applicable addenda, except where alternatives have been authorized pursuant to paragraphs 10 CFR 50.55a(z)(1) or 10 CFR 50.55a(z)(2).

Relief requests 2203 and 2204, dated December 1, 2014, cited 10 CFR 50.55a(a)(3)(i), which covered RRs for alternatives on the basis that the proposed alternative would provide an acceptable level of quality and safety. On December 5, 2015 the NRC reorganized 10 CFR 50.55a (79 FR 214), and RRs that had been previously covered by 10 CFR 50.55a(a)(3)(i) are now covered under the equivalent 10 CFR 50.55a(z)(1).

The ASME OM Code establishes the requirements of preservice and IST and examination of certain components to assess their operational readiness in light-water reactor nuclear power plants. It identifies the components subject to test or examination, responsibilities, methods, intervals, parameter to be measured and evaluated, criteria for evaluating the results, corrective action, personnel qualification, and record keeping. These requirements apply to pumps and valves that are required to perform a specific function in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident.

The proposed alternatives are for the CPS third 10-year IST program interval, which began on July 1, 2010, and is currently scheduled to conclude on June 30, 2020.

Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request and the Commission to authorize the alternative requested by the licensee.

## 3.0 TECHNICAL EVALUATION

### 3.1 Licensee's Alternative Request 2203

ASME OM Code (ISTC) Requirements:

ISTC-3521(e), "Category A and Category B Valves," states that if exercising is not practicable during operation at power or cold shutdowns, it may be limited to full stroke during refueling outages.

ISTC-3521(h), "Category A and Category B Valves," states that all valve testing required to be performed during a refueling outage shall be completed before returning the plant to operation at power.

ISTC-3522(c), "Category C Check Valves," states if exercising is not practicable during operation at power and cold shutdowns, it shall be performed during refueling outages.

ISTC-3522(f), "Category C Check Valves," states all valve testing required to be performed during a refueling outage shall be completed before returning the plant to operation at power.

Alternative testing is requested for all ASME Class 1, 2, and 3 valves listed in CPS IST program Cold Shutdown Justification (CSJ) and Refuel Justification (RFJ) section 4 attachments.

The licensee states in part:

Reason for Request

In accordance with 10 CFR 50.55a(z)(1), relief is requested from the requirements of the OM Code, Subsection ISTC-3521(e), ISTC-3521(h), ISTC-3522(c) and ISTC-3522(f). The proposed alternative would provide an acceptable level of quality and safety.

These sections require CSJ and RFJ valves to be tested each refueling outage. CPS is currently on a 24-month fuel cycle, thus, CSJ and RFJ valves are currently tested every 24 months. For financial reasons, CPS will be transitioning to a 12-month fuel cycle beginning in the Spring of 2015; performing a refueling outage every 12 months. CPS intends to alternately schedule one short outage that will focus primarily on refueling activities with minimal maintenance activities (i.e., "refueling only outages") and one more traditional refueling outage consisting of both refueling activities and maintenance activities (i.e., "refueling/maintenance outages"). Based on the above referenced code requirements, CPS will be required to test all CSJ and RFJ valves every year. This in effect cuts the testing frequency of these valves in half (i.e., 1 year vs 2 years). This change in outage scheduling and its OM Code implications do not provide a compensating increase in level of quality or safety.

This RRs is being pursued to maintain the current (i.e., 2-year) testing frequency for the CPS CSJ and RFJ valves. This will allow CPS to maintain a minimal amount of testing during the "refueling only outage" and still maintain the same level of quality and safety by continuing the two year frequency that these valves have historically been tested at during the "refueling/maintenance outages."

Proposed Alternative

CPS proposes to continue testing CSJ and RFJ valves every two years with the CSJ valves being tested during all cold shutdowns lasting longer than 48 hours and continuing until the plant is ready to return to operation at power per ISTC-3521(g) and ISTC-3522(e). Based on the current outage plans, CPS proposes treating the "refueling only outage" as a cold shutdown in accordance with OM Code requirements and not a refueling outage. This will maintain the current time between tests at every 2 years for the CSJ and RFJ valves.

CPS currently maintains a list of all CSJ valves that are eligible for testing during an extended cold shutdown (i.e., greater than 48 hours). This list is provided to Operations and Outage Planning before each planned outage and within one shift in the case of a forced outage. From this list, Operations selects the valves to be tested during the course of the outage. Engineering coordinates with Operations to ensure testing of CSJ valves is consistent with the guidance provided in Section 3.1.1.1 of NUREG 1482, Revision 2.

The OM Code permits the testing of valves to be deferred to cold shutdown or refueling outages based on practicality. The CPS valves currently classified as RFJ valves have been tested each refueling outage in accordance with the requirements of the OM Code.

In response to NRC request for additional information, CPS has reviewed the test history for the RFJ valves to determine if test failures would indicate that more frequent testing of these valves would ensure more reliable performance.

After reviewing the test history for all 70 current RFJ valves for the past 6 RFOs (i.e., 2003 (C1R09) 2013 (C1R14)), a total of 11 unsatisfactory tests were identified involving 7 different valves. The valves that had an unsatisfactory test are listed in the table below organized by the outage that the failure occurred in.

| Valve (RFJ#) | Test Failure Outage (test type) |
|---|---|
| 1E12-F041B (RFJ-005) | C1R11 (CC) |
| 1E22-F005 (RFJ-005) | C1R11 (CC) |
| 1E51-F066 (RFJ-002) | C1R11 (CC) |
| 1B21-F032A (RFJ-003) | C1R11 (CC) |
| 1E21-F006 (RFJ-005) | C1R11 (CC) |
| 1E22-F005 (RFJ-005) | C1R11 (CC) |
| 1B21-F032B (RFJ-003) | C1R11 (CC) |
| 1E51-F066 (RFJ-002) | C1R11 (CC) |
| 1CM067 (RFJ-013) | C1R11 (CC) |
| 1E51-F066 (RFJ-002) | C1R11 (CC) |
| 1E12-F041B (RFJ-005) | C1R11 (CO) |

CC = Check Valve Exercise Test – Closed
CO = Check Valve Exercise Test – Open

The other 63 valves have satisfactory test history that supports their continued testing on a 2-year test interval. Of the 7 valves that experienced an unsatisfactory test, 4 valves experienced one failure, 2 valves experienced two failures, and 1 valve was found to have experienced three failures. By virtue of no reoccurring failures, it has been demonstrated that the corrective actions taken with the 4 single failure valves have fixed their issues. The reactor pressure excess flow check valve 1CM067, which experienced a failure in C1R14 (2013), was replaced with a new valve.

Low pressure coolant injection testable check valve (i.e., 1E12-F041B) has experienced 2 failures, one on its open test and one on its close test. The open test issue found the packing gland out of alignment. This was repaired in C1R14. In C1R11 (2008), the closed test found the clearances between the disk and the valve body to be out of tolerance. The disk hole was re-bored to align the disk and body in C1R11. No repeat close test failure has occurred since C1R11.

High pressure core spray system testable check valve (i.e., 1E22-F005) had back to back failures of its check closed test, one in C1R11 and again in C1R12 (2010). Each time, repair work orders where completed. In C1R11 the valve was disassembled, no issues noted, the valve was reassembled, and passed its post-maintenance testing (PMT). In C1R12 it was disassembled and noted there were out of tolerance gaps between the valve disk and body. This was corrected under the repair work order and no repeat failure has occurred since C1R12.

Reactor core isolation cooling (RCIC) system testable check valve (i.e., 1E51-F066) has experienced multiple failures with the last two in consecutive outages. This valve is in a position to be tested during "refueling only outages" in addition to "refueling/maintenance outages." Until four consecutive years of tests are passed, this valve will be tested each refueling outage (i.e., 1 year test interval).

During the proposed "refueling only outage" there is no intent to perform maintenance on CSJ/RFJ valves other than stroking the valves as required (i.e. those valves classified as CSJ). If a valve were to fail during stroking, corrective action would be implemented and a post maintenance test would be performed prior to returning the valve to service. There would be no change in test frequency and no defined number of consecutive successful tests required to return to a 24 month test frequency. History shows that a 24-month testing frequency has been acceptable for these valves.

By maintaining the current testing frequency, CPS maintains the current acceptable level of quality and safety with regards to the CPS RFJ valves. This change in outage schedules will also increase the level of quality and safety for the CPS CSJ valves due to the planned outage in between the "refueling/maintenance outages" that will provide time to perform some of the CSJ valve testing. This statement is supported by the years of testing these valves at a 24-month interval.

In summary, CPS is proposing to test all of its CSJ and RFJ valves every 2 years during the "refueling/maintenance outages" and continue testing the CSJ valves as time allows during the "refueling only outage" to satisfy the requirements of ISTC-3521(g) and ISTC-3522(e). This will maintain the current time between tests for the CSJ and RFJ valves at a maximum of 2 years.

The proposed alternative identified in this relief request shall be utilized during the third 10-Year IST interval.

3.1.2 NRC Staff Evaluation

In the submittal, the licensee indicated that CPS is currently on a 24-month refuel cycle, but is in the process of transitioning to a 12-month refueling cycle. The licensee indicated that the reason for the change was that that a 12-month refueling cycle with an alternating "refueling only outage" followed by a "refueling/maintenance outage" cycle would be financially beneficial.

The ASME OM Code recognizes that not every valve can meet the nominal exercise frequency every 3 months due to the exercise not being practicable during normal plant operation. The ASME OM Code allows extension of the exercise requirement to be performed during a cold shutdown event. Valve exercising shall commence within 48 hours of achieving cold shutdown and continue until all testing is complete or the plant is ready to return to operation at power. If valve exercising is not practicable during a cold shutdown then exercising will be limited to refueling outages. All valve tests required to be performed during a refueling outage shall be completed before returning the plant to operation at power.

Section ISTC of the ASME OM Code delineates the requirements for IST of valves in light-water reactor nuclear power plants. The valve testing requirements outlined in section ISTC-3500 of the ASME OM Code can be simply stated as:

- Exercise Test (nominally every 3 months)
- Leakage Test (nominally once every 2 years)
- Valve Obturator Movement (verify during exercise test)
- Fail-Safe Actuators (verify during exercise test)
- Remote Position Indicator Test (nominally once every 2 years)

In lieu of this requirement, the licensee has proposed an alternative. A 12-month refuel cycle would require all ASME OM Code valve exercise tests that have been justified to be extended to be completed prior to returning the plant to operation at power. CPS proposes to continue testing CSJ and RFJ valves every two years with the CSJ valves being tested during all cold shutdowns lasting longer than 48 hours and continuing until the plant is ready to return to operation at power per ISTC-3521(g) and ISTC-3522(e).

The NRC staff reviewed the proposed valve scheduling during cold shutdowns longer than 48 hours and valve maintenance history to ensure that the licensee's program will not allow CSJ valves to exceed the 24 month test interval. The NRC staff questioned how the licensee determines scheduling for the CSJ valves during the shorter "refueling only" outages. In the supplement dated March 26, 2015, the licensee indicated that based on the current outage plans, CPS proposes treating the "refueling only outage" as a cold shutdown in accordance with OM Code requirements and not a refueling outage. Valve selection for testing will be in accordance with the guidance of NUREG-1482 Revision 2 section 3.1.1.1 "IST Cold Shutdown Testing". The NRC staff finds that use of this guidance should ensure that the valves tested in the preceding cold shutdown are the last valves tested during the next cold shutdown with the exception of valves that must be tested during each cold shutdown.

The NRC staff reviewed the proposed testing for the RFJ valves to assess the effectiveness of the proposed test interval. The NRC staff questioned the maintenance history for the affected valves to assess whether sufficient reliability would be maintained. In the supplement dated March 26, 2015, the licensee indicated that based on the maintenance history 70 valves that have been designated as RFJ valves will maintain their current 24 month test interval with the exception of Reactor Core Isolation Cooling system testable check valve 1E51-F066. This valve has experienced multiple failures with the last two consecutive outages. Corrective maintenance has been performed on this valve. To verify that the corrective maintenance action is effective, CPS proposes to maintain testing check valve 1E51-F066 during each "refueling only outage" and "refueling/maintenance outage" interval until four successful consecutive years of tests are completed. Upon completion, check valve 1E51-F066 will return to the normal 24 month test interval.

The NRC staff reviewed the maintenance history for 70 RFJ valves to determine whether some valves would benefit from the ASME OM Code required interval test frequency. The NRC staff found that the licensee's corrective maintenance has been sufficient to address almost all identified performance issues for valve IE51-F066, and therefore concludes that maintaining the 24 month test interval for the 70 RFJ valves is acceptable.

Based on the satisfactory maintenance history and valve scheduling for RFJ and CSJ valves, the NRC staff has determined that the alternative provides an acceptable level of quality and safety.

3.2.1 Licensee's Alternative RR 2204

ASME OM Code Requirements:

ASME OM Code Case OMN-1 "Alternative Rules for Preservice and Inservice Testing of Active Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants" Subsection 3.6.1, "Normal Exercising Requirements," states that all MOVs, within the scope of this Code Case, shall be full-cycle exercised at least once per refueling cycle with the maximum time between exercises to be not greater than 24 months. Full-cycle operation of an MOV, as a result of normal plant operations or Code requirements, may be considered an exercise of the MOV, if documented. If full-stroke exercising of an MOV is not practical during plant operation or cold shutdown, full-stroke exercising shall be performed during the plant's refueling outage.

Alternative testing is requested for all ASME Class 1, 2, and 3 MOVs currently included in the CPS MOV testing program.

The licensee states:

Reason for Request

In accordance with 10 CFR 50.55a(z)(1), relief is requested from the requirements of OM Code Case OMN-1, Subsection 3.6.1. The proposed alternative would provide an acceptable level of quality and safety.

Subsection 3.6.1 requires the applicable valves to be tested each refueling outage not to exceed 24 months. CPS is currently on a 24 month fuel cycle, thus, the applicable valves are currently being tested every 24 months. For financial reasons, CPS will be transitioning to a 12 month fuel cycle beginning in the Spring of 2015; performing a refueling outage every 12 months. CPS intends to alternately schedule one short outage that will focus primarily on refueling activities with minimal maintenance activities (i.e., "refueling only outages") and one more traditional refueling outage consisting of both refueling activities and maintenance activities (i.e., "refueling/maintenance outages"). Based on the above referenced code case requirements, CPS will be required to test all valves every 12 months. This in effect cuts the allowable testing frequency of these valves in half (i.e., 12 months vs 24 months). This change in outage scheduling and its OM Code implications do not provide a compensating increase in level of quality or safety.

This relief request is being pursued to maintain the current (i.e., 24 month) exercise frequency for the CPS valves covered by OMN-01. This will allow CPS to maintain a minimal amount of testing during the "refueling only outage" and still maintain the same level of quality and safety by continuing the 24 month frequency that these valves have historically been tested at during the "refueling/maintenance outage."

Proposed Alternative

CPS proposes to continue performing the exercise tests required by Subsection 3.6.1 of OMN-1 for the applicable valves every 24 months, as opposed to the required once per refueling cycle not to exceed 24 months.

By maintaining the current testing frequency at once every 24 months, CPS maintains the current acceptable level of quality and safety with regards to valves covered by OMN-1. This statement is supported by the years of testing these valves at a 24 month interval.

In summary, CPS is proposing to perform the exercise test for all of the valves covered by OMN-1 every 24 months. This will maintain the current time between tests at 2 years.

3.2.2 NRC Staff Evaluation

The ASME OM Code establishes the requirements of preservice and IST and examination of certain components to assess their operational readiness in light-water reactor nuclear power plants. It identifies the components subject to test or examination, responsibilities, methods, intervals, parameter to be measured and evaluated, criteria for evaluating the results, corrective action, personnel qualification, and record keeping. These requirements apply to pumps and valves that are required to perform a specific function in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident.

Section ISTC-3500 of the ASME OM Code delineates the valve testing requirements, which can be simply stated as:

a) Exercise Test (nominally every 3 months)
b) Leakage Test (nominally once every 2 years)
c) Valve Obturator Movement (verify during exercise test)
d) Remote Position Indicator Test (nominally once every 2 years)

In lieu of the testing requirements of section ISTC of the ASME OM Code, the licensee may implement an alternative provided that the test method has been authorized by NRC staff per 10 CFR 50.55a(z)(1) or 10 CFR 50.55.a(z)(2). Previously, CPS requested and was authorized to use alternative ASME OM Code case OMN-1 on June 10, 2010 (ADAMS Accession No. ML101340691). ASME OM Code Case OMN-1 expands the testing requirements to include static and dynamic diagnostic testing of MOVs. The use of diagnostics offers a more comprehensive evaluation of the components health and provides engineering justification for extending test intervals. The MOV testing requirements of ASME OM Code Case OMN-1 can be simply stated as:

a) One time design basis verification test
b) MOV exercise (once per refuel cycle not to exceed 24 months)
c) Diagnostic test (mix of static and dynamic until appropriate test interval is set)

The June 2010, approval allows the licensee to replace the requirements of ASME OM Code Case OMN-1 with the exception of the leakage test requirements.

The NRC staff reviewed the submittal to assess whether the MOV diagnostic test interval remained appropriate. The NRC staff recognizes that the MOV exercise is not considered to be part of the diagnostic test. It is a preventive maintenance action to maintain proper lubrication of the internal moving parts with the requirement to complete the exercise once every 2 years. Calculations for determining MOV functional margin shall account for potential performance related degradation. Maintenance activities and associated intervals can affect test intervals

and shall be considered. The inservice diagnostic test interval shall be set such that the MOV functional margin does not decrease below acceptance criteria.

Based on the ASME OM Code case OMN-1 permitting the MOV exercise interval to not exceed 24 months and the licensee assertion that the current level of quality and safety will be maintained, the NRC staff finds that maintaining the MOV exercise test interval at 24 months continues to be sufficient to account for potential performance related degradation. Therefore, the NRC staff finds that the alternative provides an acceptable level of quality and safety.

## 4.0 CONCLUSION

As set forth above, the NRC staff finds that the proposed alternative described in request 2203 provides an acceptable level of quality and safety for all ASME Class 1, 2, and 3 valves listed in CPS IST program CSJ and RFJ section 4 attachments. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1).

As set forth above, the NRC staff finds that the proposed alternative described in request 2204 provides an acceptable level of quality and safety for all ASME Class 1, 2, and 3 MOV currently included in the CPS MOV testing program. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1).

All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject requests for relief remain applicable.

Therefore, the NRC staff authorizes the proposed alternatives in RRs 2203 and 2204 for the third IST interval at CPS which began on June 15, 2010, and is currently scheduled to end on June 14, 2020.

Principle Contributor: Michael Farnan, NRR

Date of issuance: July 15, 2015

If you have any questions, please contact Ms. Eva A. Brown, at 301-415-2315 or via e-mail at eva.brown@nrc.gov.

Sincerely,

*/RA/*

Benjamin G. Beasley, Acting Branch Chief
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosure:
Safety Evaluation

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ADAMS Accession No. ML15180A407 *by memo

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 11, 2015

Mr. Bryan C. Hanson
President and Chief Nuclear Officer (CNO)
Exelon Generation Company, LLC
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: CLINTON POWER STATION, UNIT 1 - CORRECTION LETTER FOR SAFETY EVALUATION FOR ALTERNATIVES FROM ASME OM CODE REQUIRED FREQUENCY (TAC NOS. MF5344 AND MF5345)(RS-14-291 AND RS-14-292)

Dear Mr. Hanson:

By letters dated December 1, 2014, as supplemented by letters dated March 26, and June 3, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML14335A540, ML14335A541, ML15085A458 and ML15154A957, respectively) Exelon Generation Company, LLC (EGC), submitted alternatives to the required refueling outage frequency for cold and refueling shutdown justification valves, and motor operated valves at Clinton Power Station, Unit 1. On July 15, 2015, the U.S. Nuclear Regulatory Commission (NRC) staff issued a safety evaluation (SE) approving the proposed alternatives. On July 23, 2015, Mr. Timothy Byam notified the NRC staff of a minor error in the SE. The Table on page 4 of the SE should be corrected as follows to reflect the appropriate outages for the identified test failures. The changes to the table below are in bold:

| Valve (RFJ#) | Test Failure Outage (test type) |
|---|---|
| 1E12-F041B (RFJ-005) | C1R11 (CC) |
| 1E22-F005 (RFJ-005) | C1R11 (CC) |
| 1E51-F066 (RFJ-002) | C1R11 (CC) |
| 1B21-F032A (RFJ-003) | C1R11 (CC) |
| 1E21-F006 (RFJ-005) | **C1R12 (CC)** |
| 1E22-F005 (RFJ-005) | **C1R12 (CC)** |
| 1B21-F032B (RFJ-003) | **C1R12 (CC)** |
| 1E51-F066 (RFJ-002) | **C1R13 (CC)** |
| 1CM067 (RFJ-013) | **C1R14 (CC)** |
| 1E51-F066 (RFJ-002) | **C1R14 (CC)** |
| 1E12-F041B (RFJ-005) | **C1R14 (CO)** |

These corrections do not alter any findings or conclusions

Sincerely,

*/RA/*

Eva A. Brown, Senior Project Manager
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

cc w/encl: Distribution via Listserv

These corrections do not alter any findings or conclusions

Sincerely,

/RA/

Eva A. Brown, Senior Project Manager
Plant Licensing III-2 and
Planning and Analysis Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

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ADAMS ACCESSION NUMBER: ML15212A916 NRR-028

| OFFICE | LPL3-2/PM | LPL3-2/LA | EPNB/BC | LPL3-2/BC(A) |
|---|---|---|---|---|
| NAME | EBrown | SRohrer | DAlley | BBeasley (BPurnell For) |
| DATE | 8/6/15 | 8/06/15 | 8/10/15 | 8/11/15 |

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**UNITED STATES**
**NUCLEAR REGULATORY COMMISSION**
**WASHINGTON, D.C. 20555-0001**

February 21, 2017

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO)
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2; CLINTON POWER STATION, UNIT NO. 1; LASALLE COUNTY STATION, UNITS 1 AND 2; LIMERICK GENERATING STATION, UNITS 1 AND 2; NINE MILE POINT NUCLEAR STATION, UNITS 1 AND 2; PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3; AND R. E. GINNA NUCLEAR POWER PLANT — PROPOSED ALTERNATIVE TO USE ASME OM CODE CASE OMN-20 (CAC NOS. MF8226–MF8237)

Dear Mr. Hanson:

By application dated July 26, 2016 (Agencywide Documents Access and Management System Accession No. ML16209A496), Exelon Generation Company, LLC (the licensee) submitted a request in accordance with Paragraph 50.55a(z)(2) of Title 10 of the *Code of Federal Regulations* (10 CFR) for a proposed alternative to the requirements of 10 CFR 50.55a(f), "Inservice testing [IST] requirements," and the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code) for Braidwood Station, Units 1 and 2; Clinton Power Station, Unit No. 1; LaSalle County Station, Units 1 and 2; Limerick Generating Station, Units 1 and 2; Nine Mile Point Nuclear Station, Units 1 and 2; Peach Bottom Atomic Power Station, Units 2 and 3; and R. E. Ginna Nuclear Power Plant. The proposed alternative would allow the licensee to use ASME OM Code Case OMN-20, "Inservice Test Frequency," as an alternative to the IST frequencies for pumps and valves specified in ASME OM Code, Division 1, Section IST.

Specifically, pursuant to 10 CFR 50.55a(z)(2), the licensee requested to use the alternative on the basis that complying with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2).

Therefore, pursuant to 10 CFR 50.55a(z)(2), the NRC staff authorizes the use of the proposed alternative for the remainder of the current 10-year IST interval for each plant and for the fourth 10-year IST interval at LaSalle County Station, Units 1 and 2, as specified in the application, or until such time as the NRC approves Code Case OMN-20 for general use through a revision of NRC Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," and incorporates it by reference in 10 CFR 50.55a, "Codes and standards," whichever occurs first.

All other requirements of the ASME OM Code for which relief has not been specifically requested and authorized by NRC staff remain applicable.

If you have any questions, please contact Blake Purnell at 301-415-1380 or via e-mail at Blake.Purnell@nrc.gov.

Sincerely,

Kimberly J. Green for

David J. Wrona, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456, STN 50-457,
50-461, 50-373, 50-374,
50-352, 50-353, 50-220,
50-410, 50-277, 50-278,
and 50-244

Enclosure:
Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

# PROPOSED ALTERNATIVE TO USE ASME OM CODE CASE OMN-20

# BRAIDWOOD STATION, UNITS 1 AND 2;

# CLINTON POWER STATION, UNIT NO. 1;

# LASALLE COUNTY STATION, UNITS 1 AND 2;

# LIMERICK GENERATING STATION, UNITS 1 AND 2;

# NINE MILE POINT NUCLEAR STATION, UNITS 1 AND 2;

# PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3; AND

# R.E. GINNA NUCLEAR POWER PLANT.

# EXELON GENERATION COMPANY, LLC

# DOCKET NOS. STN 50-456, STN 50-457, 50-461, 50-373, 50-374, 50-352, 50-353, 50-220, 50-410, 50-277, 50-278, AND 50-244

## 1.0 INTRODUCTION

By application dated July 26, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16209A496), Exelon Generation Company, LLC (the licensee) submitted a request in accordance with Paragraph 50.55a(z)(2) of Title 10 of the *Code of Federal Regulations* (10 CFR) for a proposed alternative to the requirements of 10 CFR 50.55a(f), "Inservice testing [IST] requirements," and the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (ASME OM Code) for Braidwood Station, Units 1 and 2; Clinton Power Station, Unit No. 1; LaSalle County Station, Units 1 and 2; Limerick Generating Station, Units 1 and 2; Nine Mile Point Nuclear Station, Units 1 and 2; Peach Bottom Atomic Power Station, Units 2 and 3; and R. E. Ginna Nuclear Power Plant. The proposed alternative would allow the licensee to use ASME OM Code Case OMN-20, "Inservice Test Frequency," as an alternative to the IST frequencies for pumps and valves specified in ASME OM Code, Division 1, Section IST.

Specifically, pursuant to 10 CFR 50.55a(z)(2), the licensee requested to use the alternative on the basis that complying with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Enclosure

## 2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(f) require, in part, that IST of certain ASME Code Class 1, 2, and 3 components must meet the requirements of the ASME OM Code and applicable addenda, except where alternatives have been authorized by the NRC.

The regulations in 10 CFR 50.55a(z) state, in part, that alternatives to the ASME Code requirements may be authorized by the NRC if the licensee demonstrates that: (1) the proposed alternative provides an acceptable level of quality and safety, or (2) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

## 3.0 TECHNICAL EVALUATION

### 3.1 Licensee's Alternative Request

The proposed alternative relates to the test frequency requirements for pumps and valves specified in the ASME OM Code, Division 1, Section IST. The licensee provided, as shown in the table below, the currently applicable ASME OM Code editions and Addenda for each plant, and the end date for the current 10-year IST interval.

| PLANT | ASME OM CODE | END OF CURRENT IST INTERVAL |
|---|---|---|
| Braidwood Station, Units 1 and 2 | 2001 Edition through 2003 Addenda | July 28, 2018 |
| Clinton Power Station, Unit No. 1 | 2004 Edition, no Addenda | June 30, 2020 |
| LaSalle County Station, Units 1 and 2 | 2001 Edition through 2003 Addenda | October 11, 2017 |
| Limerick Generating Station, Units 1 and 2 | 2004 Edition, no Addenda | January 7, 2020 |
| Nine Mile Point Nuclear Station, Units 1 and 2 | 2004 Edition, no Addenda | December 31, 2018 |
| Peach Bottom Atomic Power Station, Units 2 and 3 | 2001 Edition through 2003 Addenda | August 27, 2018 |
| R. E. Ginna Nuclear Power Plant | 2004 Edition, no Addenda | December 31, 2019 |

In addition, the licensee identified that the ASME OM Code, 2004 Edition with 2006 Addenda, will be applicable to the fourth 10-year IST interval at LaSalle County Station, Units 1 and 2, which begins on October 12, 2017, and ends on October 11, 2027.

The licensee proposes to adopt the ASME OM Code Case OMN-20, which was published in conjunction with the ASME OM Code, 2012 Edition. The purpose of this code case is to prescribe a methodology for determining acceptable tolerances for pump and valve test frequencies. This proposed alternative will be used for the remainder of the current 10-year IST interval for each plant and for the fourth 10-year IST interval at LaSalle County Station, Units 1 and 2, or until such time as the NRC approves Code Case OMN-20 for general use through revision of NRC Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," and incorporates it by reference in 10 CFR 50.55a, "Codes and standards," whichever occurs first.

## 3.2 NRC Staff Evaluation

Historically, licensees have applied, and the NRC staff has accepted, the standard technical specification (TS) definitions for IST intervals (including allowable interval extensions) to ASME OM Code-required testing (see Section 3.1.3 of NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants: Inservice Testing of Pumps and Valves and Inservice Examination and Testing of Dynamic Restraints (Snubbers) at Nuclear Power Plants," October 2013 (ADAMS Accession No. ML13295A020)). Recently, the staff reconsidered the allowance of using TS testing intervals and interval extensions for IST not associated with TS surveillance requirements. As noted in Regulatory Issue Summary 2012-10, "NRC Staff Position on Applying Surveillance Requirements 3.0.2 and 3.0.3 to Administrative Controls Program Tests," dated August 23, 2012 (ADAMS Accession No. ML12079A393), the NRC determined that programmatic test intervals cannot be extended in accordance with TS Surveillance Requirement 3.0.2. This includes all IST described in the ASME OM Code not specifically required by TS surveillance requirements.

Following this development, the NRC staff sponsored and co-authored an ASME OM Code inquiry and Code Case to modify the ASME OM Code to include TS-like test interval definitions and interval extension criteria. The resultant Code Case OMN-20 was approved by the ASME Operation and Maintenance Standards Committee on February 15, 2012, with the NRC representative voting in the affirmative. Code Case OMN-20 was subsequently published in conjunction with the ASME OM Code, 2012 Edition. The licensee has proposed to adopt Code Case OMN-20 at its facilities as an alternative to the IST frequencies for pumps and valves specified in the ASME OM Code, Division 1, Section IST.

The NRC staff has determined that requiring the licensee to meet the ASME OM Code requirements and applicable ASME OM Code Cases, without an allowance for defined test intervals and test interval extensions for IST of pumps and valves, would cause a loss of operational flexibility for meeting the ASME OM Code requirements and result in a hardship without a compensating increase in the level of quality and safety. In addition, allowing the usage of Code Case OMN-20 provides reasonable assurance of operational readiness of pumps and valves subject to the ASME OM Code, Division 1, Section IST, requirements. Based on the above, and the prior acceptance by the staff of similar TS test interval definitions and interval extension criteria, the staff concludes that implementation of the test interval definitions and interval extension criteria contained in ASME OM Code Case OMN-20 are acceptable.

## 4.0 CONCLUSION

As set forth above, the NRC staff has determined that complying with the current ASME OM Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety and that the proposed alternative to adopt Code Case OMN-20 provides reasonable assurance that the affected components at the licensee's facilities are operationally ready. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2) for this alternative.

Therefore, pursuant to 10 CFR 50.55a(z)(2), the NRC staff authorizes the use of the proposed alternative for the remainder of the current 10-year IST interval for each plant and for the fourth 10-year IST interval at LaSalle County Station, Units 1 and 2, as specified in the application (Section 3.1 of this safety evaluation), or until such time as the NRC approves Code Case

OMN-20 for general use through revision of NRC Regulatory Guide 1.192 and incorporates it by reference in 10 CFR 50.55a, whichever occurs first.

All other ASME OM Code requirements for which relief was not specifically requested and approved remain applicable.

Principal Contributor: J. Huang, NRR

BRAIDWOOD STATION, UNITS 1 AND 2; CLINTON POWER STATION, UNIT NO. 1; LASALLE COUNTY STATION, UNITS 1 AND 2; LIMERICK GENERATING STATION, UNITS 1 AND 2; NINE MILE POINT NUCLEAR STATION, UNITS 1 AND 2; PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3; AND R. E. GINNA NUCLEAR POWER PLANT — PROPOSED ALTERNATIVE TO USE ASME OM CODE CASE OMN-20 (CAC NOS. MF8226–MF8237) DATED

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| DATE | 2/16/17 | 2/15/17 | 2/14/17 | 2/21/17 |

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In order to cut down on re-copying already presented data RAIs can be found with their associated relief request.

# ATTACHMENT 7
# CODE CASE INDEX

Revision 9
7/12/2018

| CODE CASE NUMBER | TITLE |
|---|---|
| OMN-1 | Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light-Water Reactor Power Plants OM Code-1995, Subsection ISTC |
| OMN-20 | Inservice Test Frequency |

# ATTACHMENT 8

# COLD SHUTDOWN JUSTIFICATION INDEX

Revision 9
7/12/2018

## COLD SHUTDOWN JUSTIFICATION INDEX

| | |
|---|---|
| CSJ-101 | 1B21-F022A, 1B21-F022B, 1B21-F022C, 1B21-F022D, 1B21-F028A, 1B21-F028B, 1B21-F028C, 1B21-F028D: Main Steam Isolation Valves (MSIV's) |
| CSJ-102 | 1RE019 & 1RF019 – Drywell Isolation Valve Testing Impractical on Quarterly Basis |
| CSJ-103 | 1SA032 Service air inboard isolation valve |
| CSJ-104 | 1VR006A/B, 1VR007A/B, 1VR035, 1VR036, 1VR040, 1VR041 1VQ003 Containment HVAC valves |
| CSJ-105 | 1E12-F050A, 1E12-F050B, 1E51-F066 PIV check valves |
| CSJ-106 | 1IA005, 1IA006, 1IA007, 1IA008: Instrument Air System Isolation Valves |
| CSJ-107 | 1VQ004A, 1VQ004B, 1VR001A, 1VR001B: Containment Ventilation and Purge CIV's |
| CSJ-108 | 1E31-F014,15,17,18; 1E51-F063, 64 Containment and/or Drywell Isolation Valves |
| CSJ-109 | Deleted |
| CSJ-110 | 1E51-F065: RCIC Injection Line Check Valve |
| CSJ-111 | 1E12-F042A, 1E12-F042B, 1E12-F042C, 1E21-F005, 1E22-F004, 1E51-F013: RCS PIVs |
| CSJ-112 | 1G33-F001, 1G33-F004: Reactor Water Cleanup system CIVs |
| CSJ-113 | 1IA012A, 1IA013A: Instrument Air Containment Isolation valves |
| CSJ-114 | Deleted |
| CSJ-115 | 1B33-F019, 1B33-F020: RR Sample Line Drywell Isolation Valves |
| CSJ-116 | 1PS004/9/16/22/31/34/56/70: PASS Inboard Containment Isolation Valves. |
| CSJ-117 | 1B21-F016/19: Main Steam Line Drain Valves |
| CSJ-118 | 1SX346A/B: VX Inlet Vacuum Breakers |

# ATTACHMENT 9
# COLD SHUTDOWN JUSTIFICATIONS

Revision 9
7/12/2018

## Cold Shutdown Justification

CSJ-101

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1B21-F022A | MS | 1 | A |
| 1B21-F022B | MS | 1 | A |
| 1B21-F022C | MS | 1 | A |
| 1B21-F022D | MS | 1 | A |
| 1B21-F028A | MS | 1 | A |
| 1B21-F028B | MS | 1 | A |
| 1B21-F028C | MS | 1 | A |
| 1B21-F028D | MS | 1 | A |

**Function**:
The Main Steam Isolation Valves (MSIV's) are normally open valves that close to isolate containment from the main steam system.

**Justification:**
Exercising these valves during normal operation isolates one line of steam flow to the turbine. Isolation of a main steam header would cause a severe pressure transient in the associated main steam line possibly resulting in a plant trip. Additionally, closure of an MSIV, at power, could potentially result in challenging the setpoint of the main safety relief valves causing inadvertent lifting. Industry experience also indicates that closing the MSIVs under high steam flow conditions may be a contributing factor in observed seat degradation. Seat degradation occurring during valve exercising could result in a loss of primary containment integrity. Therefore, it is impractical to full-stroke exercise these valves to the closed position on a quarterly (nominal 92 days) frequency during plant operation.

The MSIVs have the capability and are being partial stroked during the Technical Specification MSIV scram sensor channel functional test requirements. To completely partially fail-safe exercise these valves to the closed position, the airlines to the valves must be isolated. Thus, with the loss of air, the fail-safe mechanism (springs) would be demonstrated. The resultant exercising of the Main Steam Isolation Valves (MSIV's) could place the plant in an unsafe mode of operation causing transient conditions which could result in a reactor scram. Therefore, partial stroke exercise testing increases the risk of a valve closure when the unit is generating power. This concern was realized within the fleet and the industry and has resulted in full closure of the applicable MSIV and a reactor trip on high pressure.

NUREG-1482, Rev 2 "Guidelines for Inservice Testing at Nuclear Power Plants", Section 2.4.5, "Deferring Valve Testing to Cold Shutdown or Refueling Outages" identifies

"impractical conditions justifying test deferrals" as those conditions that could result in unnecessary challenges to safety systems, place undue stress on components, cause unnecessary cycling of equipment, or unnecessarily reduce the life expectancy of the plant systems and components. As such, it is impractical to partially exercise MSIVs on a quarterly (nominal 92 days) frequency during plant operation.

**Alternative Test:**
These valves will be full-stroke exercise tested to the closed position and fail-safe tested during cold shutdowns per ISTC-3521(c) and (f).

**Additional Information to Support Alternative Test**
On November 1, 2017, Exelon Generation Company, LLC (Exelon) submitted a relief request associated with the Inservice Testing (IST) programs for Clinton Power Station, Unit 1; Dresden Power Station, Units 2 and 3; James A. FitzPatrick Nuclear Power Plant; LaSalle County Station, Units 1 and 2; Nine Mile Point Nuclear Station, Units 1 and 2; Oyster Creek Nuclear Generating Station; and Quad Cities Nuclear Power Station, Units 1 and 2.

The relief request submitted on November 1, 2017 proposed an authorization to continue to partial stroke exercise MSIVs on a limited basis with a Cold Shutdown Justification currently in place for MSIVs. Exelon proposed that the partial stroke exercise of MSIVs would be performed in accordance with the Surveillance Frequency Control Program (SFCP) and would partially stroke exercise MSIVs at variant test intervals until the final refueling outage testing interval was achieved. Exelon's relief request was submitted due to the belief that ISTC-3521(b) and ISTC-3521(c) prohibited any type of exercising of MSIVs with a cold shutdown in place.

On February 26, 2018 the NRC held a public meeting to address and explain why Exelon should withdraw the relief request submitted on November 1, 2017. The NRC explained that partial stroke exercise of MSIVs is not prohibited for testing outside of ASME OM Code. The NRC staff explained ISTC 3521(b) and ISTC-3521(c) explicitly states that stroking "may be limited" and does not state stroking "shall be limited." The NRC staff explained that Exelon's concern, that partial stroking at power will be prohibited if CSJ is implemented for MSIVs under ISTC-3521(c), was incorrect and the use and implementation of ISTC-3521(c) will not prohibit on-line exercising of MSIVs reasons outside of ASME OM Code requirements -- provided a justifiable cold shutdown justification is documented in IST Program Plan document for each site. Based on this information the NRC staff verbally explained to Exelon that the relief request submitted on November 1, 2017 is not necessary and should be withdrawn.

Based on the above information, Exelon withdrew its relief request for ISTC-3521(b) and utilize ISTC-3521(c) along with SFCP that could partially stroke exercise MSIVs during power on frequencies commensurate with the SFCP frequencies. This withdraw was applicable to the relief request submitted by Exelon on November 1, 2017 for Clinton Power Station, Unit 1; Dresden Power Station, Units 2 and 3; James A. FitzPatrick Nuclear Power Plant; LaSalle County Station, Units 1 and 2; Nine Mile Point Nuclear Station, Units 1 and 2; Oyster Creek Nuclear Generating Station; and Quad Cities Nuclear Power Station, Units

1 and 2. It is understood by Exelon, based on the NRC public meeting held on February 26, 2018 and the information contained in this withdrawal, Peach Bottom's relief request approved on December 7, 2017 is not needed.

As such, the MSIVs will be exercise, stroke time, and fail-safe test to the closed position in accordance with ISTC-3521(c) & ISTC-5131 during each cold shutdown except as specified in ISTC-3521(g). Additionally, MSIVs will be partial stroke exercised in accordance with the Surveillance Frequency Control Program (SFCP) at variant test intervals until the final refueling outage testing interval was achieved.

## Cold Shutdown Justification

CSJ-102

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1RE019 | RE | 2 | B |
| 1RF019 | RF | 2 | B |

Function:

1RE019 - Drywell RE Inboard Isolation Control Valve - This valve must close to isolate the drywell from the equipment drain system during emergency and accident conditions.

1RF019 - Drywell RF Inboard Isolation Control Valve - This valve must close to isolate the drywell from the floor drain water system during emergency and accident conditions.

Basis for Justification:

These normally open air operated valves have a safety function to provide drywell isolation in the event of an accident. They are normally open to allow pumping down and processing the drywell floor and equipment drains sumps during normal operation. Failure of these inaccessible valves during the quarterly test could result in an unnecessary shutdown since the drywell floor/equipment drain sumps would not be able to be pumped down for processing.

Based on the above, these valves are impractical to test on a quarterly basis as per NUREG 1482, Section 3.1.1, "Deferring Valve Testing to Each Cold Shutdown or Refueling Outage".

These valves have no open safety function.

Alternate Test:

The Drywell Isolation valves 1RE019 and1RF019 will be fail safe tested to the closed position during Cold Shutdown.

## Cold Shutdown Justification

CSJ-103

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1SA032 | SA | 2 | B |

Function:

Valve 1SA032 is the drywell Service Air Inboard Isolation Valve. It must close to isolate the drywell from the service air system during emergency and accident conditions requiring drywell isolation.

Basis for Justification:

Valve 1SA032 is the drywell Service Air inboard Isolation Valve. It is required to automatically close within 10 seconds upon receipt of an automatic isolation signal to isolate the drywell from the service air system. It is the drywell isolation valve for Penetration 1MD-059 [P&ID M05-1048 Sheet 6]. This valve fails closed on loss of air or electrical power and may be remotely closed by the operator. It forms a part of the drywell boundary. There are requirements that limit total drywell bypass leakage. There are, however, no specific requirements for seat leakage for individual valves [ITS B 3.6.5.3].

This valve opens to provide a flow path for Service Air to the drywell hose stations. This is not a safety function and is not required during normal power operation. During normal power operation the drywell is inaccessible and the hose stations this valve supplies are not used.

The closing safety function for 1SA032 is limited to operating modes 1, 2 and 3. (Ref. Tech Spec 3.6.5.3) Since Service Air through this valve is not required during Modes 1, 2 and 3, the only time it is cycled is during quarterly stroke time testing. Exercising this valve increases the potential for air leakage inside the drywell with subsequent drywell pressurization. This could increase the frequency for venting the drywell resulting in cycling of the hydrogen mixing compressors and unnecessarily reduce their life expectancy. Step 8.3, Drywell Venting, of CPS procedure 3316.01, states that each hydrogen mixing compressor should not be run for more than 3 hours per month to prevent exceeding the expected 40 year life runtime. In addition, leakage resulting from stroke time testing could require a plant shutdown to implement repairs. This concern would be exacerbated by other conditions inside the drywell also contributing to drywell pressurization that were already existent at the time of the stroke time test.

The possibility of stroke time testing resulting in air leakage is documented on IR 519897, issued on 8/14/06. IR 519897 identified a condition of a potential air leak on one or both air operated drywell isolation valves 1VQ002 and 1VQ003. In this event, the frequency of drywell venting increased following IST surveillance testing in accordance with 9061.03C005. The issue report identified that following valve stroking the venting frequency increased from once every 24 hours to once every 12 hours. A number of IRs have been generated over the past years as a result of the hydrogen mixing compressors exceeding the 3 hour run time identified in procedure 3316.01.

In addition to the above, instrument air valve 1IA818 in the supply line to the actuator will be maintained in the closed during MODEs 1, 2 and 3. The solenoid valve to the actuator will remain energized because 1SA032 shares a hand switch with containment isolation valve 1SA029, which is maintained in the open position during normal power operation. Since the actuator spring closes, isolating air to its actuator will not impact the closing safety function for the valve. Therefore although 1SA032 will not be secured in its closed safety position, it is expected it will be in its closed safety position if called upon to perform is closing safety function.

Section 2.4.5 of NUREG 1482, Rev. 2, identifies impractical conditions justifying test deferrals include those conditions which could cause an unnecessary plant shutdown, cause unnecessary cycling of equipment or unnecessarily reduce the life expectancy of the plant systems and components. Based on the above discussion and NUREG 1482 quarterly stroke time testing of 1SA032 is considered impractical.

Alternate Test: Valve 1SA032 will be exercise tested closed during Cold Shutdown.

## Cold Shutdown Justification

CSJ-104

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1VR006A/B, 1VR007A/B, 1VR035, 1VR036, 1VR040 1VR041 | VR | 2 | B |
| 1VQ003 | VQ | 2 | B |

Function:

1VR006A. - Continuous CNMT HVAC Supply Outboard Isolation - This valve must close to isolate containment from the continuous containment purge system during emergency and accident conditions.

1VR006B - Continuous CNMT HVAC Supply Inboard isolation - This valve must close to isolate containment from the continuous containment purge system during emergency and accident conditions.

1VR007A – CCP Outboard Exhaust Isolation Valve - This valve must close to isolate containment from the continuous containment purge system during emergency and accident conditions.

1VR007B - CCP Inboard Exhaust Isolation Valve - This valve must close to isolate containment from the continuous containment purge system during emergency and accident conditions.

1VR035 - 1PDCVR020 Air Line Isolation Valve - This valve must close to isolate containment from the containment building ventilation system during emergency and accident conditions.

1VR036 - 1PDCVR020 CNMT Purge Air Line Isolation Valve - This valve must close to isolate containment from the containment building ventilation system during emergency and accident conditions.

1VR040 - CCP Air Line Isolation Valve - This valve must close to isolate containment from the containment building ventilation system during emergency and accident conditions.

1VR041 - 1TSVR166 Isolation Valve - This valve must close to isolate containment from the containment building ventilation system during emergency and accident conditions.

1VQ003 – Exhaust Outboard Drywell Isolation Valve - This valve must close to isolate the drywell from the primary containment purge system during emergency and accident conditions.

Basis for Justification:

Valves 1VR006A/B are containment isolation valves on the CCP inlet to containment. They are normally open to support continuous containment purge (CCP). CCP is used during normal operation to maintain primary to secondary containment differential pressure within Tech Spec limits. A failure of one of them to close during stroke time testing would require the penetration to be administratively isolated, resulting in loss of CCP System function. Likewise a failure of the valve to open following stroke time testing would result in the loss of CCP System function.

Valves 1VR007A/B are normally open containment isolation valves on the outlet side of the CCP System. A failure of one of them to close during stroke time testing would require the penetration to be administratively isolated, resulting in loss of system function. Likewise a failure of the valve to open following stroke time testing would result in the loss of CCP System function.

Valves 1VR036 and 1VR037 are solenoid valves that provide containment isolation for instrument air lines supplying valves 1VR006A/7A. Valves 1VR035 and 1VR040 are solenoid valves that provide containment isolation for instrument air lines supplying valves 1VR006B/7B. A failure of one of these valves during testing would require the penetration to be administratively isolated resulting in one of the 1VR006A/B or 1VR007A/B valves closing due to loss of air. Consequently failure of one of these valves could result in loss of the CCP System function.

1VQ003 is a normally open drywell isolation valve. This valve is required to automatically close on a drywell isolation signal. This valve is located in the main flow path for the CCP System. If the valve failed closed during stroke time testing, CCP operation would be interrupted until the valve could be repaired and reopened. The inboard CCP drywell isolation valves are maintained in the closed position during MODES 1, 2 and 3.

Loss of the CCP system function could result in a plant shutdown. CCP is used during normal operation to maintain primary to secondary containment differential pressure within Tech Spec limits. Tech Spec 3.6.1.4 requires the primary containment to secondary containment differential pressure to be $\geq$ -0.25 psid and $\leq$ 0.25 psid. If these differential pressure limits are not maintained, there is a 1 hr time limit for restoring them. If the limits are not restored within 1 hour, there is a 12 hr time limit for being in MODE 3 and a 36 hr

time limit for being in MODE 4. According to Operations personnel there is no standard alternate method for returning the differential pressure to within limits and it may be difficult to maintain the Tech Spec required primary containment to secondary containment differential pressure if the CCP System is not available. Therefore stroke time testing could result in an unnecessary plant shutdown.

As such, these valves are impractical to test on a quarterly basis per section 2.4.5 of NUREG 1482 Rev 2 because testing them could result in an unnecessary plant shutdown.

Alternate Test: The valves included in this cold shutdown justification will be exercise tested closed during Cold Shutdown

## Cold Shutdown Justification

CSJ-105

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1E12-F050A | RH | 2 | A/C |
| 1E12-F050B | RH | 2 | A/C |
| 1E51-F066 | RI | 1 | A/C |

Function: These check valves are Reactor Coolant Pressure Boundary. They are required to close to limit leakage between the high pressure Reactor Coolant System and connected systems (RHR and RCIC) in a LOCA.

Basis for Justification: These check valves are Reactor Coolant Pressure Boundary. They are required to close to limit leakage between the high pressure Reactor Coolant System and connected systems (RHR and RCIC) in a LOCA. It is not practical to perform a full or partial exercise test of these valves quarterly during normal operation. Opening these valves at power would remove one of the two valves in its respective line from performing its PIV function. If the second valve was in a degraded condition, this could create a pressure spike throughout the system, since each system is maintained filled and pressurized. Depending on the severity of the pressure spike, this could result in an inter-system LOCA with the potential for release of reactor coolant outside the primary containment. This is considered an impact as per NUREG 1482, R/2, 3.1.1.

Alternate Test: Closure for these valves will be performed during cold shutdown conditions. Additional assurance of proper closure is provided by performance of leak rate testing during refueling outages.

NOTE: Bi-directional exercising in the non-safety related open direction is performed at the same frequency for valves 1E12-F050A and B.

## Cold Shutdown Justification

CSJ-106

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1IA005 | IA | 2 | A |
| 1IA006 | IA | 2 | A |
| 1IA007 | IA | 2 | B |
| 1IA008 | IA | 2 | B |

Function: Instrument Air System Isolation Valves that are Drywell and Containment Isolation Valves (CIVs).

Basis for Justification: These are the Containment and Drywell Isolation Valves for the Instrument Air System. Exercising these valves quarterly during normal operation would interrupt the air supply to IA System loads Inside Containment, including the MSIV and SRV accumulators, several safety-related air operated isolation valves, and various pneumatic instruments. Repeated pressure fluctuations or the inability to reopen one of these valves following testing would cause a Reactor scram and forced shutdown of the Plant. This would be impractical as per NUREG 1482, R/2 2.4.5 and 3.1.1.

The pneumatic actuators for these valves are designed to provide full-stroke capability only; partial-stroke testing is not available.

Alternate Test: These valves will be exercise tested to the closed position during Cold Shutdowns.

## Cold Shutdown Justification

CSJ-107

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1VQ004A | VQ | 2 | A |
| 1VQ004B | VQ | 2 | A |
| 1VR001A | VR | 2 | A |
| 1VR001B | VR | 2 | A |

Function:

1VQ004A/B - These drywell purge containment isolation valves close to isolate containment from the primary containment purge system during emergency and accident conditions.

1VR001A/B - These valves close to isolate containment from the containment building ventilation system during emergency and accident conditions.

Basis for Justification:

These are 36-inch air-operated butterfly Containment Isolation Valves in the Containment Ventilation and Containment/Drywell Purge Systems. They are required by Technical Specification 3.6.1.3 to be maintained closed in Modes 1, 2 and 3, except during specific, infrequent evolutions and are normally tagged shut. The safety function of these valves is to close for Containment isolation; they receive several isolation signals. In addition, these valves are Secondary Containment valves and are required to be operable in modes 4 and 5 when Secondary Containment is required.

Opening these valves for quarterly testing takes them out of their normal safety-related position and results in unnecessary cycling of equipment that could lead to damage or shortened life of the valve seat resilient seal. (ref: U-601736, L30-90(09-27)-1A.120). In addition, the Technical Specifications recognize the potential for resilient seal damage due to cycling these valves by requiring an LLRT of the affected penetration within 92 days after they are cycled. Due to the limitations on use for these valves, it is likely that the only time these valves would be cycled during power operation would be for stroke time testing. As a result, quarterly testing of these valves during power operation is considered impractical as per NUREG 1482, R/2, Sections 2.4.5, and 3.1.1. An appropriate level of testing will be maintained because stroke time testing during power operation, in accordance with ASME OM Code ISTC, will be required for these valves prior to use if it has been more than 92 days since they were last stroke time tested.

Alternate Test: These valves will be full-stroke exercise tested to the closed position during Cold Shutdowns. If these valves are to be opened during Modes 1, 2 and 3, and have not been full-stroke exercise tested to the closed position in the previous 92 days, the valves will be full-stroke exercised individually to the closed position to verify their ability to reposition in order to maintain containment integrity prior to being used.

## Cold Shutdown Justification

CSJ-108

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1E31-F014, F015, F017, F018; | LD | 2 | B |
| 1E51-F063, 1E51-F064 | RI | 1 | A |

Function: Containment and/or Drywell Isolation Valves

Basis for Justification: Valves 1E31-F014/15/17/18 are normally open, solenoid actuated, drywell isolation valves. Should a valve fail during stroke time testing the penetration would be isolated per T.S. 3.6.5.3 and the plant would be forced to operate under the burden of a TS LCO and abnormal system configuration and associated compensatory actions. In addition, 1E31-F014 and 1E31-F018 are located in the Drywell and should they fail, they cannot be repaired without shutting the plant down.

Valves 1E51-F063 and 1E51-F064 are normally opened motor operated containment isolation valves with a Medium Risk rank. They are the RCIC turbine steam supply valves. A failure of one of these valves during exercise testing would result in a loss of the RCIC function and could require an immediate plant to affect repairs.

Based on the above discussions, stroking of these valves on a quarterly basis can result in NUREG 1482 Rev 2 impacts, including 2.4.5 unnecessary plant shutdown, and/or 3.1.1, unnecessary challenge to plant safety systems should the valves fail in the non-conservative position (i.e. a primary containment isolation valve fail in the open position requiring isolation of the containment penetration).

Alternate Test: These valves will be full-stroke exercised during Cold Shutdowns.

# Cold Shutdown Justification

CSJ-109
**DELETED**

**Revision 9**
**7/12/2018**

## Cold Shutdown Justification

CSJ-110

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1E51-F065 | RI | 1 | C |

Function: RCIC Injection Line Check Valve

Basis for Justification: This valve opens to admit RCIC flow into the Reactor Vessel when required. It also opens to admit flow from the RHR to RCIC Head Spray line during normal Reactor cooldown; this function, however, is not required to achieve Cold Shutdown.

This valve is located within the Reactor Coolant Pressure Isolation boundary. No credit is taken, however, for this valve to function as a Containment Isolation Valve or Reactor Coolant Pressure Isolation Valve (PIV).

Exercising this valve with flow at power would require injecting cold water from the RCIC System into the dome of the Reactor Vessel via the Head Spray line. This would result in significant thermal and reactivity transients, potentially causing a Reactor scram. Exercising this valve with a mechanical exerciser during normal operation is impractical because the potential exists for differential pressure equivalent to Reactor pressure across the disc. Exercising the valve under this condition could result in damage to the valve or in a pressure spike to portions of the RCIC and RHR Systems. These impacts are as per NUREG 1482, R/2, 2.4.5 and 3.1.1.

Alternate Test: This valve will be exercise tested with flow on a Cold shutdown frequency while RHR is providing Head Spray to the Reactor Vessel for Shutdown Cooling.

NOTE: Bi-directional exercising in the non-safety related closed direction is performed at the same frequency.

## Cold Shutdown Justification

CSJ-111

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1E12-F042A | RH | 1 | A |
| 1E12-F042B | RH | 1 | A |
| 1E12-F042C | RH | 1 | A |
| 1E21-F005 | LP | 1 | A |
| 1E22-F004 | HP | 1 | A |
| 1E51-F013 | RI | 1 | A |

Function: Reactor Coolant system Pressure Isolation Valves (PIV's)

Basis for Justification: These valves are Reactor Coolant Pressure Boundary PIV's. They are required to limit leakage between the high pressure Reactor Coolant System and connected systems (RHR, LPCS, HPCS, and RCIC) to prevent an intersystem LOCA. They are also required to open to place or maintain the reactor in Cold Shutdown or to mitigate the consequences of an accident and are PRA risk ranked as High Risk. It is not practical to perform a full or partial exercise test of these valves quarterly during normal operation based on the following considerations, as described in NUREG 1482, R/2, Section 3.1.1:

1) Opening any Reactor Coolant PIV at power would remove one of the two valves in its respective line from performing its PIV function. If the second valve was in a degraded condition, this could create a pressure spike throughout the system, since each system is maintained filled and pressurized. Depending on the severity of the pressure spike, this could result in an inter-system LOCA with the potential for release of reactor coolant outside the primary containment.

2) Several MOV's in the above list have operators which are not designed to open against full differential pressure when the Reactor is at power. Furthermore, these valves are interlocked to prevent opening them until pressure drops below a preset value.

3) The shutoff head of the RHR and LPCS Pumps is below the normal operating pressure of the Reactor Coolant System.

Alternate Test: These valves will be full stroke exercise tested during cold shutdowns.

Additional assurance of proper closure is provided by performance of leak rate testing during refueling outages.

## Cold Shutdown Justification

CSJ-112

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1G33-F001 | RT | 1 | A |
| 1G33-F004 | RT | 1 | A |

Function: Reactor Water Cleanup System Containment Isolation Valves

Basis for Justification: These are the Containment Isolation Valves in the Reactor Water Cleanup (RT) System and risk ranked as Medium Risk. They isolate automatically on receipt of several Containment and system isolation signals. Exercising these valves requires the RT System to be taken out of service. Isolating the system, performing the testing, and restoring the system to service during power operations is a complex evolution and involves a significant amount of time. The RT System maintains the water quality limits of the Reactor Coolant within ORM limits. Sudden changes in temperature or flow could result in significant water chemistry changes which may require more time than is permitted by the applicable action statements. In addition, instances of resin intrusion into the RPV have occurred at other Plants while attempting to test RT System valves at power. This cold shutdown justification is allowed by NUREG 1482, R/2, Section 3.1.1 for potential impacts to containment isolation integrity.

Alternate Test. These valves will be full-stroke exercised during Cold Shutdowns.

## Cold Shutdown Justification

CSJ-113

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1IA012A | IA | 2 | A |
| 1IA013A | IA | 2 | A |

Function: Instrument Air Containment Isolation Valves

Basis for Justification: These valves are the outboard Containment Isolation Valves for the instrument air line connecting the ADS valves with their air back-up bottles. These valves are PRA risk ranked as High Risk. 1IA012A supplies the Div 1 ADS valves and 1IA013A supplies the Div 2 ADS valves. A failure of one of these valves to open during exercise testing would result in the associated division of ADS backup air bottles becoming inoperable. The inboard containment isolation valve is check valve that is located in the drywell and is not accessible when the plant is on line. In addition, there are no valves located between the inboard and outboard isolation valves that could be shut in order to allow repair that required disassembly of 1IA012A/13A. Similarly a failure of one of these valves to close during exercise testing would require closing of the manual valve outside containment. Since the manual valve is not located between the outboard containment isolation valve and the containment, in body repair of the containment isolation valve could not be implemented with the plant on line.

For both of the above scenarios, the associated division of ADS back up air supply would be out of service until repairs could be completed. A 30- day allowable outage time is a recommended maximum out-of-service time for removing one ADS backup air supply during plant operation (Ref. Paragraph 6.3 of CPS Procedure 3101.01, Main Steam (MS, IS AND ADS).

Based on the above discussion, exercise testing for valves 1IA012A and 1IA013A is considered impractical when the plant is on line as per NUREG 1482, R/2, section 3.1.1 for loss of system function; or loss of containment integrity.

Alternate Test: These valves will be full-stroke exercised during Cold Shutdowns.

# Cold Shutdown Justification

CSJ-114

**DELETED**

Revision 9
7/12/2018

## Cold Shutdown Justification

CSJ-115

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1B33-F019 | RR | 2 | B |
| 1B33-F020 | RR | 2 | B |

Function:

Valves 1B33-F019 and 1B33-F020 are the reactor sample inboard and outboard drywell isolation valves for the reactor sample station. 1B33-F019 is the inboard isolation valve and 1B33-F020 is the outboard Isolation valve. These valves close to isolate the drywell under accident conditions.

Basis for Justification:

Valves 1B33-F019 and 1B33-F020 are the reactor sample station drywell isolation valves. They closed automatically upon receipt of an automatic isolation signal to isolate the drywell. They are the drywell isolation valves for Penetration 1MD-013 [P&ID M05-1072 Sheet 1]. They close on loss of air or electrical power and may be remotely closed by the operator. They form part of the drywell boundary. There are requirements that limit total drywell bypass leakage. There are, however, no specific requirements for seat leakage for individual valves [ITS B 3.6.5.3].

These valves are normally open to provide a flow path for sampling the reactor coolant. This is not a safety function and sampling through this line is not required during accident conditions. During normal power operation 1B33-F019 is inaccessible. However 1B33-F20 is accessible during normal power operation.

The closing safety function for these valves is limited to operating modes 1, 2 and 3. (Ref. Tech Spec 3.6.5.3) Exercising 1B21-F019 increases the potential for air leakage inside the drywell with subsequent drywell pressurization. 1B33-F019 would also be required to be stroked closed if 1B33-F020 failed open during stroke time testing, again creating a potential for air leakage inside the drywell. Air leakage inside the drywell could increase the frequency for drywell venting resulting in cycling of the hydrogen mixing compressors and unnecessarily reduce their life expectancy. CPS 4402.01 directs OPS to use the hydrogen mixing compressors to maintain Drywell pressure below 1.68 psig. Step 8.3, Drywell Venting, of CPS procedure 3316.01, states each hydrogen mixing compressor should not be run for more than 5 hours per month to prevent exceeding the expected 40 year life runtime. In addition, leakage resulting from stroke time testing could require a plant

shutdown to implement repairs. This concern would be exacerbated by other conditions inside the drywell also contributing to drywell pressurization that were already existent at the time of the stroke time test.

The possibility of stroke time testing resulting in air leakage is documented on IR 519897, issued on 8/14/06. IR 519897 identified a condition of a potential air leak on one or both air operated drywell isolation valves 1VQ002 and 1VQ003. In this event, the frequency of drywell venting increased following IST surveillance testing in accordance with 9061.03C005. The issue report identified that following valve stroking the venting frequency increased from once every 24 hours to once every 12 hours.

Section 2.4.5 of NUREG 1482, Rev. 2, identifies impractical conditions justifying test deferrals include those conditions which could cause an unnecessary plant shutdown, cause unnecessary cycling of equipment or unnecessarily reduce the life expectancy of the plant systems and components. Based on the above discussion and NUREG 1482 quarterly stroke time testing of 1B33-F019 and 1B21-F020 is considered impractical.

Alternate Test: Valves 1B33-F019 and 1B33-F020 will be exercise tested during Cold Shutdown.

## Cold Shutdown Justification

CSJ-116

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1PS004/9/16/22/31/34/56/70 | PS | 2 | A |

Function: Valves 1PS004/9/16/22/31/34/56/70 are inboard primary containment isolation valves. They are installed in the Post Accident Sampling System. They automatically close on a low reactor water signal or a high drywell pressure signal. Additionally, they can be manually initiated from the control room. The valves also close on a loss of power.

Basis for Justification: Failure of one of these valves to close during stroke time testing will require the corresponding outboard isolation valve to be closed and power removed. The electrical design for the outboard isolation is such that when power is removed from these PS valves, the Division 1 diesel generator starting air compressors will be shunt tripped.

Therefore, quarterly stroke time testing for the above valves is considered impracticable, as per NUREG 1482, R/2, Section 3.1.1.

Alternate Test: Valves 1PS004/9/16/22/31/34/56/70 will be stroke time tested during cold shutdowns.

## Cold Shutdown Justification

CSJ-117

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1B21-F016 | MS | 1 | A |
| 1B21-F019 | MS | 1 | A |

Function:

Valves 1B21-F016 and 1B21-F019 are the containment isolation valves for the main steam line drain, Penetration 1MC-045. 1B21-F016 is the inboard isolation valve and 1B21-F019 is the outboard isolation valve. These valves are required to close for an event requiring containment isolation for the main steam lines.

Basis for Justification:

Valves 1B21-F016 and 1B21-F019 are containment isolation valves that are inaccessible during power operation (they are located in the drywell and the auxiliary building steam tunnel, respectively). If one of them failed open during exercise testing, the other valve would be required to be closed to maintain containment. As a result, the main steam drain line function would be lost. The same result would occur if one of the valves failed in the closed position during exercise testing. 1B21-F016 and 1B21-F019 in the main steam drain line are used to provide a method for pressure control following a reactor scram. In addition they can be used to reduce the pressure across the MSIVs so the MSIVs can be opened. The ability to use the steam line drain to perform these functions would be lost if one of these valves failed during IST exercise testing.

In addition to the above, if a packing leak that requires immediate repair were to occur during valve exercising, the plant would be required to be placed in cold shutdown in order to affect repair, as per NUREG 1482 Rev 2, Section 3.1.1.

Based on the above, quarterly exercising of valves 1B21-F016 and 1B21-F019 is considered impractical.

Alternate Test

Valves 1B21-F016 and 1B21-F019 will be exercise tested closed during Cold Shutdown.

## Cold Shutdown Justification

CSJ-118

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1SX346A | SX | 3 | C |
| 1SX346B | SX | 3 | C |

Function:

Valves 1SX346A/B are the SX vacuum breakers on 1VX06CA and 1VX06CB. The 1SX346's are the inlet valves. These valves are required to open to allow air to enter the SX piping when under a vacuum and to close to prevent the loss of ultimate heat sink inventory (SX) and Division 1 and 2 switch gear room flooding.

Basis for Justification:

Testing these valves online require declaring the VX system nonfunctional due to the testing lineup. The station has taken a conservative position that when the VX system is nonfunctional, inoperability is needed to be entered for supported systems. Action statements for these systems are in some cases 8 hours or less. This affects the Division 1 and 2 AC power distribution systems. Division 1 when testing 1SX346A and Division 2 when testing 1SX346B. Entering into an 8 hour or less LCO is considered impractical to the station per NUREG 1482 Rev 2, section 3.1.1.

Based on the above, online testing of valves 1SX346A/B is considered impractical.

Alternate Test

In place of quarterly testing valves 1SX346A/B will be manually stroked to full open and full closed position with the force to crack open the valve being measured during the opening portion. The valve shall return to the closed position without any assistance and with no evidence of binding or restriction of motion. This testing will occur during Cold Shutdown not to exceed a Refuel Outage per ISTC-3522 (b).

# ATTACHMENT 10

# REFUELING OUTAGE JUSTIFICATION INDEX

Revision 9
7/12/2018

# REFUEL OUTAGE JUSTIFICATION INDEX

| | |
|---|---|
| RFJ-001 | 1C41-F006: Standby Liquid Control System Injection Check Valve |
| RFJ-002 | 1E51-F066: RCIC Injection Check Valve |
| RFJ-003 | 1B21-F010A, 1B21-F010B, 1B21-F032A, 1B21-F032B: Feedwater System Containment Isolation Valves |
| RFJ-004 | 1B21-F041B, 1B21-F041C, 1B21-F041D, 1B21-F041F, 1B21-F047A, 1B21-F047C, 1B21-F051G: Automatic Depressurization System (ADS) Valves |
| RFJ-005 | 1E12-F041A, 1E12-F041B, 1E12-F041C, 1E21-F006, 1E22-F005: Reactor Coolant System Pressure Isolation Valves (PIV's) |
| RFJ-006 | 1B21-F024A, 1B21-F024B, 1B21-F024C, 1B21-F024D, 1B21-F029A, 1B21-F029B, 1B21-F029C, 1B21-F029D: Instrument Air Supply Check Valves to MSIV Accumulators |
| RFJ-007 | 1B21-F036A, 1B21-F036F, 1B21-F036G, 1B21-F036J, 1B21-F036L, 1B21-F036M, 1B21-F036N, 1B21-F036P, 1B21-F036R, 1B21-F039B, 1B21-F039C, 1B21-F039D, 1B21-F039E, 1B21-F039H, 1B21-F039K, 1B21-F039S: Instrument Air Supply to SRV Accumulator Check Valves |
| RFJ-008 | 1B21-F433A, 1B21-F433B: IA Supply Check Valves to FW Check Valve Accumulators |
| RFJ-009 | 1C11-114, 1C11-115, 1C11-126, 1C11-127, 1C11-138, 1C11-139: Control Rod Drive System Hydraulic Control Unit Valves |
| RFJ-010 | 1C11-F376A, 1C11-F376B, 1C11-F377A, 1C11-F377B: RV Level Instrumentation Reference Leg Keep Fill Check Valves |
| RFJ-011 | 1C41-F033A, 1C41-F033B: Standby Liquid Control Pump Discharge Check Valves |
| RFJ-012 | 1C41-F336: Standby Liquid Control System Injection Check Valve |
| RFJ-013 | 1CM066, 1CM067 Excess Flow Check Valves |
| RFJ-014 | 1IA042A, 1IA042B: Instrument Air Supply Header to ADS/LLS Valves |
| RFJ-015 | 1CM002B, 1E51-F377B, 1SM008: Excess Flow Check Valves |

# ATTACHMENT 11
# REFUELING OUTAGE JUSTIFICATIONS

Revision 9
7/12/2018

## Refuel Justification

RFJ-001

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1C41-F006 | SC | 1 | C |

Function: Standby Liquid Control system Injection Check

Basis for Justification: This valve is the Standby Liquid Control (SC) System injection flow path check valve. It is located inside Primary Containment and is accessible during normal operation and Cold Shutdowns.

This valve is equipped with a mechanical exerciser. It has been determined, however, that use of the exerciser to test the valve to the open position does not provide consistent or conclusive results. Breakaway force required to move the valve off its seat has been measured at 2 in. lbs. This results in an acceptance range of 1 to 3 in. lbs. for inservice testing. Due to the low torque valves involved, it is very difficult to distinguish between the force represented by the hinge pin packing load and the actual force required to lift the disc. Thus, there is no direct correlation between breakaway force and valve degradation.

This is a 3-inch stainless steel valve in a stainless steel system containing de-ionized water. During normal plant operation this valve is isolated from reactor pressure and temperature. Because of the stainless steel system, lack of flow, ambient containment temperature, and the use of DI water, corrosion products or other contaminates are minimal and as such this valve will not undergo normal degradation processes.

There is no method to conduct the open (and closed) test on-line except during the firing of the explosive valve, this would inject flow through 1C41-F006 into the RPV. The only way to conduct a closure test is to open the valve. As a result firing of the explosive valve on a quarterly basis or during cold shutdown would not be practical. Therefore the test cannot be conducted except during a refueling outage during the firing of the explosive valve.

This valve will be tested with flow from alternating SC loops during Refueling Outages. One loop will have its valve tested open with flow, while the other loop will be tested closed.

## Refuel Justification

RFJ-002

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1E51-F066 | RI | 1 | A/C |

Function: RCIC Injection Check Valve

Basis for Justification: This check valve isolates the Reactor Vessel from the RCIC injection header. Full-stroke exercising of this valve during normal operation would involve the injection of accident-rated flow from the RCIC Pump into the Reactor Vessel. RCIC is normally lined up to take suction from the RCIC Storage Tank, the temperature of which can be as low as 40°F. This would involve the injection of a significant amount of cold water into the vessel at power resulting in a reactivity addition excursion and thermal shock to the RCIC head spray and Reactor Vessel components, and possible damage to turbine blades from the impingement of water droplets carried through the Main Steam lines.

This valve is exercise tested to the open position during Cold shutdowns (refer to CSJ-105) and will be tested in the closed position by means of a Reactor Coolant System Pressure Isolation Valve (PIV) leak rate test during refueling outages.

## Refuel Justification

RFJ-003

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1B21-F010A/B | FW | 2 | C |
| 1B21-F032A/B | FW | 2 | A/C |

Function: Feedwater System Containment Isolation Valves

Basis for Justification: These are the Reactor Feedwater Inlet Containment Isolation Check Valves. Shutdown Cooling flow from the RHR System returns to the Reactor Vessel through these valves.

1B21-F010A/B are simple check valves located inside the Drywell. There is no means to exercise test these valves to the closed position during normal operation.

Exercising 1B21-F032A/B to the closed position would interrupt the flow of feedwater to the RPV, which would introduce undesirable operational transients and could result in a Reactor Trip.

Closure of these valves is demonstrated by performance of leak rate tests each refueling outage.

NOTE: Bi-directional exercising in the non-safety related open direction is performed during routine operations. These valves are normally open with flow.

## Refuel Justification

RFJ-004

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1B21-F041B/C/D/F | MS | 1 | B/C |
| 1B21-F047A/C | MS | 1 | B/C |
| 1B21-F051G | MS | 1 | B/C |

Function: Automatic Depressurization System (ADS) Valves

Basis for Justification: These valves depressurize the Reactor in order to allow injection of LPCI and LPCS flow in the event of a small-break LOCA.

These valves cannot be exercised during normal operation because the resulting pressure fluctuations, particularly if the valve failed to close and reseat in a timely manner, could result in an inadvertent Reactor shutdown and possible ECCS actuation. Exercising these valves during Cold Shutdowns would increase the number of challenges to the Main Steam SRV's in conflict with the recommendations of NUREG-0737.

These valves are tested in accordance with the exercise testing requirements for Category B valves per ISTC and with the safety/relief valve requirements for Class 1 valves with auxiliary actuating devices of Appendix I.

## Refuel Justification

RFJ-005

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1E12-F041A/B/C | RH | 1 | A/C |
| 1E21-F006 | RH | 1 | A/C |
| 1E22-F005 | RH | 1 | A/C |

Function: Reactor Coolant System Pressure Isolation valves (PIV's)

Basis for Justification: These check valves isolate the Reactor Vessel from the RHR LPCI, LPCS and HPCS injection headers. Full-stroke exercising of these valves during normal operation would involve the injection of accident-rated flow from the respective pumps into the Reactor Vessel.

Valves 1E12-F041A, B and C and 1E21-F006 cannot be exercised quarterly since the shutoff head of the RHR and LPCS pumps are below normal RV pressure. Testing of 1E22-F005 quarterly would involve the injection of a significant amount of cold water into the vessel at power resulting in a reactivity addition excursion and thermal shock to the HPCS and Vessel components. Full stroke exercising of these valves during Cold shutdowns would also increase the number of thermal fatigue cycles on the Reactor Vessel nozzles.

These valves are full-stroke exercised during refueling outages.

Satisfactory closure of these valves is also demonstrated during refueling outages by performance of the PIV leak rate test.

## Refuel Justification

RFJ-006

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1B21-F024A/B/C/D | MS | 3 | C |
| 1B21-F029A/B/C/D | MS | 3 | C |

Function: Instrument Air Supply Check Valves to MSIV Accumulators

Basis for Justification: These are the Instrument Air Supply Check valves to the air accumulators for the MSIV's. They prevent depressurization of the accumulators in the event of a loss of Instrument Air supply.

Excessive leakage past any of these valves would result in depressurization of the accumulator. During normal operation at power, this would lead to closing of the associated MSIV, which would most likely cause a Reactor scram. It is also impractical to test these valves during Cold Shutdowns due to the significant amount of time and manpower required to set up and perform the test. In addition, 1B21-F024A through D are located in the Drywell which is not accessible during normal operation or most Cold Shutdowns.

These valves will be tested in the closed position by means of a leak rate test during refueling outages.

NOTE: Bi-directional exercising in the non-safety related open direction is performed at the same frequency.

## Refuel Justification

RFJ-007

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1B21-F036A/F/G/J/L | MS | 3 | A/C |
| 1B21-F036M/N/P/R | MS | 3 | A/C |
| 1B21-F039B/C/D/E/H | MS | 3 | A/C |
| 1B21-F039K/S | MS | 3 | A/C |

Function: Instrument Air Supply to SRV Accumulator Check Valves

Basis for Justification: These are the Instrument Air supply check valves to the air accumulators for the Main Steam SRV's. They prevent depressurization of the accumulators in the event of a loss of Instrument Air supply in order to allow the SRV's to operate in the relief mode. Additionally, some of these valves perform a safety function in the open direction for the purpose of refilling the SRV accumulators. These valves lack design provisions for "on-line" testing and are located in the drywell which is inaccessible during normal operation.

Exercise testing of these valves in the closed direction is performed by isolating the Instrument Air supply and depressurizing the upstream side of the check valve. The open test is performed by measuring the air flow rate through the check valve. Performance of either of these tests during power operation is impractical. Both open and closed tests require transporting and setting up test equipment in the drywell. NUREG-1482 Rev 2, section 3.1.1 allows these valves to be tested during refueling outages. Therefore, these valves will be tested, in the open and closed positions during refueling outages.

## Refuel Justification

RFJ-008

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1B21-F433A/B | FW | 3 | C |

Function: IA Supply Check Valves to FW Check Valve Accumulators

Basis for Justification: These are the Instrument Air supply check valves to the accumulators for Feedwater Check Valves 1B21-F032A and 1B21-F032B. They prevent depressurization of the accumulators on loss of Instrument Air in order to assure pneumatic pressure will be available to the closing side of the Feedwater Check Valve air actuators.

These valves and other valves necessary to perform the exercise test are located in the Steam Tunnel, which is inaccessible during normal operation. It is also impractical to test them during Cold Shutdowns due to the significant amount of time and manpower required to set up and perform the test, which would most likely delay Plant startup.

These valves are tested in the closed position during refueling outages by isolating the Instrument Air supply and depressurizing the upstream side of the check valve.

NOTE: Bi-directional exercising in the non-safety related open direction is performed at the same frequency.

## Refuel Justification

RFJ-009

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1C11-114, 1C11-115 | RD | O | C |
| 1C11-126, 1C11-127 | RD | O | B |
| 1C11-138, 1C11-139 | RD | O | A/C |

Function: Control Rod Drive System Hydraulic Control Unit Valves

Basis for Justification: Each EIN listed above actually represents 145 valves (1 valve for each of 145 Control Rod Drive Hydraulic Control Units [HCU's]) which are required to perform specific functions during a Reactor scram.

1C11-114 is a check valve which opens to permit water from the top of its associated Control Rod Drive piston to be discharged to the Scram Discharge Volume header, and closes to prevent backpressure from the SDV causing an inadvertent withdrawal of a scrammed Control Rod.

1C11-115 is a check valve in the Charging Water supply to each associated HCU accumulator which closes to assure sufficient pressure to scram its Control Rod in the event of a loss of Drive Water pressure.

1C11-126 and 1C11-127 are the air-operated scram valves which open to direct drive water to the bottom of each Control Rod Drive piston and exhaust water from the top of the piston to the SDV.

1C11-138 is a check valve in the CRD cooling water supply header which prevents diversion of scram flow away from the CRD.

1C11-139 is a pilot valve which exhausts air from the actuators of the scram valves (1C11-126 and 1C11-127), causing them to open.

All of the valves in this Refuel Justification, with the exception of 1C11-115 are verified to perform their required functions by the performance of Control Rod Scram Time testing in accordance with the requirements of the Technical Specifications. This complies with the recommendations of Position 7 of NRC Generic Letter 89-04. The 1C11-115 valves are tested in the closed position by performance of a leak rate test using the pressure drop method during each refueling outage.

## Refuel Justification

RFJ-010

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1C11-F376A/B | RD | O | A/C |
| 1C11-F377A/B | RD | O | A/C |

Function: RV Level Instrumentation Reference Leg Keep Fill Check Valve

Basis for Justification: These valves are located in lines which provide a steady source of keep-fill water to the Reactor Vessel level instrumentation reference legs during normal operation and Cold Shutdown. They are required to close to prevent backflow and keep the instrument reference leg full of water in order to maintain level indication for the reactor vessel and to prevent a small-break LOCA in the event of a loss of the non-safety related upstream RD piping.

Testing these valves in the closed position during normal operation would require securing the keep fill flow to the reference legs which could result in a false indication of high level in the RV, which in turn could cause a turbine trip at power. Accurate level indication is also required during Cold shutdowns in order to assure that adequate decay heat removal capacity is available.

The only practical method of assuring that these valves are closed is by means of a leak rate test. These valves are tested in the closed position during refueling outages.

NOTE: Exercising in the open direction is performed during routine operations.

## Refuel Justification

RFJ-011

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1C41-F033A/B | SC | 2 | C |

Function: Standby Liquid Control Pump Discharge Check Valves

Basis for Justification: It is not practical to exercise these valves to the closed position during normal operation or during Cold Shutdowns, because there is no instrumentation between the pumps and these valves that can be used to detect reverse flow or pressure, nor are there any vents or drains that would indicate excessive reverse flow.

These valves are tested during refueling outages by removing the relief valve (1C41-F029A or B) while running the pump in the opposite train, and monitoring the open flange connection for back leakage.

Open exercise test is performed quarterly in conjunction with pump testing.

## Refuel Justification

RFJ-012

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1C41- F336 | SC | 1 | C |

Function: Standby Liquid Control System Injection Check Valve

Basis for Justification: This check valve is located in the common Standby Liquid Control System injection header downstream of explosive injection valves 1C41-F004A and B, inside the drywell. It is a totally enclosed valve with no provisions for external exercising. The only means to test this valve with flow is to activate one Train of the SC System which would fire the explosive-actuated Squib valve in the selected Train.

Exercise testing to the open position is accomplished during each refueling outage when one of the explosive valves is fired to satisfy Technical Specification surveillance requirements and flow is injected into the Reactor Vessel from the Test Tank. Testing in the closed position is accomplished by means of the Reactor Coolant System Leakage Test which requires access to the Drywell.

This valve will be tested to the open and closed positions during refueling outages.

## Refuel Justification

RFJ-013

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1CM066 | CM | 2 | A/C |
| 1CM067 | CM | 2 | A/C |

Function: Excess Flow Check Valves

Basis for Justification: These are Containment Isolation Valves and provide isolation capability for various Reactor Vessel and Primary Containment instrument lines in the event of an instrument line break as discussed in US NRC Regulatory Guide 1.11 (Safety Guide 11).

These valves communicate directly to the RPV and during operation are exposed to RPV pressure. Testing in such conditions exposes the test performer to unnecessary risk and exposure. Also, testing these valves during normal plant operation requires isolating numerous safety-related instruments associated with scram logic, ECCS activation and accident monitoring. This involves filling, venting and draining operations, breaking connections to the instruments, setting up a test rig, introducing water flow through lines with high potential for contamination, then restoring the instrument to service. These instruments have the potential for scramming the Reactor, causing an ECCS actuation, or initiating a Containment Isolation signal. In addition, testing these valves during Plant operation or Cold Shutdown results in numerous LCO entries. These valves cannot be partially exercised.

These valves will be exercised open and closed during refueling outages when they are not required to perform their protective functions.

## Refuel Justification

RFJ-014

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1IA042A | IA | 2 | A/C |
| 1IA042B | IA | 2 | A/C |

Function: Instrument Air Supply Header to ADS/LLS Valves

Basis for Justification: These are Containment Isolation Valves which are located in the Instrument Air (IA) supply lines from the Compressors and Emergency Bottle Banks to the Main Steam Safety/Relief Valve accumulators used for ADS and LLS service.

Testing of these valves during normal operation or during unscheduled Cold Shutdowns is impractical because they and others required to perform the test are located in the Drywell, which is inaccessible during these conditions.

Proper functioning of these valves to the open position is confirmed on a continuous basis during normal Plant operation by maintaining pressure in the accumulators. Testing to the open position is accomplished during refueling outages by means of a flow test. Testing of these valves in the closed position is performed by isolating the supply sources, depressurizing the upstream side and measuring pressure drop over a 10-minute period.

## Refuel Justification

RFJ-015

| Valve Number | System | Safety Class | Category |
|---|---|---|---|
| 1CM002B | CM | 2 | C |
| 1E51-F377B | RI | 2 | C |
| 1SM008 | SM | 2 | C |

Function: These are excess flow check valves in low pressure systems. They are required to close to eliminate a level rise in the instrument standpipe. They are required to reopen to allow operation of the instruments in their associated line.

Basis for Justification: Testing these valves during normal plant operation requires isolating numerous safety-related instruments associated with scram logic, ECCS activation and accident monitoring. This involves filling, venting and draining operations, breaking connections to the instruments, setting up a test rig, introducing water flow through lines with high potential for contamination, then restoring the instrument to service. These instruments have the potential for scramming the Reactor, causing an ECCS actuation, or initiating a Containment Isolation signal. In addition, testing these valves during Plant operation or Cold Shutdown results in numerous LCO entries. As such, quarterly testing of these valves are impacted by NUREG 1482, R/2, Section 3.1.1 (1), potential loss of system function; (2), loss of containment integrity, or potential for reactor trip.

Alternate Test: These valves will be full-stroke exercised during refueling outages when they are not required to perform their protective functions.

Open and close exercising is performed at the same frequency.

# ATTACHMENT 12

## CORPORATE TECHNICAL POSITION INDEX

**Revision 9**
**7/12/2018**

## CORPORATE TECHNICAL POSITION INDEX

| Designator | Description | Issue Date |
|---|---|---|
| CTP-IST-001, Rev.1 | Preconditioning of IST Components | 2/1/2012 |
| CTP-IST-002, Rev.1 | Quarterly Pump Testing Under Full Flow Conditions | 2/1/2012 |
| CTP-IST-003, Rev.0 | Quarterly Testing of Group B Pumps | 9/10/2009 |
| CTP-IST-004, Rev.1 | Classification of Pumps: Centrifugal vs. Vertical Line Shaft | 2/1/2012 |
| CTP-IST-005, Rev.1 | Preservice Testing of Pumps | 2/1/2012 |
| CTP-IST-006, Rev.1 | Testing of Power Operated Valves with both Active and Passive Safety Functions (Not implemented at CPS) | 2/1/2012 |
| CTP-IST-007, Rev.1 | Skid-Mounted Components | 2/1/2012 |
| CTP-IST-008, Rev.1 | Position Verification Testing | 2/1/2012 |
| CTP-IST-009, Rev. 0 | ASME Class 2 & 3 Relief Valve Testing Requirements | 2/1/2012 |
| CTP-IST-010, Rev. 0 | ERV and PORV Testing Requirements | 2/1/2012 |
| CTP-IST-011, Rev. 0 | Extension of Exercise Testing Frequencies to Cold Shutdown or Refueling Outage | 2/1/2012 |
| CTP-IST-012, Rev. 0 | Use of ASME OM Code Cases for Inservice Testing | 2/1/2012 |
| CTP-IST-013, Rev. 0 | Exercise Testing Requirements for Valves with Fail-Safe Actuators | 2/1/2012 |
| CTP-IST-014, Rev.0 | Bi-directional Testing of Check Valves to Their Safety and Non-Safety Related Positions | 2/1/2012 |

# ATTACHMENT 13

# CORPORATE TECHNICAL POSITIONS

**Revision 9**
**7/12/2018**

**Number:** CTP-IST-001, Rev. 1

**Title:** Preconditioning of IST Program Components

**Applicability:** All Exelon IST Programs. This issue also applies to other Technical Specification surveillance testing where preconditioning may affect the results of the test. This Technical Position may be adopted optionally by other Exelon organizations.

**Background:** There are no specified ASME Code requirements regarding preconditioning or the necessity to perform as-found testing, with the exception of setpoint testing of relief valves and MOV testing performed in accordance with Code Case OMN-1 or Mandatory Appendix III. Nevertheless, there has been significant concern raised by the NRC, and documented in numerous publications, over this issue. Section 3.5 of Reference 2 provides guidance on preconditioning as it relates to IST; Section 3.6 provides additional guidance on as-found testing. It is the intent of this Technical Position to provide a unified, consistent approach to the issue of preconditioning as it applies to IST Programs throughout the Exelon fleet.

The purpose of IST is to confirm the operational readiness of pumps and valves within the scope of the IST Program to perform their intended safety functions whenever called upon. This is generally accomplished by testing using quantifiable parameters which provide an indication of degradation in the performance of the component. Preconditioning can diminish or eradicate the ability to obtain any meaningful measurement of component degradation, thus defeating the purpose of the testing.
Preconditioning is defined as the alteration, variation, manipulation, or adjustment of the physical condition of a system, structure, or component before Technical Specification surveillance or ASME Code testing. Since IST is a component-level program, this Technical Position will address preconditioning on a component-level basis. Preconditioning may be acceptable or unacceptable.

- Acceptable preconditioning is defined as preconditioning which is necessary for the protection of personnel or equipment, which has been evaluated as having insufficient impact to invalidate the results of the surveillance test, or which provides performance data or information which is equivalent or superior to that which would be provided by the surveillance test.
- Unacceptable preconditioning is preconditioning that could potentially mask degradation of a component and allow it to be returned to or remain in service in a degraded condition.

In most cases, the best means to eliminate preconditioning concerns is to perform testing in the as-found condition. When this is not practical, an evaluation must be performed to determine if the preconditioning is acceptable. Appendix 1 to this Technical Position may be used to document this evaluation.
The acceptability or unacceptability of preconditioning must be evaluated on a case-by-case basis due to the extensive variability in component design, operation, and performance requirements. Preconditioning of pumps may include filling and venting of pump casings, venting of discharge piping, speed adjustments, lubrication, adjustment of seals or packing, etc. Preconditioning of valves may include stem lubrication, cycling of the valve prior to the "test" stroke, charging of accumulators, attachment of electrical leads or jumpers, etc.

Factors to be considered in the evaluation of preconditioning acceptability include component size and type, actuator or driver type, design requirements, required safety functions, safety significance, the nature, benefit, and consequences of the

preconditioning activity, the frequencies of the test and preconditioning activities, applicable service and environmental conditions, previous performance data and trends, etc.

Lubrication of a valve stem provides an example of the variability of whether or not a preconditioning activity is acceptable. For example, lubrication of the valve stem of an AC-powered MOV during refueling outages for a valve that is exercise tested quarterly would normally be considered acceptable, unless service or environmental conditions could cause accelerated degradation of its performance. Lubrication of a valve stem each refueling outage for an MOV that is exercise tested on a refueling outage frequency may be unacceptable if the lubrication is always performed prior to the exercise test. Lubrication of a valve stem for an AOV prior to exercise testing is likely to be unacceptable, unless it can be documented that the preconditioning (i.e., maintenance or diagnostic testing) can provide equal or better information regarding the as-found condition of the valve. Manipulation of a check valve or a vacuum breaker that uses a mechanical exerciser to measure breakaway force prior to surveillance testing would be unacceptable preconditioning. Additional information regarding preconditioning of MOVs may be found in Reference 4.

**Position:**

1. Preconditioning **SHALL** be avoided unless an evaluation has been performed to determine that the preconditioning is acceptable. Appendix 1 to this Technical Position may be used to document this evaluation. In cases where the same information applies to more than one component, a single acceptability evaluation may be performed and documented
2. Evaluations **SHALL** be prepared, reviewed and approved by persons with the appropriate level of knowledge and responsibility. For example, persons preparing an evaluation should hold a current certification in the area related to the activity. Reviewers should be certified in a related area.
3. The evaluation **SHALL** be approved by a Manager or designee.
4. If it is determined that an instance of preconditioning has occurred without prior evaluation, the evaluation **SHALL** be performed as soon as practicable following discovery. If the evaluation concludes that the preconditioning is unacceptable, an IR shall be written to evaluate the condition and identify corrective actions.

**References:**


1. NRC Information Notice 97-16, "Preconditioning of Plant Structures, Systems, and Components before ASME Code Inservice Testing or Technical Specification Surveillance Testing".
2. NUREG-1482, Revision 1 (January, 2005), Section 3.5 "Pre-Conditioning of Pumps and Valves".
3. NRC Inspection Manual Part 9900: Technical Guidance, "Maintenance – Preconditioning of Structures, Systems and Components Before Determining Operability".
4. ER-AA-302-1006, "Generic Letter 96-05 Program Motor-Operated Valve Maintenance and Testing Guidelines"
5. ER-AA-321, "Administrative Requirements for Inservice Testing"

## CTP-IST-001 APPENDIX 1
## EVALUATION OF PRECONDITIONING ACCEPTABILITY

Description of activity:

**Section 1: NRC Inspection Manual Part 9900 Review:**

**Answer the following questions to determine the acceptability of the preconditioning activity based on Section D.2 of Reference 3.**

| *Question* | *Yes* | *No* | *Not Determined* |
|---|---|---|---|
| 1. Does the alteration, variation, manipulation or adjustment ensure that the component will meet the surveillance test acceptance criteria? | ☐ | ☐ | ☐ |
| 2. Would the component have failed the surveillance without the alteration, variation, manipulation or adjustment? | ☐ | ☐ | ☐ |
| 3. Does the practice bypass or mask the as-found condition? | ☐ | ☐ | |
| 4. Is the alteration, variation, manipulation or adjustment routinely performed just before the testing? | ☐ | ☐ | |
| 5. Is the alteration, variation, manipulation or adjustment performed only for scheduling convenience? | ☐ | ☐ | |

**If all the answers to Questions 1 thru 5 are No, the activity is acceptable; go to Section 3. Otherwise, continue to Section 2.**

**Section 2: Additional Evaluation**

**The following questions may be used to determine if preconditioning activities that do not meet the screening criteria of Section 1 are acceptable**

| *Question* | *Yes* | *No* |
|---|---|---|
| 6. Is the alteration, variation, manipulation or adjustment required to prevent personnel injury or equipment damage? If yes, explain below. | ☐ | ☐ |
| 7. Does the alteration, variation, manipulation or adjustment provide performance data or information that is equivalent or superior to that provided by the surveillance test? If yes, explain below. | ☐ | ☐ |
| 8. Is the alteration, variation, manipulation or adjustment being performed to repair, replace, inspect or test an SSC that is inoperable or is otherwise unable to meet the surveillance test acceptance criteria? If yes, explain below. | ☐ | ☐ |
| 9. Is there other justification to support classification of the alteration, variation, manipulation or adjustment as acceptable preconditioning? If yes, explain below and provide references. | ☐ | ☐ |

Explanation / Details: (attach additional sheets as necessary)

| Conclusion: The preconditioning evaluated herein **(is / is not)** acceptable. (Circle one) | |
|---|---|
| **Section 3: Review / Approve** | |
| Prepared by: | Date: |
| Reviewed by: | Date: |
| Approved by: | Date: |

**Number:** CTP-IST-002, Rev. 1

**Title:** Quarterly Pump Testing Under Full Flow Conditions

**Applicability:** ASME OM-1995 Code and Later, Subsection ISTB

**Background:** Pumps included in the scope of the IST Program are classified as Group A or Group B. The OM Code defines a Group A pump as a pump that is operated continuously or routinely during normal operation, cold shutdown, or refueling operations. A Group B pump is defined as a pump in a standby system that is not operated routinely except for testing.

Testing of pumps in the IST Program is performed in accordance with Group A, Group B, comprehensive or preservice test procedures. In general, a Group A test procedure is intended to satisfy quarterly testing requirements for Group A pumps, a Group B test procedure is intended to satisfy quarterly testing requirements for Group B pumps and a comprehensive test procedure is required to be performed on a frequency of once every two years for all Group A and Group B pumps. The Code states that when a Group A test is required a comprehensive test may be substituted; when a Group B test is required a comprehensive test or a Group A test may be substituted. A preservice test may be substituted for any inservice test. The Corporate Exelon position on preservice testing requirements for pumps in the IST Program is provided in CTP-IST-005.

Subsection ISTB provides different acceptance, alert and required action ranges for centrifugal, vertical line shaft, non-reciprocating positive displacement and reciprocating positive displacement pumps, for Group A, Group B and comprehensive pump tests. In each case, the acceptance bands for flow and differential or discharge pressure for the comprehensive test are narrower than those for the Group A and Group B tests. Since comprehensive pump test requirements did not exist prior to the OM-1995 Code, and since the frequency of comprehensive tests is once every two years, most stations have a limited history of comprehensive pump test performance. Thus, pumps that have demonstrated satisfactory results during quarterly testing over a period of several years may fail a comprehensive test while continuing to operate at the same performance level.

**Position:** The following points summarize the Exelon position on full-flow testing of pumps:

1. Any specific pump is either Group A or Group B; it cannot be both. Any pump that is operated routinely for any purpose, except for the performance of inservice testing, is a Group A pump. A pump cannot be classified as Group A for certain modes of operation and Group B for other modes of operation (e.g., pumps used for shutdown cooling are Group A pumps), unless authorized by means of an NRC-approved Relief Request.
2. Under certain circumstances, similar or redundant pumps may be classified differently. For example, if a station has four identical RHR pumps with two used for shutdown cooling and two dedicated to ECCS service, the shutdown cooling pumps would be Group A, whereas the dedicated ECCS pumps would be Group B provided they were maintained in standby except when performing inservice testing.
3. Quarterly testing of Group A pumps shall be performed in accordance with a Group A or comprehensive test procedure. Post-maintenance testing of Group A pumps shall be performed in accordance with a Group A, a comprehensive, or a preservice test procedure.

4. Quarterly testing of Group B pumps shall be performed in accordance with a Group B, Group A, or comprehensive test procedure. Post-maintenance testing of Group B pumps shall be performed in accordance with a Group A, a comprehensive, or a preservice test procedure.
5. Credit can only be taken for a comprehensive test if all of the OM Code requirements for a comprehensive test are met, including flow, instrument range and accuracy, and acceptance limits.

Regardless of test conditions, quarterly pump testing is required to meet the acceptance criteria specified for Group A or Group B pumps, as applicable, in the edition/addenda of the OM Code in effect at the Plant. More restrictive acceptance criteria may be applied optionally if desired to improve trending or administrative control.

The ASME OM Code has identified quarterly and comprehensive pump testing as distinctly separate tests with separate frequency and instrumentation requirements and separate acceptance criteria. When performing a quarterly (Group A or Group B) test under full flow conditions, it may be apparent that a comprehensive test limit was exceeded. In such cases, **ISSUE** an IR to describe and evaluate the condition and potential compensatory measures (e.g., establishing new reference values) prior to the next scheduled comprehensive test. No additional corrective actions are required.

**References:**

1. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition and later, Subsection ISTB.

**Number:** **CTP-IST-003, Rev. 0**

**Title:** **Quarterly Testing of Group B Pumps**

**Applicability:** ASME OM-1995 Code and Later

**Background:** Pumps included in IST Programs that must comply with the 1995 Edition of the ASME OM Code and later are required to be classified as either Group A or Group B pumps. The OM Code defines a Group A pump as a pump that is operated continuously or routinely during normal operation, cold shutdown, or refueling operations. A Group B pump is defined as a pump in a standby system that is not operated routinely except for testing.

Testing of pumps is performed in accordance with Group A, Group B, comprehensive or preservice test procedures. In general, a Group A test procedure is intended to satisfy quarterly testing requirements for a Group A pump, a Group B test procedure is intended to satisfy quarterly testing requirements for a Group B pump, and a comprehensive test procedure is required to be performed on a frequency of once every two years for all Group A and Group B pumps. A Group A test procedure may be substituted for a Group B procedure and a comprehensive or preservice test procedure may be substituted for a Group A or a Group B procedure at any time.

A Group A test procedure is essentially identical to the quarterly pump test that was performed in accordance with OM-6 and earlier Code requirements. Group B testing was introduced to the nuclear industry when the NRC endorsed the OM-1995 Edition with OMa-1996 Addenda in 10 CFR 50.55a(b)(3). The intent of the Group B test was to provide assurance that safety related-pumps that sit idle essentially all of the time (e.g. ECCS pumps) would be able to start on demand and achieve a pre-established reference condition. The requirements for Group B testing were significantly relaxed when compared with the Group A (traditional) pump test requirements based on the assumption that there were no mechanisms or conditions that would result in pump degradation while the pump sat idle.

Strong differences of opinion regarding the intent and requirements for Group B testing developed and have persisted since the beginning. These differences span the industry, the NRC, and even members of the OM Code Subgroup-ISTB who created them. One opinion is that the Group B test is intended to be a "bump" test in which the pump is started, brought up to reference flow or pressure, and then stopped. The opposing opinion is that the Group B test requires the pump to be brought to the reference flow or pressure followed by recording and evaluation of both the flow and pressure readings. Both opinions can be supported by the applicable OM Code verbiage. However, NRC personnel have expressed a reluctance to accept the "bump" test interpretation.

**Position:** Group B pump testing should be performed as follows:

1. When performing a Group B pump test, both hydraulic test parameters (i.e., flow and differential pressure OR flow and discharge pressure) shall be measured and evaluated in accordance with the applicable Code requirements for the pump type.

2. Vibration measurements are not required for Group B pump tests. Vibration measurements may continue to be taken optionally. In the event that a vibration reading exceeds an alert or required action limit for the comprehensive test for the pump being tested, an IR shall be written and corrective action taken in accordance with the CAP process.

**References:**

1. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition and later, Subsection ISTB.

**Number:** CTP-IST-004, Rev. 1

**Title:** **Classification of Pumps: Centrifugal vs. Vertical Line Shaft**

**Applicability:** All Exelon IST Programs

**Background:** Early Code documents that provided requirements for inservice testing of pumps did not differentiate between pump types. Subsection IWP of the ASME Boiler and Pressure Vessel Code, Section XI, required the measurement of flow, differential pressure and vibration and comparison of the measured data with reference values, similar to the way in which centrifugal pump testing is currently performed. Some additional measurements were required (e.g., bearing temperature, lubrication level or pressure) which were later determined to be of minimal value to IST. A major limitation in the earlier Code was that the same parameters and acceptance criteria were specified for all pumps.

With the development of the OM Standards (OM-1, OM-6, OM-10, etc.), it was recognized that pumps of different design performed differently and required different measurement criteria to determine acceptable performance. For example, discharge pressure was determined to be a more representative measurement of performance for a positive displacement pump than differential pressure. Part 6 of the OM Standards (OM-6), also introduced different criteria for inservice testing of centrifugal and vertical line shaft pumps. Unfortunately, it did not provide any definition for a vertical line shaft pump.

The definition of "vertical line shaft" pump was first incorporated into the OM-1998 Edition of the OM Code as "a vertically suspended pump where the pump driver and pump element are connected by a line shaft within an enclosed column." This definition failed to eliminate much of the uncertainty in determining whether certain pumps were vertically-oriented centrifugal pumps or vertical line shaft pumps. Further confusion was created by the choice of wording used in the OM Code Tables that specify the acceptance criteria for centrifugal and vertical line shaft pumps.

**Position:** Code requirements for vibration measurement provide the clearest indication of the difference between a centrifugal pump and a vertical line shaft pump. On centrifugal pumps, vibration measurements are required to be taken in a plane approximately perpendicular to the rotating shaft in two approximately orthogonal directions on each accessible pump-bearing housing and in the axial direction on each accessible pump thrust bearing housing. On vertical line shaft pumps, measurements are required to be taken on the upper motor-bearing housing in three approximately orthogonal directions, one of which is the axial direction.

Therefore, a pump which is connected to its driver by a vertically-oriented shaft in which vibration measurements must be taken on the pump motor due to the inaccessibility of the pump bearings will be classified as a vertical line shaft pump.
For plants using the 1998 Edition of the OM Code through the OMb-2003 addenda, Table ISTB-5100-1 applies to all horizontally and vertically-oriented centrifugal pumps; Table ISTB-5200-1 applies to vertical line shaft pumps. For plants using the 2004 Edition of the OM Code and later, Table ISTB-5121-1 applies to all horizontally and vertically-oriented centrifugal pumps; Table ISTB-5221-1 applies to vertical line shaft pumps.

**References:**

1. ASME OMa-1988, ASME/ANSI Operation and Maintenance of Nuclear Power Plants, Part 6, Inservice Testing of Pumps in Light-Water Reactor Power Plants.
2. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition and later, Subsection ISTB.

**Number:** **CTP-IST-005, Rev. 1**

**Title:** **Preservice Testing of Pumps**

**Applicability:** OM-1995 Code and Later

**Background:** Requirements for preservice testing of pumps have been stated in ASME Code documents since the beginning. However, the 1995 Edition of the OM Code significantly expanded the scope of preservice testing by introducing the requirement that centrifugal and vertical line shaft pumps in systems where resistance can be varied establish a pump curve by measuring flow and differential pressure at a minimum of five points. These points are required to be from pump minimum flow to at least design flow, if practicable. At least one point is to be designated as the reference point for future inservice tests.

The OM Codes further state that it is the responsibility of the Owner to determine if preservice testing requirements apply when reference values may have been affected by repair, replacement, or maintenance on a pump. A new reference value or set of values is required to be determined or the previous reference value(s) reconfirmed by a comprehensive or Group A test prior to declaring the pump operable.

**Position:** Whenever a pump's reference values may have been affected by repair, replacement, or maintenance, a preservice test **SHALL** be performed in accordance with the preservice test requirements of Reference 1 of this CTP for the applicable pump design. If it is determined through evaluation that the maintenance activity did not affect the existing reference values, then the previous reference value(s) **SHALL** be reconfirmed by a comprehensive or Group A test prior to declaring the pump operable. Evaluation that the maintenance activity did not affect the pump's reference values **SHALL BE DOCUMENTED**.

Since a preservice test may be substituted for any other required inservice test, this test could be performed in place of any quarterly or comprehensive test. Performing it in lieu of a comprehensive test would have minimal impact on test scope or schedule and would provide valuable information for subsequent evaluations of pump performance.
For centrifugal and vertical line shaft pumps in systems with variable resistance, one of the five points on the preservice test curve (preferably one between 100% and 120% of design flow but in no case less than 80% of design flow) **SHALL** be selected as the reference point for the comprehensive tests. If quarterly testing will be performed at full flow, then the same point should be selected for the quarterly pump tests. If quarterly testing cannot be performed at full flow, then another point on the preservice test curve **SHALL** be selected as the reference point for the quarterly tests.

**References:**

1. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition and later, Subsection ISTB.

**Number:** CTP-IST-006, Rev. 1

**Title:** Classification and Testing of Class 1 Safety/Relief Valves With Auxiliary Actuating Devices

**Applicability:** All Exelon IST Programs

**Background:** The definition for valve categories in the ASME Codes has been consistent since the beginning. Category A, B, C and D valves are basically defined the same now as they were in early editions/addenda of Section XI of the ASME Boiler and Pressure Vessel Code. Likewise, the requirement that valves meeting the definition for more than one category be tested in accordance with all the applicable categories has been consistent over time.

Due to a lack of clear testing requirements for Class 1 Safety/Relief Valves With Auxiliary Actuating Devices in early ASME Codes, these valves were historically classified as Category B/C. As relief valves, they were required to meet the Category C testing requirements; and since the auxiliary operators essentially put them in the classification of power-operated valves, Category B requirements were imposed to address stroke-time and position indication testing considerations.

**Position:** The B/C categorization of these valves was initially made due to a lack of specific Code requirements. However, with the publication of ASME OM Standard OM-1 in 1981, which identified specific requirements for these valves, it became irrelevant. All applicable testing requirements for these valves were specified in OM-1, which has been superceded by Appendix I of the ASME OM Code. Efforts of the Code to exempt these valves from Category B testing requirements further demonstrate their inapplicability. Therefore, these valves should be classified as Category C.

**References:**

1. ASME OM-1987, ASME/ANSI Operation and Maintenance of Nuclear Power Plants, Part 1, Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices.
2. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition and later, Subsection ISTC and Appendix I.

**Number:** **CTP-IST-007, Rev. 1**

**Title:** **Skid-Mounted Components**

**Applicability:** All Exelon IST Programs

**Background:** The term "skid-mounted component" was coined to describe support components, such as pumps and valves for the purposes of IST, that function in the operation of a supported component in such a way that their proper functioning is confirmed by the operation of the supported component. For example, the successful operation of an emergency diesel-generator set confirms that essential support equipment, such as cooling water and lube oil pumps and valves, are functioning as required. The concept of "skid-mounted" is actually irrespective of physical location.

**Position:** Components that are required to perform a specific function in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident are required to tested in accordance with the ASME Code-in-effect for the station's IST Program. It is not the intent of the skid-mounted exemption that it be used in cases where the specific testing requirements of the Code for testing of pumps and valves can be met. For example, if adequate instrumentation is provided to measure a pump's flow and differential pressure, and if required points for vibration measurement can be accessed, then invoking the skid-mounted exemption would be inappropriate.

The "skid-mounted" exclusion as stated in references 2 and 3, below, may be applied to pumps or valves classified as "skid-mounted" in the IST Program provided that they are tested as part of the major component and are justified to be adequately tested. Such components **SHALL** be listed in the Program Plan document and identified as skid-mounted. Pump or Valve Data Sheets which contain the justification regarding the adequacy of their testing **SHALL** be provided in the IST Bases Document.

**References:**


1. NUREG-1482 (Rev.0 and Rev.1), Section 3.4, Skid-Mounted Components and Component Subassemblies
2. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition OMa-1996 Addenda, ISTA 1.7, ISTC 1.2.
3. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1998 Edition and later, ISTA-2000 and ISTC-1200.

**Number:** **CTP-IST-008, Rev. 1**

**Title:** **Position Verification Testing**

**Applicability:** All Exelon IST Programs

**Background:** Valves with remote position indicators are required to be observed locally at least once every two years to verify that valve operation is accurately indicated. This local observation should be supplemented by other indications to verify obturator position. Where local observation is not possible, other indications shall be used for verification of valve operation.

**Position:** All valves within the scope of the IST Program that are equipped with remote position indicators, shall be tested. The testing shall clearly demonstrate that the position indicators operate as required and are indicative of obturator position. For example, a valve that has open and closed indication shall be cycled to demonstrate that both the open and closed indicators perform as designed, including both or neither providing indication when the valve is in mid-position. Valves that have indication in one position only shall be cycled to ensure that the indicator is energized/de-energized when appropriate. These requirements apply to all IST valves, regardless of whether they are classified as active or passive.

**References:**

1. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition with OMa-1996 Addenda, para ISTC 4.1.
2. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1998 Edition and later, para ISTC-3700.
3. NUREG-1482, Rev. 1, Section 4.2.8

**Number:** **CTP-IST-009, Rev. 0**
**Title:** **ASME Class 2 & 3 Relief Valve Testing Requirements**
**Applicability:** All Exelon IST Programs
**Background:** The ASME OM Code, Appendix I, provides requirements for Inservice Testing of ASME Class 1, 2, and 3 Pressure Relief Devices. The requirements for Class 1 pressure relief devices are identified separately from those for Classes 2 and 3. The requirements for Class 2 and 3 pressure relief devices are identified together. This Technical Position applies only to ASME Class 2 and 3 safety and relief valves. It does not include vacuum breakers or rupture discs. Class 2 PWR Main Steam Safety Valves are also not included in this Technical Position because they are required to be tested in accordance with ASME Class 1 safety valve requirements.

**Position:** This Technical Position applies to the classification, selection, scheduling and testing of ASME Class 2 and 3 safety and relief valves only. For the purposes of this Technical Position, the term "relief valve" will be used to apply to both types.

Classification

**DETERMINE** whether or not the valve may be classified as a thermal relief. A thermal relief valve is one whose only over-pressure protection function is to protect isolated components, systems, or portions of systems from fluid expansion caused by changes in fluid temperature. If a relief valve is required to perform any other function in protecting a system or a portion of a system that is required to place the reactor in the safe shutdown condition, to maintain the safe shutdown condition, or to mitigate the consequences of an accident, it cannot be classified as a thermal relief valve.

Class 2 and Class 3 thermal relief valves are required to be **TESTED** or **REPLACED** every 10 years unless performance data indicates the need for more frequent testing or replacement. Details regarding whether a Class 2 or Class 3 thermal relief valve is tested or replaced and the bases for the associated frequency **SHALL** be documented in the IST Bases Document.

Grouping, sample expansion and the requirement to test 20% of the valves within any 48-month period do not apply to Class 2 and Class 3 thermal relief valves. Class 2 and 3 thermal relief valves may be optionally tested in accordance with the more conservative requirements for non-thermal relief valves if desired.
Non-thermal relief valves shall be grouped in accordance with the grouping criteria of Appendix I (same manufacturer, type, system application, and service media). Groups may range in size from one valve to all of the valves meeting the grouping criteria. Grouping criteria **SHALL** be documented in the IST Bases Document or other document that controls Class 2 and 3 IST relief valve testing.
If two valves are manufactured at the same facility to the same specifications, dimensions, and materials of construction but under a different manufacturer's name due to a merger or acquisition, the valves may be considered to meet the requirement for same manufacturer.

Valves in systems containing air or nitrogen may be considered to have the same service media.

Selection
Valves **SHALL** be selected for testing such that the valve(s) in each group with the longest duration since the previous test are chosen first. This **SHALL INCLUDE** any valves selected due to sample expansion.

**IF** an exception to this requirement is necessary due to accessibility or scheduling considerations, **DOCUMENT** the reason and that the valves that should have been selected will not come due prior to the next opportunity to test them (e.g., the next outage).

Scheduling
Grace is **NOT** permitted for relief valve testing, unless authorized by an NRC-approved relief request.

All frequency requirements are test-to-test (i.e., they begin on the most recent date on which the valve was tested per Appendix I requirements and end on the date of the next Appendix I test).

All Class 2 or Class 3 relief valves in any group must be tested at least once every 10 years.

Valves within each group must be tested such that a minimum of 20% of the valves are tested within any given 48-month period.

If all of the valves in a group are removed for testing and replaced with pretested valves, the removed valves shall be tested within 12 months of removal from the system.

If less than all of the valves in a group are removed for testing and replaced with pretested valves, the removed valves shall be tested within 3 months of removal from the system or before resumption of electric power generation, whichever is later.

Testing of pretested valves must have been performed such that they will meet the 10 year and 20% / 48-month requirements for the entire time they are in service.

Testing of relief valves that is required to be performed during an outage **SHALL BE PERFORMED** as early in the outage as practicable in order to allow for contingency testing of additional valves in the event a scheduled valve fails its as-found test.

Testing
Testing **SHALL BE PERFORMED** using the same service media wherein the valve was installed.

Testing of additional valves due to failure of a scheduled valve to meet its as-found setpoint acceptance criteria **SHALL BE PERFORMED** in accordance with all applicable OM Code and Technical Specification requirements.

**References:**

1. ASME OM Code, 1995 Edition and later, Mandatory Appendix I, Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants

**Number:** CTP-IST-010, Rev. 0
**Title:** ERV and PORV Testing Requirements
**Applicability:** Exelon Stations with Electromatic Relief Valves or Power-Operated Relief Valves
**Background:** Electromatic Relief Valves (ERVs) and Power-Operated Relief Valves (PORVs) are used at nuclear plants to protect the Reactor Coolant pressure boundary from overpressure under various conditions. This may include preventing excessive challenges to BWR Main Steam Safety Valves and PWR Pressurizer Safety Valves during operation at power or preventing low temperature overpressure (LTOP) conditions from exceeding brittle fracture limits when the plant is cooled down.

ERVs and PORVs come in a variety of designs, which can make their categorization and testing in accordance with OM Code requirements challenging. Some are actual relief valves that are equipped with air operators to open the valves against spring force upon actuation by some pressure-sensing apparatus in the primary coolant system. Others may be motor-operated gate valves that open and close as a result of signals generated at predetermined pressure settings. The key to determining the proper category of the ERV or PORV is not the nomenclature of the valve (i.e., "relief valve"), but the actual physical design of the valve and its actuator.

Power-operated relief valves were not addressed by the ASME Codes until the OMa-1996 Addenda. Even then, they were only alluded to by the addition of an exclusion to paragraph ISTC 1.2 which stated: "Category A and B safety and relief valves are excluded from the requirements of ISTC 4.1, Valve Position Verification and ISTC 4.2, Inservice Exercising Test." Up to this point, Owners typically categorized these valves as Category B/C, assigned the position verification and exercise test requirements for the Category B portion, and then obtained Relief from the NRC to not perform them due to their impracticability. The Relief Requests provided a detailed description of the proposed alternative techniques, which generally matched Category C requirements for valves with auxiliary actuators.

Paragraph ISTC-5110 was introduced in the OM-1998 Edition of the OM Code which stated: "Power-operated relief valves shall meet the requirements of ISTC-5100 for the specific Category B valve type and ISTC-5240 for Category C valves." This essentially added no value, since this was already the practice.
OMb-2000 added the following definition of a power-operated relief valve to paragraph ISTC-2000, Supplemental Definitions: "a power-operated valve that can perform a pressure relieving function and is remotely actuated by either a signal from a pressure sensing device or a control switch. A power-operated relief valve is not capacity certified under ASME Section III overpressure protection requirements." In addition, OMb-2000 added the following to paragraph ISTC-3510: "Power-operated relief valves shall be exercise tested once per fuel cycle."
The addition of exclusions, definitions and test requirements to the Code for these valves has only tended to make actual testing requirements more conflicting or confusing. These valves are still being categorized as Category B, C or B/C (with a few A's or A/C's) throughout the industry with testing requirements assigned accordingly and relief still being sought where deemed appropriate.

**Position:** Each Station **MUST DETERMINE** the proper valve category or categories for its ERVs and/or PORVs based on valve and actuator design, and **IDENTIFY** appropriate testing requirements and methodologies appropriate to that categorization. The following table summarizes the possible categories that can be applied to an ERV or PORV, whether or not the valve meets the definition of a PORV as defined in ISTC-2000, and the associated test requirements:

| Category | | Meets PORV Def. | Test Requirements | | Comments |
|---|---|---|---|---|---|
| B | C | | B | C | |
| X | | No | **ISTC-3700 ISTC-5120* ISTC-5130* ISTC-5140*** | | Valve is not a safety or relief valve; actuator is MO, AO or HO. Does **not** meet Code definition of PORV (ISTC-2000). Exercise test quarterly per ISTC-3510, or defer to Cold Shutdown or RFO per ISTC-3521. |
| X | | Yes | **ISTC-3700 ISTC-5110** | | Valve meets Code definition of PORV (ISTC-2000). Exercise test once per fuel cycle per ISTC-3510 and ISTC-5110. |
| | X | No | | **ISTC-5240 App. I** | Valve is a relief valve with AO or HO actuator. Does **not** meet Code definition of PORV (ISTC-2000). Exempt from Cat B testing (ISTC-3500/ISTC-3700) per ISTC-1200. |
| X | X | No | | **ISTC-5240 App. I** | Valve is a relief valve with AO or HO actuator. Does **not** meet Code definition of PORV (ISTC-2000). Exempt from Cat B testing (ISTC-3500/ISTC-3700) per ISTC-1200. |
| X | X | Yes | **ISTC-3700 ISTC-5110** | | Should not be classified Category C. Relief valves do not meet the Code definition of PORV (ISTC-2000). |

* **As applicable**

A Relief Request **SHALL BE SUBMITTED** for any ERV or PORV that does not meet the applicable test requirements specified in the above table.

A detailed description of the rationale behind the category designation, the assignment of testing requirements, and how they are satisfied **SHALL BE PROVIDED** on the applicable IST Bases Document Valve Data Sheets.

**References:**


1. ASME OM Code, 1995 Edition and later, Subsection ISTC, Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants
2. ASME OM Code, 1995 Edition and later, Mandatory Appendix I, Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants

**Number:** CTP-IST-011, Rev. 0

**Title:** **Extension of Valve Exercise Test Frequencies to Cold Shutdown or Refueling Outage**

**Applicability:** All Exelon IST Programs

**Background:** Requirements for exercise testing of Category A and B power-operated valves and check valves (Category C) are stipulated in the OM Code as follows:
ISTC-3510 states: "Active Category A, Category B and Category C check valves shall be exercised nominally every 3 mo, except as provided by paras. ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and ISTC-5222." Plant Technical Specifications for IST identify the 3 month frequency as once per 92 days with allowance for a 25% extension.

ISTC-3520 is divided into ISTC-3521 for Category A and Category B valves, and ISTC-3522 for Category C check valves. ISTC-3521 states: "Category A and B valves shall be tested as follows:

a. full-stroke exercising of Category A and Category B valves during operation at power to the position(s) required to fulfill its function(s).
b. if full-stroke exercising during operation at power is not practicable, it may be limited to part-stroke during operation at power and full-stroke during cold shutdowns.
c. if exercising is not practicable during operation at power, it may be limited to full-stroke exercising during cold shutdowns.
d. if exercising is not practicable during operation at power and full-stroke during cold shutdowns is also not practicable, it may be limited to part-stroke during cold shutdowns and full-stroke during refueling outages.
e. if exercising is not practicable during operation at power or cold shutdowns, it may be limited to full-stroke during refueling outages.

Paragraphs (f) through (h) provide additional limitations on cold shutdown and refueling outage exercise testing.

ISTC-3522 provides essentially the same requirements for check valves except that the requirement to consider partial-stroke exercising is not included.

ISTC-3540 stipulates exercise testing frequency requirements for manual valves.

ISTC-3550 discusses valves in regular use, ISTC-3570 addresses valves in systems out-of-service, ISTC-5221 addresses special frequency considerations for check valves in a sample disassembly and inspection program, and ISTC-5222 addresses check valves in a condition monitoring program.

ISTC-3521 makes it clear that the intent of the Code is for valves to be exercised quarterly unless it is impracticable to do so. When it is impracticable, the graduated approach of ISTC-3521 through cold shutdown and refueling frequencies and partial and full-stroke exercising impose an obligation on the owner to perform at least some testing as frequently as practicable.

The determination of "practicability" is left to the owner. The industry has universally adopted the practice of writing Cold Shutdown and Refueling Outage Justifications to document conditions that they believe to be "impracticable". There are no Code or regulatory definitions of impracticability nor are there any Code or regulatory requirements to prepare Cold Shutdown or Refueling Outage Justifications. However, Reference 2 provides a good deal of useful guidance regarding a regulatory opinion of what constitutes it. Merriam-Webster defines "impracticable" as (1) impassable or (2) not practicable; incapable of being performed or accomplished by the means employed or at command".

**Position:**

The following direction **SHALL BE IMPLEMENTED** when establishing exercise test frequencies for power-operated Category A and B valves and Category C check valves:

1. Stations **SHALL DETERMINE** the practicability of performing exercise testing of all valves in their IST Programs in accordance with the Code.
2. When preparing or performing a technical revision to a Cold Shutdown or Refueling Outage Justification, the Station IST Engineer **SHALL OBTAIN** a peer review from the Corporate IST Engineer and at least one other Site IST Program Engineer.
3. Cold Shutdown and Refueling Outage Justifications **SHALL PROVIDE** a strong, clear technical case for the testing deferral. References to NUREG-1482 may be made to support the justification; however, it is not to be cited as the justification itself.

**References:**


1. ASME OM Code, 1995 Edition and later, Subsection ISTC, Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants
2. NUREG 1482, Revision 1, Guidelines for Inservice Testing at Nuclear Power Plants, Sections 2.4.5 and 3.1.

**Number:** CTP-IST-012, Rev. 0

**Title:** Use of ASME OM Code Cases for Inservice Testing

**Applicability:** All Exelon IST Programs

**Background:** Code Cases are issued to clarify the intent of existing Code requirements or to provide alternatives to those requirements. Adoption of the alternative requirements provided by Code Cases are optional; they only become mandatory when an owner commits to them. Code Cases are included as a separate section at the end of published editions/addenda of the OM Code for the user's convenience. They are not a part of any Code edition or addenda and endorsement of specific editions/ addenda of the OM Code by the NRC does not constitute endorsement of the Code Cases.

If the Code Committee desires to make the requirements of a Code Case mandatory, those requirements are incorporated into the Code at a later date. For example, Code Case OMN-1, Alternative Rules for Preservice and Inservice Testing of Active Electric Motor Operated Valve Assemblies in Light-Water Reactor Power Plants, was incorporated into the 2009 Edition of the OM Code as Mandatory Appendix III. Appendix III will become mandatory for IST Programs when 10 CFR 50.55a imposes the requirement that 10-year interval updates meet the requirements of the 2009 Edition of the ASME Code or later. Until such time, plants may optionally implement OMN-1 or may continue to perform stroke-time testing and position indication verification in accordance with Subsection ISTC requirements.

In order for an OM Code Case to be used in an Inservice Testing Program at a nuclear power plant, it must be authorized by ASME and approved by the NRC. A Code Case is authorized for use by ASME as soon as it is published, provided certain limitations included in the Code Case, such as the applicability statement, are met. OM Code Cases are published on the ASME Web site at http:// cstools.asme.org and in Mechanical Engineering magazine as they are issued.
Efforts to clarify or simplify the use of Code Cases have instead created conflicting requirements which need to be addressed in order to avoid noncompliance with the Code or CFR. These include:

- The Code of Federal Regulations, paragraph 10 CFR 50.55a(b)(6) states that Licensees may apply ASME OM Code Cases listed in Regulatory Guide 1.192 without prior NRC approval subject to certain conditions. One condition states that when a licensee initially applies a listed Code case, the licensee shall apply the most recent version of the Code case "incorporated by reference in this paragraph". A second condition states that if a licensee has previously applied a Code case and a later version of the Code case is "incorporated by reference in this paragraph", the licensee may continue to apply, to the end of the current 120-month interval, the previous version of the Code case or may apply the later version of the Code case, including any NRC-specified conditions placed on its use. A third condition restricts the use of annulled Code cases to those that were in use prior to their annulment.
  It is not clear what "incorporated by reference in this paragraph" is referring to. If "this paragraph" means 10 CFR 50.55a(b)(6), this would refer to Reg

Guide 1.192. If it refers more broadly to 10 CFR 50.55a(b), this would also include 10CFR 50.55a(b)(3), which contains the endorsement of the latest edition/addenda of the OM Code approved for use by the NRC. In the first case, Reg Guide 1.192 was published in June 2003 with no revisions to date. Versions of the Code cases referenced therein have all exceeded their expiration dates and are not applicable to current Code editions. In the latter case, since Code Cases are independent of Code editions/addenda, there is a disconnect between approval of Code versus Code Cases.

- Requirements for the use of Code Cases are stipulated in the body of the OM Code. In all cases from the OM-1995 Edition through the OMa-2011 Addenda, it is required that "Code Cases shall be applicable to the edition and addenda specified in the inservice test plan" and " Code Cases shall be in effect at the time the inservice test plan is filed". These requirements are almost never met.
- Code Cases provided as attachments up to and including the OMb-2006 Addenda contained expiration dates. These dates are usually prior to the time it is desired to use the Code Case.
- Each Code Case contains an applicability statement. Even in the latest Edition/addenda of the Code incorporated by reference in 10 CFR 50.55a, these statements usually indicate that the Code Case applies to earlier versions of the Code than what is required to be used.

Despite the inconveniences in implementing Code Cases, they often provide alternatives to the Code that are technically superior and highly desirable from a cost-efficiency perspective. Therefore, each plant should review the potential use of Code Cases with Corporate Engineering, particularly when in the process of performing 10-year updates.

**Position:** The following requirements **SHALL BE IMPLEMENTED** in order to use ASME OM Code Cases at Exelon stations:

1. All Code Cases used by a Station for their IST Program **SHALL BE LISTED** in the IST Program Plan.
2. Code Case expiration dates, applicability statements, and the Edition/ addenda of the Code-in-effect for a Station's IST Program **SHALL** all be compatible for Code Cases implemented in an IST Program **OR** a Relief Request **SHALL BE SUBMITTED** to use the Code Case in accordance with Reference 2 of this CTP.

**References:**

1. ASME OM Code, 1995 Edition and later, Subsection ISTA, General Requirements
2. ER-AA-321, Administrative Requirements for Inservice Testing

**Number:** CTP-IST-013, Rev. 0

**Title:** Exercise Testing Requirements for Valves with Fail-Safe Actuators

**Applicability:** All Exelon IST Programs

**Background:** Valves with fail-safe positions usually have actuators that use the fail-safe mechanism to stroke the valve to the fail-safe position during normal operation. For example, an air-operated valve that fails closed may use air to open the valve against spring pressure. When the actuator is placed in the closed position, air is vented from the diaphragm and the spring moves the obturator to the closed position.

The fail-safe test is generally an integral part of the stroke time exercise test and is thus performed at the same frequency. Where the exercise test is performed less frequent than every 3 months, a cold shutdown justification, refueling outage justification, or relief request is required. The same justification for the stroke time exercise test would also apply to the fail-safe test.

**Position:** In cases where normal valve operation moves the valve to the fail-safe position by de-energizing the operator electrically, by venting air, or both (e.g., a solenoid valve in the air supply system of a valve operator moves to the vent position on loss of power), no additional fail-safe testing is required.

In cases where a fail-safe actuator does not operate as an integral part of normal actuator operation, the fail-safe feature(s) must be tested in a manner that demonstrates proper operation of each component that contributes to the fail-safe operation. The means used to meet this requirement shall be described in the IST Bases Document.

**References:**

1. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition and later, Subsection ISTC.

**Number:** CTP-IST-014, Rev. 0

**Title:** **Bi-directional Testing of Check Valves to Their Safety and Non-Safety Related Positions**

**Applicability:** All Exelon IST Programs

**Background:** This CTP addresses those cases in which inservice testing of check valves is performed in accordance with the requirements of ISTC-5221. It does not address these issues for check valves that are included in a Condition Monitoring Program. References 2 and 3 of this CTP provide additional information regarding check valve testing and Condition Monitoring.

The OM Code changed the focus of inservice testing of check valves from the ability to demonstrate that a check valve was capable of being in its safety-related position to demonstrating that the obturator was capable of free, unobstructed movement in both directions. This was accomplished by introducing a bidirectional testing requirement to inservice testing of check valves. Confirmation of this change in focus is evidenced by the fact that the Code required frequency for bi-directional testing of check valves is the lesser of the frequencies that the open direction and close direction tests can be performed. In other words, if a check valve is capable of being tested in the open direction quarterly but can only be tested closed during refueling outages, the Code required frequency for the bidirectional test is every refueling outage irrespective of the valve's safety position(s).

Condition Monitoring is the preferred method for check valve testing and inspection. For check valves that are not in a Condition Monitoring Program, the OM Code provides three options: flow/flow reversal, use of an external mechanical exerciser, and sample disassembly/examination. Of these, the flow and mechanical exerciser methods are preferred; the Code limits sample disassembly/ examination to those cases where the others are impractical. In all of these non-Condition Monitoring methods, demonstration of unobstructed obturator travel in the open and closed directions is required.

**Position:** The following requirements **SHALL BE MET** when implementing this CTP:

1. When using flow to demonstrate opening of a check valve with an open safety function, **OBSERVE** that the obturator has traveled to **EITHER** the full open position **OR** to the position required to perform its intended safety function(s).
   Travel to the position required to perform its intended safety function(s) is defined as the minimum flow required to mitigate the system's most limiting accident requirements. For example, if three different accident scenarios called for flows of 300, 600 and 1000 gpm respectively, the required test flow would be 1000 gpm.
   The full open position is defined as the point at which the obturator is restricted from further travel (e.g., hits the backstop). Methods for demonstrating travel to the full open position must be qualified if less than required accident flow is used.

2. When using flow to demonstrate that the obturator of a valve that does not have an open safety function has traveled open, the test **MUST DEMONSTRATE** that the obturator is unimpeded.
3. Tests for check valve closure **MUST DEMONSTRATE** that the check valve has travelled to the closed position, not merely that it is in the closed position.
4. Whenever design requirements are used for IST acceptance criteria, instrument accuracy **MUST BE CONSIDERED.** This can be accomplished by determining that sufficient margin was included in the design calculation or by adding a correction to the IST acceptance criteria.
5. Non-intrusive methods used to credit obturator position **SHALL BE QUALIFIED.** Documentation of the means used to qualify the test method(s) shall be documented in the IST Bases Document.
6. The Code requirement satisfied for each check valve, identification of the method used to satisfy the Code requirement, and a description of how the method satisfies the requirement **SHALL BE PROVIDED OR RERENENCED** on the Valve Data Sheet in the IST Bases Document for each check valve.

**References:**


1. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition and later, Subsection ISTC.
2. ER-AA-321, Administrative Requirements for Inservice Testing
3. ER-AA-321-1005, Condition Monitoring for Inservice Testing of Check Valves

**ATTACHMENT 14**

**INSERVICE TESTING PUMP TABLE with P&ID**

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## Diesel Fuel Oil (Page 1)

| Pump EIN | Class | P&ID | P&ID Coor. | Pump Type | Driver | Nominal Speed | Group | Test Type | Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1DO01PA | 3 | 1036, 1 | B1 | PD | MOTOR | 1750 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name | Diesel Oil Transfer Pump A | | | | | | | | | |
| 1DO01PB | 3 | 1036, 1 | B5 | PD | MOTOR | 1750 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name | Diesel Oil Transfer Pump B | | | | | | | | | |
| 1DO01PC | 3 | 1036, 2 | B4 | PD | MOTOR | 1750 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name | Diesel Oil Transfer Pump C | | | | | | | | | |

## Fuel Pool Cooling (Page 1)

| Pump EIN | Class | P&ID | P&ID Coor. | Pump Type | Driver | Nominal Speed | Group | Test Type | Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1FC02PA | 3 | 1037 -3 | E-7 | C | MOTOR | 1780 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name | Fuel Pool Cooling and Clean-Up Pump A | | | | | | | | | |
| 1FC02PB | 3 | 1037 -3 | B-7 | C | MOTOR | 1780 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name | Fuel Pool Cooling and Clean-Up Pump B | | | | | | | | | |

## High Pressure Core Spray (Page 1)

| Pump EIN | Class | P&ID | P&ID Coor. | Pump Type | Driver | Nominal Speed | Group | Test Type | Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E22-C001 | 2 | 1074 | B3 | VLS | MOTOR | 1780 | B | Comprehensive | Y2 | | | |
| | | | | | | | B | Group B | M3 | | | |
| | | Pump Name High Pressure Core Spray (HPCS) Pump | | | | | | | | | | |
| 1E22-C003 | 2 | 1074 | C5 | C | MOTOR | 3500 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name HPCS Water Leg Pump | | | | | | | | | | |

## Low Pressure Core Spray (Page 1)

| Pump EIN | Class | P&ID | P&ID Coor. | Pump Type | Driver | Nominal Speed | Group | Test Type | Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E21-C001 | 2 | 1073 | E7 | VLS | MOTOR | 1780 | B | Comprehensive | Y2 | | | |
| | | | | | | | B | Group B | M3 | | | |
| | | Pump Name Low Pressure Core Spray (LPCS) Pump | | | | | | | | | | |
| 1E21-C002 | 2 | 1073 | B7 | C | MOTOR | 3500 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | 3201 | | |
| | | Pump Name LPCS and RHR Loop A Water Leg Pump | | | | | | | | | | |

## Residual Heat Removal (Page 1)

| Pump EIN | Class | P&ID | P&ID Coor. | Pump Type | Driver | Nominal Speed | Group | Test Type | Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-C002A | 2 | 075 Sht.: | A-7 | VLS | MOTOR | 1780 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name Residual Heat Removal (RHR) Pump A | | | | | | | | | | |
| 1E12-C002B | 2 | 075 Sht.: | B-4 | VLS | MOTOR | 1780 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name Residual Heat Removal (RHR) Pump B | | | | | | | | | | |
| 1E12-C002C | 2 | 075 Sht.: | B-3 | VLS | MOTOR | 1780 | B | Comprehensive | Y2 | | | |
| | | | | | | | B | Group B | M3 | | | |
| | | Pump Name Residual Heat Removal (RHR) Pump C | | | | | | | | | | |
| 1E12-C003 | 2 | 075 Sht.: | C-3 | C | MOTOR | 3500 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | 3201 | | |
| | | Pump Name RHR LOOP B/C Water Leg Pump | | | | | | | | | | |

## Reactor Core Isolation Cooling (Page 1)

| Pump EIN | Class | P&ID | P&ID Coor. | Pump Type | Driver | Nominal Speed | Group | Test Type | Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E51-C001 | 2 | 1079, 2 | E1 | C | TURBINE | 2550 | B | Comprehensive | Y2 | | | |
| | | | | | | | B | Group B | M3 | | | |
| | | Pump Name Reactor Core Isolation Cooling (RCIC) Pump | | | | | | | | | | |
| 1E51-C003 | 2 | 1079, 2 | B5 | C | MOTOR | 3500 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | 3201 | | |
| | | Pump Name RCIC Water Leg Pump | | | | | | | | | | |

## Standby Liquid Control (Page 1)

| Pump EIN | Class | P&ID | P&ID Coor. | Pump Type | Driver | Nominal Speed | Group | Test Type | Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C41-C001A | 2 | 1077 | C5 | PD | MOTOR | 368* | B | Comprehensive | Y2 | | | |
| | | | | | | | B | Group B | M3 | | | |
| | | Pump Name Standby Liquid Control (SLC) Pump A | | | | | | | | | | |
| 1C41-C001B | 2 | 1077 | E5 | PD | MOTOR | 368* | B | Comprehensive | Y2 | | | |
| | | | | | | | B | Group B | M3 | | | |
| | | Pump Name Standby Liquid Control (SLC) Pump B | | | | | | | | | | |

## Shutdown Service Water (Page 1)

| Pump EIN | Class | P&ID | P&ID Coor. | Pump Type | Driver | Nominal Speed | Group | Test Type | Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX01PA | 3 | 1052 | D7 | VLS | MOTOR | 895 | B | Comprehensive | Y2 | | | |
| | | | | | | | B | Group B | M3 | | | |
| | | Pump Name Shutdown Service Water Pump A | | | | | | | | | | |
| 1SX01PB | 3 | 1052 | D7 | VLS | MOTOR | 895 | B | Comprehensive | Y2 | | | |
| | | | | | | | B | Group B | M3 | | | |
| | | Pump Name Shutdown Service Water Pump B | | | | | | | | | | |
| 1SX01PC | 3 | 1052 | D7 | VLS | MOTOR | 1760 | B | Comprehensive | Y2 | | | |
| | | | | | | | B | Group B | M3 | | | |
| | | Pump Name Shutdown Service Water Pump C | | | | | | | | | | |

## Control Room Ventilation (Page 1)

| Pump EIN | Class | P&ID | P&ID Coor. | Pump Type | Driver | Nominal Speed | Group | Test Type | Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0VC08PA | 3 | 1102, 5 | D7 | C | MOTOR | 1770 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name | Control Room HVAC Chilled Water Pump A | | | | | | | | | |
| 0VC08PB | 3 | 1102, 6 | D7 | C | MOTOR | 1770 | A | Comprehensive | Y2 | | | |
| | | | | | | | A | Group A | M3 | | | |
| | | Pump Name | Control Room HVAC Chilled Water Pump B | | | | | | | | | |

# ATTACHMENT 15
# INSERVICE TESTING VALVE TABLE with P&ID

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## Component Cooling Water (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1CC049 | 10 | GA | MO | 1032, 3 | C8 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name CCW SUPPLY CMNT OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1CC050 | 6 | GA | MO | 1032, 3 | C7 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name CCW CNMT FEED LINE INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1CC053 | 6 | GA | MO | 1032, 3 | C3 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name CCW RETURN LINE CNMT INBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1CC054 | 10 | GA | MO | 1032, 3 | C1 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name CCW CNMT RETURN LINE OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1CC057 | 8 | GA | MO | 1032, 3 | D-8 | 2 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | Valve Name CCW DRYWELL ISOLATION VALVE | | | | | | | | | | | | |
| 1CC060 | 8 | GA | MO | 1032, 3 | C-2 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name CCW RETURN FROM NRHX INBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1CC071 | 4 | GA | MO | 1032, 3 | E2 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name SSW CNMT FEED LINE INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1CC072 | 4 | GA | MO | 1032, 3 | E1 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name SSW CNMT FEED LINE OUTBOARD ISOL VALVE | | | | | | | | | | | | |
| 1CC073 | 4 | GA | MO | 1032, 3 | F1 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name SSW CNMT FEED LINE OUTBOARD ISOL VALVE | | | | | | | | | | | | |
| 1CC074 | 4 | GA | MO | 1032, 3 | F2 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name SSW CNMT FEED LINE INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1CC075A | 14 | BTF | MO | 1032, 2 | E3 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | | Valve Name FC HEAT EXCHANGER 1A CCW INLET VALVE | | | | | | | | | | | | |

## Component Cooling Water (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1CC075B | 14 | BTF | MO | 1032, 2 | C3 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name FC HEAT EXCHANGER 1B CCW INLET VALVE | | | | | | | | | | | | | |
| 1CC076A | 14 | BTF | MO | 1032, 2 | D2 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name FC HEAT EXCHANGER 1A CCW OUTLET VALVE | | | | | | | | | | | | | |
| 1CC076B | 14 | BTF | MO | 1032, 2 | C2 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name FC HEAT EXCHANGER 1B CCW OUTLET VALVE | | | | | | | | | | | | | |
| 1CC127 | 8 | GA | MO | 1032, 3 | D-8 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name CCW CONTAINMENT INBOARD ISOL VALVE | | | | | | | | | | | | | |
| 1CC128 | 8 | GA | MO | 1032, 3 | C-2 | 2 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name CCW DRYWELL ISOLATION VALVE | | | | | | | | | | | | | |
| 1CC185A | 0.75x1 | RV | SA | 1046, 1 | F1 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name FPC&C HX 1A SHELL RELIEF VALVE | | | | | | | | | | | | | |
| 1CC185B | 0.75x1 | RV | SA | 1046, 1 | F3 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name FPC & C HX 1B SHELL RELIEF VALVE | | | | | | | | | | | | | |
| 1CC280A | 0.75x1 | RV | SA | 1032, 6 | E4 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name 1FC02PA MOTOR HX SHELL SIDE RELIEF VALVE | | | | | | | | | | | | | |
| 1CC280B | 0.75x1 | RV | SA | 1032, 6 | C4 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name 1FC02PB MOTOR HX SHELL SIDE RELIEF VALVE | | | | | | | | | | | | | |

## Containment Monitoring (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1CM002B | 0.75 | EFC | SA | 1034, 1 | A-7 | 2 | O | O/C | C | A | CC | RR | 2203 | RFJ-015 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-015 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SUPP POOL LEVEL STP EXCESS FLOW CHECK VALVE | | | | | | | | | | | | | |
| 1CM011 | 0.75 | GA | SO | 1034, 2 | C-7 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name OUTBOARD CONT. MONITORING CONT. ISOL. VALVE DIV.1 | | | | | | | | | | | | | |
| 1CM012 | 0.75 | GA | SO | 1034, 2 | C-6 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name INBOARD CONT. MONITORING CONT. ISOL. VALVE DIV.1 | | | | | | | | | | | | | |
| 1CM022 | 0.75 | GA | SO | 1034, 2 | D-3 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name OUTBOARD CONT. MONITORING CONT. ISOL. VALVE DIV. 2 | | | | | | | | | | | | | |
| 1CM023 | 0.75 | GA | SO | 1034, 2 | D-3 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name INBOARD CONT. MONITORING CONT. ISOL. VALVE DIV. 2 | | | | | | | | | | | | | |
| 1CM025 | 0.75 | GA | SO | 1034, 2 | C-3 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name OUTBOARD CONT. MONITORING CONT. ISOL. VALVE DIV. 2 | | | | | | | | | | | | | |
| 1CM026 | 0.75 | GA | SO | 1034, 2 | C-3 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name INBOARD CONT. MONITORING CONT. ISOL. VALVE DIV. 2 | | | | | | | | | | | | | |
| 1CM047 | 0.75 | GA | SO | 1034, 2 | D-6 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name INBOARD CONT. MONITORING CONT. ISOL. VALVE DIV.1 | | | | | | | | | | | | | |
| 1CM048 | 0.75 | GA | SO | 1034, 2 | D-7 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name OUTBOARD CONT. MONITORING CONT. ISOL. VALVE DIV.1 | | | | | | | | | | | | | |

## Containment Monitoring (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1CM066 | 0.75 | EFC | SA | 1071, 1 | F-3 | 2 | O | C | A/C | A | BDO | RR | 2203 | RFJ-013 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-013 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name REACTOR PRESSURE EXCESS FLOW CHECK VALVE | | | | | | | | | | | | | |
| 1CM067 | 0.75 | EFC | SA | 1071, 2 | E-6 | 2 | O | C | A/C | A | BDO | RR | 2203 | RFJ-013 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-013 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name REACTOR PRESSURE EXCESS FLOW CHECK VALVE | | | | | | | | | | | | | |
| 1E22-F332 | 0.75 | EFC | SA | S 1074,1 | C4 | 2 | O | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SUPP POOL WATER LVL SENSOR EX FL CHECK VLV | | | | | | | | | | | | | |
| 1E51-F377B | 0.75 | EFC | SA | S 1079, | C11 | 2 | O | O/C | C | A | CC | RR | 2203 | RFJ-015 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-015 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SUPP POOL INSTR EXCESS FLOW CHECK VALVE | | | | | | | | | | | | | |
| 1SM008 | 0.75 | EFC | SA | 1069, 1 | A-3 | 2 | O | O/C | C | A | CC | RR | 2203 | RFJ-015 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-015 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SUPP POOL LVL EXCESS FLOW CHECK VALVE | | | | | | | | | | | | | |

## Cycled Condensate (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1CY016 | 6.0 | GA | MO | 1012, 6 | C6 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | CYCLED COND OUTBOARD INLET ISOL VALVE | | | | | | | | | | | | |
| 1CY017 | 6.0 | GA | MO | 1012, 6 | C6 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | CYCLED COND INBOARD INLET ISO VALVE | | | | | | | | | | | | |

## Diesel Generator (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1DG006A | 0.75x1 | RV | SA | 1035, 1 | E-6 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | | Valve Name 1DG04TA STARTING AIR RCVR 1A1 RELIEF VALVE | | | | | | | | | | | | |
| 1DG006B | 0.75x1 | RV | SA | 1035, 1 | C-6 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | | Valve Name 1DG04TB STARTING AIR RCVR 1A2 RELIEF VALVE | | | | | | | | | | | | |
| 1DG006C | 0.75x1 | RV | SA | 1035, 2 | E-6 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | | Valve Name 1DG05TA STARTING AIR RCVR 1B1 RELIEF VALVE | | | | | | | | | | | | |
| 1DG006D | 0.75x1 | RV | SA | 1035, 2 | C-6 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | | Valve Name 1DG05TB STARTING AIR RCVR 1B2 RELIEF VALVE | | | | | | | | | | | | |
| 1DG006E | 0.75x1 | RV | SA | 1035, 3 | E-6 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | | Valve Name 1DG06TA STARTING AIR RCVR 1C1 RELIEF VALVE | | | | | | | | | | | | |
| 1DG006F | 0.75x1 | RV | SA | 1035, 3 | D-6 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | | Valve Name 1DG06TB STARTING AIR RCVR 1C2 RELIEF VALVE | | | | | | | | | | | | |
| 1DG008A | 2 | DIA | AO | 1035, 1 | E-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16MA/ML 16 CYLINDER AIR START VALVE | | | | | | | | | | | | |
| 1DG008B | 2 | DIA | AO | 1035, 1 | C-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16MB/MM 12 CYLINDER AIR START VALVE | | | | | | | | | | | | |
| 1DG008C | 2 | DIA | AO | 1035, 1 | F-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16MC 16 CYLINDER AIR START VALVE | | | | | | | | | | | | |
| 1DG008D | 2 | DIA | AO | 1035, 1 | B-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16MD 12 CYLINDER AIR START VALVE | | | | | | | | | | | | |
| 1DG008E | 2 | DIA | AO | 1035, 2 | E-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16ME/MN STARTING AIR SUPPLY VALVE | | | | | | | | | | | | |
| 1DG008F | 2 | DIA | AO | 1035, 2 | C-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16MF/MP STARTING AIR SUPPLY VALVE | | | | | | | | | | | | |

## Diesel Generator (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1DG008G | 2 | DIA | AO | 1035, 2 | F-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16MG STARTING AIR SUPPLY VALVE | | | | | | | | | | | | |
| 1DG008H | 2 | DIA | AO | 1035, 2 | B-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16MH STARTING AIR SUPPLY VALVE | | | | | | | | | | | | |
| 1DG008J | 2 | DIA | AO | 1035, 3 | E-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16MJ/MR AIR START VALVE | | | | | | | | | | | | |
| 1DG008K | 2 | DIA | AO | 1035, 3 | D-3 | 3 | C | O | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| | | | Valve Name 1DG16MK/MS AIR START VALVE | | | | | | | | | | | | |
| 1DG168 | 1.25 | CK | SA | 1035, 1 | E-7 | 3 | SYS | C | C | A | BDO | M3 | | | |
| | | | | | | | | | | | CC | M3 | | | |
| | | | Valve Name 1DG04TA AIR RECEIVER INLET CHECK VALVE | | | | | | | | | | | | |
| 1DG169 | 1.25 | CK | SA | 1035, 1 | C-7 | 3 | SYS | C | C | A | BDO | M3 | | | |
| | | | | | | | | | | | CC | M3 | | | |
| | | | Valve Name 1DG04TB AIR RECEIVER INLET CHECK VALVE | | | | | | | | | | | | |
| 1DG170 | 1.25 | CK | SA | 1035, 2 | E-7 | 3 | SYS | C | C | A | BDO | M3 | | | |
| | | | | | | | | | | | CC | M3 | | | |
| | | | Valve Name 1DG02CA DISCHARGE TO 1DG05TA VALVE | | | | | | | | | | | | |
| 1DG171 | 1.25 | CK | SA | 1035, 2 | C-7 | 3 | SYS | C | C | A | BDO | M3 | | | |
| | | | | | | | | | | | CC | M3 | | | |
| | | | Valve Name 1DG02CB DISCHARGE TO 1DG05TB VALVE | | | | | | | | | | | | |
| 1DG172 | 1.25 | CK | SA | 1035, 3 | E-7 | 3 | SYS | C | C | A | BDO | M3 | | | |
| | | | | | | | | | | | CC | M3 | | | |
| | | | Valve Name 1DG03CA STARTING AIR COMPRESSOR DISCHARGE | | | | | | | | | | | | |
| 1DG173 | 1.25 | CK | SA | 1035, 3 | C-7 | 3 | SYS | C | C | A | BDO | M3 | | | |
| | | | | | | | | | | | CC | M3 | | | |
| | | | Valve Name 1DG03CB STARTING AIR COMPRESSOR DISCHARGE | | | | | | | | | | | | |

## Diesel Generator (Page 3)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1DG646A | 0.375 | 3W | SO | 1035, 1 | D-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| Valve Name AIR START VALVE 1DG008A SOLENOID VALVE | | | | | | | | | | | | | | | |
| 1DG646B | 0.375 | 3W | SO | 1035, 1 | C-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| Valve Name AIR START VALVE 1DG008B SOLENOID VALVE | | | | | | | | | | | | | | | |
| 1DG646C | 0.375 | 3W | SO | 1035, 1 | E-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| Valve Name AIR START VALVE 1DG008C SOLENOID VALVE | | | | | | | | | | | | | | | |
| 1DG646D | 0.375 | 3W | SO | 1035, 1 | B-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| Valve Name AIR START VALVE 1DG008D SOLENOID VALVE | | | | | | | | | | | | | | | |
| 1DG646E | 0.375 | 3W | SO | 1035, 2 | D-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| Valve Name AIR START VALVE 1DG008E SOLENOID VALVE | | | | | | | | | | | | | | | |
| 1DG646F | 0.375 | 3W | SO | 1035, 2 | C-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| Valve Name AIR START VALVE 1DG008F SOLENOID VALVE | | | | | | | | | | | | | | | |
| 1DG646G | 0.375 | 3W | SO | 1035, 2 | E-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| Valve Name AIR START VALVE 1DG008G SOLENOID VALVE | | | | | | | | | | | | | | | |
| 1DG646H | 0.375 | 3W | SO | 1035, 2 | B-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| Valve Name AIR START VALVE 1DG008H SOLENOID VALVE | | | | | | | | | | | | | | | |
| 1DG646J | 0.375 | 3W | SO | 1035, 3 | D-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |
| Valve Name AIR START VALVE 1DG008J SOLENOID VALVE | | | | | | | | | | | | | | | |

## Diesel Generator (Page 4)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1DG646K | 0.375 | 3W | SO | 1035, 3 | C-4 | 3 | D | E/D | B | A | SC | M3 | | | CTP-IST-007 |
| | | | | | | | | | | | SO | M3 | | | CTP-IST-007 |

Valve Name AIR START VALVE 1DG008K SOLENOID VALVE

## Diesel Fuel Oil (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1DO001A | 1.5 | CK | SA | 1036, 1 | B1 | 3 | SYS | O | C | A | BDC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 1DO01PA DISCHARGE CHECK VALVE | | | | | | | | | | | | | |
| 1DO001B | 1.5 | CK | SA | 1036, 1 | B5 | 3 | SYS | O | C | A | BDC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 1DO01PB FUEL OIL DISCHARGE CHECK VALVE | | | | | | | | | | | | | |
| 1DO001C | 1.5 | CK | SA | 1036, 2 | B3 | 3 | SYS | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name 1DO01PC FUEL OIL TRANSFER PUMP DISCHARGE VLV | | | | | | | | | | | | | |
| 1DO005A | 0.75x1 | RV | SA | 1036, 1 | C1 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name 1DO01PA DISCHARGE RELIEF VALVE | | | | | | | | | | | | | |
| 1DO005B | 0.75x1 | RV | SA | 1036, 1 | C5 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name 1DO01PB DISCHARGE RELIEF VALVE | | | | | | | | | | | | | |
| 1DO005C | 0.75x1 | RV | SA | 1036, 2 | C3 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name 1DO01PC DISCHARGE RELIEF VALVE | | | | | | | | | | | | | |

## Fuel Pool Cooling (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F066 | 14 | GA | M | 1075,1 | B-4 | 3 | LC | O | B | A | ET | Y2 | | | |
| | | | Valve Name RHR to FC Manual CrossTie | | | | | | | | | | | | |
| 1E12-F099 | 14 | GA | M | 1075,1 | C-6 | 3 | LC | O | B | A | ET | Y2 | | | |
| | | | Valve Name RHR to FC Manual CrossTie | | | | | | | | | | | | |
| 1FC002 | 14 | GA | M | 1037, 2 | B2 | 3 | LC | O | B | A | ET | Y2 | | | |
| | | | Valve Name RHR to FC Suction Manual Isolation | | | | | | | | | | | | |
| 1FC004A | 8 | GL | AO | 1037, 3 | E-5 | 3 | O | O | B | A | FO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name FC DEMINERALIZER BYPASS FLOW CONTROL VALVE | | | | | | | | | | | | |
| 1FC004B | 8 | GL | AO | 1037, 3 | A-5 | 3 | O | O | B | A | FO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name FC DEMINERALIZER BYPASS FLOW CONTROL VALVE | | | | | | | | | | | | |
| 1FC007 | 10 | GA | MO | 1037, 1 | B-2 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name FC RETURN INSIDE CNMT ISOL VALVE | | | | | | | | | | | | |
| 1FC008 | 10 | GA | MO | 1037, 1 | B-1 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name FC RETURN OUTSIDE CNMT ISOLATION VALVE | | | | | | | | | | | | |
| 1FC011A | 14 | BTF | MO | 1037, 3 | E-7 | 3 | O | O/C | B | A | PI | Y2 | | | |
| | | | | | | | | | | | SC | M3 | | | |
| | | | | | | | | | | | SO | M3 | | | |
| | | | Valve Name FPC & C PUMP 1A SUCTION ISOL VALVE | | | | | | | | | | | | |
| 1FC011B | 14 | BTF | MO | 1037, 3 | A-7 | 3 | O | O/C | B | A | PI | Y2 | | | |
| | | | | | | | | | | | SC | M3 | | | |
| | | | | | | | | | | | SO | M3 | | | |
| | | | Valve Name FPC & C PUMP 1B SUCTION ISOLATION VALVE | | | | | | | | | | | | |
| 1FC013A | 14 | CK | SA | 1037, 3 | E-7 | 3 | O | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | Valve Name 1FC02PA DISCHARGE CHECK VALVE | | | | | | | | | | | | |
| 1FC013B | 14 | CK | SA | 1037, 3 | A-7 | 3 | O | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | Valve Name 1FC02PB DISCHARGE CHECK VALVE | | | | | | | | | | | | |

## Fuel Pool Cooling (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1FC015A | 14 | BTF | MO | 1037, 3 | E-2 | 3 | O | O | B | A | PI | Y2 | | | |
| | | | | | | | | | | | SO | M3 | | | |
| | | Valve Name FPC & C HX 1A INLET ISOLATION VALVE | | | | | | | | | | | | | |
| 1FC015B | 14 | BTF | MO | 1037, 3 | A-2 | 3 | O | O | B | A | PI | Y2 | | | |
| | | | | | | | | | | | SO | M3 | | | |
| | | Valve Name FPC & C HX 1B INLET ISOLATION VALVE | | | | | | | | | | | | | |
| 1FC016A | 8 | BTF | MO | 1037, 3 | D-6 | 3 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name FILTER DEMIN SUPPLY ISOLATION VALVE 1A | | | | | | | | | | | | | |
| 1FC016B | 8 | BTF | MO | 1037, 3 | C-6 | 3 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name FILTER DEMIN SUPPLY ISOLATION VALVE 1B | | | | | | | | | | | | | |
| 1FC024A | 8 | BTF | MO | 1037, 3 | E-2 | 3 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name FILTER DEMIN RETURN ISOLATION VALVE 1A | | | | | | | | | | | | | |
| 1FC024B | 8 | BTF | MO | 1037, 3 | C-2 | 3 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name FILTER DEMIN RETURN ISOLATION VALVE 1B | | | | | | | | | | | | | |
| 1FC026A | 14 | BTF | MO | 1037, 3 | E-2 | 3 | O | O/C | B | A | PI | Y2 | | | |
| | | | | | | | | | | | SC | M3 | | | |
| | | | | | | | | | | | SO | M3 | | | |
| | | Valve Name FPC & C HX 1A OUTLET ISOLATION VALVE | | | | | | | | | | | | | |
| 1FC026B | 14 | BTF | MO | 1037, 3 | B-2 | 3 | O | O/C | B | A | PI | Y2 | | | |
| | | | | | | | | | | | SC | M3 | | | |
| | | | | | | | | | | | SO | M3 | | | |
| | | Valve Name FPC & C HX 1B OUTLET ISOLATION VALVE | | | | | | | | | | | | | |
| 1FC036 | 8 | GA | MO | 1037, 1 | E-1 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name FC SUPPLY CNMT OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1FC037 | 8 | GA | MO | 1037, 1 | E-2 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name FC SUPPLY CNMT INBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1FC090 | 14 | GA | M | 1037, 3 | D1 | 3 | LC | O | B | A | ET | Y2 | | | |
| | | Valve Name RHR to FC Manual Isolation | | | | | | | | | | | | | |

## Fuel Pool Cooling (Page 3)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1FC091 | 4x6 | RV | SA | 1037, 3 | E-1 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name FC TO RHR HX RELIEF VALVE | | | | | | | | | | | | | |
| 1FC095A | 0.75x1 | RV | SA | 1046, 1 | F-2 | 3 | C | N/A | C | A | RT | Y10 | | | |
| | | Valve Name 1FC01AA TUBE SIDE RELIEF VALVE | | | | | | | | | | | | | |
| 1FC095B | 0.75x1 | RV | SA | 1046, 1 | F-3 | 3 | C | N/A | C | A | RT | Y10 | | | |
| | | Valve Name 1FC01AB TUBE SIDE RELIEF VALVE | | | | | | | | | | | | | |

## Fire Protection (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1FP050 | 6 | GA | MO | 1039, 9 | E3 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | CNMT FP SYS INBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1FP051 | 10 | GA | MO | 1039, 9 | C8 | 2 | LC | C | A | P | LTJ | AJ | | | |
| | | Valve Name | CNMT FP SYS OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1FP052 | 10 | GA | MO | 1039, 9 | C6 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | CNMT FP SYS INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1FP053 | 10 | GA | MO | 1039, 9 | C4 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | CNMT FP SYS INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1FP054 | 10 | GA | MO | 1039, 9 | C2 | 2 | LC | C | A | P | LTJ | AJ | | | |
| | | Valve Name | CNMT FP SYS OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1FP092 | 6 | GA | MO | 1039, 9 | E2 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | CONTAINMENT FP SYS OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |

## Feedwater (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F010A | 18 | CK | SA | 1004 | C7 | 1 | O | C | C | A | BDO | RR | 2203 | RFJ-003 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-003 | |
| | | Valve Name REACTOR FEEDWATER HEADER CHECK VALVE | | | | | | | | | | | | | |
| 1B21-F010B | 18 | CK | SA | 1004 | A7 | 1 | O | C | C | A | BDO | RR | 2203 | RFJ-003 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-003 | |
| | | Valve Name REACTOR FEEDWATER HEADER CHECK VALVE | | | | | | | | | | | | | |
| 1B21-F032A | 20 | CK | SA/AO | 1004 | C6 | 1 | O | C | A/C | A | BDO | RR | 2203 | RFJ-003 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-003 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name FEEDWATER OBD. CONT ISOL AIR OP CHECK VALVE | | | | | | | | | | | | | |
| 1B21-F032B | 20 | CK | SA/AO | 1004 | A6 | 1 | O | C | A/C | A | BDO | RR | 2203 | RFJ-003 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-003 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name FEEDWATER OBD. CONT ISOL AIR OP CHECK VALVE | | | | | | | | | | | | | |
| 1B21-F065A | 20 | GA | MO | 1004 | C5 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name FEED WATER INLET SHUTOFF VALVE A | | | | | | | | | | | | | |
| 1B21-F065B | 20 | GA | MO | 1004 | A5 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name FEED WATER INLET SHUTOFF VALVE B | | | | | | | | | | | | | |
| 1B21-F433A | 0.5 | CK | SA | 9004, 8 | D5 | 3 | O | C | C | A | BDO | RR | | | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-008 | |
| | | Valve Name 1B21A300A AIR SUPPLY CHECK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F433B | 0.5 | CK | SA | 9004, 8 | D5 | 3 | O | C | C | A | BDO | RR | | | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-008 | |
| | | Valve Name 1B21A300B AIR SUPPLY CHECK VALVE TO ACCUMU | | | | | | | | | | | | | |

## Containment Combustible Gas Control (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1HG001 | 2 | BTF | MO | 1063 | D3 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name CGCS CONTAINMENT ISOLATION VALVE | | | | | | | | | | | | | |
| 1HG004 | 2 | BTF | MO | 1063 | C3 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name CGCS CONTAINMENT ISOLATION VALVE | | | | | | | | | | | | | |
| 1HG005 | 2 | BTF | MO | 1063 | E3 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name CONTAINMENT ISOLATION VALVE | | | | | | | | | | | | | |
| 1HG008 | 2 | BTF | MO | 1063 | E3 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name CONTAINMENT ISOLATION VALVE | | | | | | | | | | | | | |
| 1HG009A | 6 | GA | MO | 1063 | E4 | 2 | C | O/C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name COMPRESSOR SUCTION VALVE 1A | | | | | | | | | | | | | |
| 1HG009B | 6 | GA | MO | 1063 | E6 | 2 | C | O/C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name COMPRESSOR SUCTION VALVE 1B | | | | | | | | | | | | | |
| 1HG010A | 10 | CK | AO | 1063 | C4 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y2 | | | |
| | | Valve Name H2 VACUUM RELIEF VALVE CHECK VALVE | | | | | | | | | | | | | |
| 1HG010B | 10 | CK | AO | 1063 | C7 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y2 | | | |
| | | Valve Name H2 VACUUM RELIEF | | | | | | | | | | | | | |

## Containment Combustible Gas Control (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1HG010C | 10 | CK | AO | 1063 | B4 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y2 | | | |
| | | Valve Name H2 VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1HG010D | 10 | CK | AO | 1063 | B7 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y2 | | | |
| | | Valve Name H2 VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1HG011A | 10 | CK | AO | 1063 | C4 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y2 | | | |
| | | Valve Name H2 VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1HG011B | 10 | CK | AO | 1063 | C6 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y2 | | | |
| | | Valve Name H2 VACUUM RELIEF | | | | | | | | | | | | | |
| 1HG011C | 10 | CK | AO | 1063 | B4 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y2 | | | |
| | | Valve Name H2 VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1HG011D | 10 | CK | AO | 1063 | B6 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y2 | | | |
| | | Valve Name H2 VACUUM RELIEF | | | | | | | | | | | | | |

## High Pressure Core Spray (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E22-F001 | 16 | GA | MO | 1074 | A6 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name HPCS SUCTION FROM RCIC STORAGE TANK VALVE | | | | | | | | | | | | |
| 1E22-F002 | 16 | CK | SA | 1074 | A5 | 2 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | Valve Name HPCS SUCTION CHECK VALVE FROM RCIC STOR TANK | | | | | | | | | | | | |
| 1E22-F004 | 10 | GA | MO | 1074 | E7 | 1 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-111 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | | Valve Name HPCS PUMP DISCH VALVE | | | | | | | | | | | | |
| 1E22-F005 | 10 | CK | AO | 1074 | E8 | 1 | C | O/C | A/C | A | CC | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | | Valve Name HPCS RX PRESS VESSEL CHECK VALVE | | | | | | | | | | | | |
| 1E22-F006 | 2 | SCK | SA | 1074 | D4 | 2 | SYS | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | Valve Name HPCS WATER LEG PUMP DISCHARGE STOP CK VLV | | | | | | | | | | | | |
| 1E22-F007 | 2.5 | CK | SA | 1074 | D4 | 2 | SYS | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | Valve Name HPCS WATER LEG PUMP DISCHARGE CHECK VALVE | | | | | | | | | | | | |
| 1E22-F010 | 10 | GL | MO | 1074 | D6 | 2 | C | C | B | P | PI | Y2 | | | |
| | | | Valve Name STORAGE TANK TEST BYPASS VALVE | | | | | | | | | | | | |
| 1E22-F011 | 10 | GL | MO | 1074 | D5 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name COND STORAGE TANK TEST VALVE | | | | | | | | | | | | |
| 1E22-F012 | 4 | GA | MO | 1074 | D3 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name SUPPRESSION POOL MIN FLOW BYPASS VALVE | | | | | | | | | | | | |
| 1E22-F014 | 1x0.75 | RV | SA | 1074 | C5 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y4 | | | |
| | | | Valve Name HPCS PUMP SUCTION HEADER RELIEF VALVE | | | | | | | | | | | | |

## High Pressure Core Spray (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E22-F015 | 20 | GA | MO | 1074 | B7 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name SUPPRESSION POOL PUMP SUCTION VALVE | | | | | | | | | | | | | |
| 1E22-F016 | 20 | CK | SA | 1074 | B6 | 2 | C | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name HPCS PUMP SUCTION CHECK VALVE | | | | | | | | | | | | | |
| 1E22-F023 | 10 | GL | MO | 1074 | D6 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name SUPPRESSION POOL TEST BYPASS VALVE | | | | | | | | | | | | | |
| 1E22-F024 | 14 | CK | SA | 1074 | E3 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name HPCS PUMP DISCHARGE CHECK VALVE | | | | | | | | | | | | | |
| 1E22-F035 | 1x0.75 | RV | SA | 1074 | E3 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name HPCS INJ LINE RELIEF VALVE | | | | | | | | | | | | | |
| 1E22-F036 | 12 | GA | M | 1074 | E8 | 1 | LO | O | B | P | PI | Y2 | | | |
| | | Valve Name HPCS MAN INJ ISOL VALVE | | | | | | | | | | | | | |
| 1E22-F039 | 1x0.75 | RV | SA | 1074 | C6 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name RETURN TO RCIC TANK RELIEF VALVE | | | | | | | | | | | | | |

## Instrument Air (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1IA005 | 3 | GL | AO | 1040, 5 | D2 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-106 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name CONTAINMENT IA ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1IA006 | 3 | GL | AO | 1040, 5 | D3 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-106 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name CONTAINMENT IA ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1IA007 | 3 | GL | AO | 1040, 5 | D5 | 2 | O | C | B | A | FC | CS | 2203 | CSJ-106 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL IA OUTBOARD ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1IA008 | 3 | GL | AO | 1040, 5 | D7 | 2 | O | C | B | A | FC | CS | 2203 | CSJ-106 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL IA INBOARD ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1IA012A | 1 | GL | MO | 1040, 7 | D2 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-113 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name ADS 1A CNMT OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1IA012B | 1 | GL | MO | 1040, 7 | C3 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name ADS 1A CNMT INBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1IA013A | 1 | GL | MO | 1040, 7 | D7 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-113 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name ADS 1B CNMT OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1IA013B | 1 | GL | MO | 1040, 7 | C6 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name ADS 1B CNMT INBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1IA042A | 1 | CK | SA | 1040, 7 | D6 | 2 | SYS | O/C | A/C | A | CC | RR | 2203 | RFJ-014 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-014 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name IA TO DIV 2 ADS VALVES CHECK VALVE | | | | | | | | | | | | | |

## Instrument Air (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1IA042B | 1 | CK | SA | 1040, 7 | D4 | 2 | SYS | O/C | A/C | A | CC | RR | 2203 | RFJ-014 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-014 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name IA TO DIV 1 ADS VALVES CHECK VALVE | | | | | | | | | | | | | |
| 1IA128A | 1.5x3 | RV | SA | 1040, 7 | E7 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name 1IA10TA-H DIV 2 ADS BACKUP HEADER RELIEF VALVE | | | | | | | | | | | | | |
| 1IA128B | 1.5x3 | RV | SA | 1040, 7 | E2 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name 1IA11TA-H DIV 1 ADS BACKUP HEADER RELIEF VALVE | | | | | | | | | | | | | |
| 1IA175 | 0.5 | CK | SA | 1040, 5 | E3 | 2 | SYS | C | A/C | A | BDO | CMP | | | |
| | | | | | | | | | | | CC | CMP | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name IA SYS PISTON CHECK VALVE | | | | | | | | | | | | | |

## MSIV Leakage Control (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E32-F001A | 1.5 | GL | MO | 1070 | C7 | 1 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name MSIV LEAK CONTROL SYSTEM INBOARD VALVE | | | | | | | | | | | | | |
| 1E32-F001E | 1.5 | GL | MO | 1070 | E7 | 1 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name MSIV LEAK CONTROL SYSTEM INBOARD VALVE | | | | | | | | | | | | | |
| 1E32-F001J | 1.5 | GL | MO | 1070 | B7 | 1 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name MSIV LEAK CONTROL SYSTEM INBOARD VALVE | | | | | | | | | | | | | |
| 1E32-F001N | 1.5 | GL | MO | 1070 | D7 | 1 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name MSIV LEAK CONTROL SYSTEM INBOARD VALVE | | | | | | | | | | | | | |

## Leak Detection (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E31-F014 | 1 | GA | SO | 1041, 4 | E8 | 2 | O | C | B | A | FC | CS | 2203 | CSJ-108 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL ISOLATION VALVE | | | | | | | | | | | | | |
| 1E31-F015 | 1 | GA | SO | 1041, 4 | E7 | 2 | O | C | B | A | FC | CS | 2203 | CSJ-108 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL ISOLATION VALVE | | | | | | | | | | | | | |
| 1E31-F017 | 1 | GA | SO | 1041, 4 | C7 | 2 | O | C | B | A | FC | CS | 2203 | CSJ-108 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL ISOLATION VALVE | | | | | | | | | | | | | |
| 1E31-F018 | 1 | GA | SO | 1041, 4 | C8 | 2 | O | C | B | A | FC | CS | 2203 | CSJ-108 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL ISOLATION VALVE | | | | | | | | | | | | | |

## Low Pressure Core Spray (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E21-F001 | 20 | GA | MO | 1073 | B4 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name LPCS SUCTION FROM SUP POOL VALVE | | | | | | | | | | | | | |
| 1E21-F003 | 12 | CK | SA | 1073 | E6 | 2 | SYS | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name LPCS PUMP DISCHARGE CHECK VALVE | | | | | | | | | | | | | |
| 1E21-F005 | 10 | GA | MO | 1073 | E4 | 1 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-111 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name LPCS INJECTION SHUTOFF VALVE | | | | | | | | | | | | | |
| 1E21-F006 | 10 | CK | SA | 1073 | E2 | 1 | SYS | O/C | A/C | A | CC | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name LPCS INJECTION TESTABLE CHECK VALVE | | | | | | | | | | | | | |
| 1E21-F007 | 10 | GA | M | 1073 | E2 | 1 | LO | O | B | P | PI | Y2 | | | |
| | | Valve Name LPCS MAN INJ ISOL VALVE | | | | | | | | | | | | | |
| 1E21-F011 | 4 | GA | MO | 1073 | D6 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name LPCS MIN FLOW BYPASS TO SUP POOL VALVE | | | | | | | | | | | | | |
| 1E21-F012 | 10 | GL | MO | 1073 | D5 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name LPCS TEST RETURN TO SUPPRESSION POOL VALVE | | | | | | | | | | | | | |
| 1E21-F018 | 1.5x2 | RV | SA | 1073 | E5 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name INJECTION HEADER RELIEF VALVE | | | | | | | | | | | | | |
| 1E21-F031 | 1.5x1 | RV | SA | 1073 | C8 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name LPCS PUMP SUCTION HEADER RELIEF VALVE | | | | | | | | | | | | | |
| 1E21-F033 | 2 | CK | SA | 1073 | D6 | 2 | SYS | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name LPCS WATER LEG PUMP DISCH CHK VLV TO LP | | | | | | | | | | | | | |

## Low Pressure Core Spray (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E21-F034 | 2 | CK | SA | 1073 | D6 | 2 | SYS | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name LPCS WATER LEG PUMP DISCH CHK VALVE TO LP | | | | | | | | | | | | | |
| 1E21-F303 | 10 | CK | SA | 1073 | C5 | 2 | SYS | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name LPCS TEST LINE CHECK VALVE | | | | | | | | | | | | | |

## Clean Condensate Storage (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0MC009 | 4 | GA | MO | 1042, 4 | E5 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | OUTBOARD DEMIN WATER CNMT ISOL VLVE | | | | | | | | | | | | |
| 0MC010 | 4 | GA | MO | 1042, 4 | D5 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | INBOARD DEMIN WATER CNMT ISOLATION VALVE | | | | | | | | | | | | |
| 1MC090 | 3/4 | RV | SA | 1042, 4 | E4 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name | Make-up Condensate Containment Pen Relief Valve | | | | | | | | | | | | |

## Main Steam (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F016 | 3 | GA | MO | 1002, 1 | B1 | 1 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-117 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | MAIN STEAM LINE INB. DRAIN ISOL. VALVE | | | | | | | | | | | | |
| 1B21-F019 | 3 | GA | MO | 1002, 2 | B6 | 1 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-117 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | MAIN STEAM LINE OUTB. DRAIN ISOL. VALVE | | | | | | | | | | | | |
| 1B21-F022A | 24 | GL | AO | 1002, 1 | C2 | 1 | O | C | A | A | FC | CS | 2203 | CSJ-101 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | MAIN STEAM INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1B21-F022B | 24 | GL | AO | 1002, 1 | F2 | 1 | O | C | A | A | FC | CS | 2203 | CSJ-101 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | MAIN STEAM INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1B21-F022C | 24 | GL | AO | 1002, 1 | A2 | 1 | O | C | A | A | FC | CS | 2203 | CSJ-101 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | MAIN STEAM INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1B21-F022D | 24 | GL | AO | 1002, 1 | D2 | 1 | O | C | A | A | FC | CS | 2203 | CSJ-101 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | MAIN STEAM INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1B21-F024A | 0.5 | CK | SA | 9002, 5 | C7 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-006 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-006 | |
| | | Valve Name | 1B21A001A INST AIR SUPPLY CK VLV TO ACCUMU | | | | | | | | | | | | |
| 1B21-F024B | 0.5 | CK | SA | 9002, 5 | C7 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-006 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-006 | |
| | | Valve Name | 1B21A001B INST AIR SUPPLY CK VLV TO ACCUMU | | | | | | | | | | | | |
| 1B21-F024C | 0.5 | CK | SA | 9002, 5 | C7 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-006 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-006 | |
| | | Valve Name | 1B21A001C INST AIR SUPPLY CK VLV TO ACCUMU | | | | | | | | | | | | |
| 1B21-F024D | 0.5 | CK | SA | 9002, 5 | C7 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-006 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-006 | |
| | | Valve Name | 1B21A001D INST AIR SUPPLY CK VLV TO ACCUMU | | | | | | | | | | | | |

## Main Steam (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F028A | 24 | GL | AO | 1002, 2 | C5 | 1 | O | C | A | A | FC | CS | 2203 | CSJ-101 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name MAIN STEAM OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1B21-F028B | 24 | GL | AO | 1002, 2 | F5 | 1 | O | C | A | A | FC | CS | 2203 | CSJ-101 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name MAIN STEAM OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1B21-F028C | 24 | GL | AO | 1002, 2 | B5 | 1 | O | C | A | A | FC | CS | 2203 | CSJ-101 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name MAIN STEAM OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1B21-F028D | 24 | GL | AO | 1002, 2 | E5 | 1 | O | C | A | A | FC | CS | 2203 | CSJ-101 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name MAIN STEAM OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1B21-F029A | 0.5 | CK | SA | 9002, 5 | D3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-006 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-006 | |
| | | Valve Name 1B21A002A INST AIR SUPPLY CK VLV TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F029B | 0.5 | CK | SA | 9002, 5 | D3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-006, | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-006 | |
| | | Valve Name 1B21A002B INST AIR SUPPLY CK VLV TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F029C | 0.5 | CK | SA | 9002, 5 | D3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-006 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-006 | |
| | | Valve Name 1B21A002C INST AIR SUPPLY CK VLV TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F029D | 0.5 | CK | SA | 9002, 5 | D3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-006 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-006 | |
| | | Valve Name 1B21A002D INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F036A | 0.5 | CK | SA | 9002, 2 | C3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A004A INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F036F | 0.5 | CK | SA | 9002, 2 | C3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A004F INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |

## Main Steam (Page 3)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F036G | 0.5 | CK | SA | 9002, 2 | C3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A004G INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F036J | 0.5 | CK | SA | 9002, 2 | C3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A004J INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F036L | 0.5 | CK | SA | 9002, 2 | C3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A004L INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F036M | 0.5 | CK | SA | 9002, 2 | C3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A004M INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F036N | 0.5 | CK | SA | 9002, 2 | C3 | 3 | SYS | C | C | A | BDO | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A004N INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F036P | 0.5 | CK | SA | 9002, 2 | C3 | 3 | SYS | C/O | C | A | CC | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A004P INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F036R | 0.5 | CK | SA | 9002, 2 | C3 | 3 | SYS | C/O | C | A | CC | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A004R INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F037A | 10 | CK | SA | 1002, 1 | C6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037B | 10 | CK | SA | 1002, 1 | E6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037C | 10 | CK | SA | 1002, 1 | A7 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |

## Main Steam (Page 4)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F037D | 10 | CK | SA | 1002, 1 | D7 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037E | 10 | CK | SA | 1002, 1 | E4 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037F | 10 | CK | SA | 1002, 1 | A5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037G | 10 | CK | SA | 1002, 1 | A4 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037H | 10 | CK | SA | 1002, 1 | C5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037J | 10 | CK | SA | 1002, 1 | E7 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037K | 10 | CK | SA | 1002, 1 | A5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037L | 10 | CK | SA | 1002, 1 | D6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037M | 10 | CK | SA | 1002, 1 | E3 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |

## Main Steam (Page 5)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F037N | 10 | CK | SA | 1002, 1 | E5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037P | 10 | CK | SA | 1002, 1 | A6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037R | 10 | CK | SA | 1002, 1 | D5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F037S | 10 | CK | SA | 1002, 1 | A3 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F039B | 0.5 | CK | SA | 9002, 1 | C4 | 3 | C | O/C | C | A | CC | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A003B INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F039C | 0.5 | CK | SA | 9002, 1 | C4 | 3 | C | O/C | C | A | CC | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A003C INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F039D | 0.5 | CK | SA | 9002, 1 | C4 | 3 | C | O/C | C | A | CC | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A003D INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F039E | 0.5 | CK | SA | 9002, 1 | C4 | 3 | C | O/C | C | A | CC | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A003E INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F039H | 0.5 | CK | SA | 9002, 1 | C4 | 3 | C | O/C | C | A | CC | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A003H INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F039K | 0.5 | CK | SA | 9002, 1 | C4 | 3 | C | O/C | C | A | CC | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A003K INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |

## Main Steam (Page 6)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass. | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F039S | 0.5 | CK | SA | 9002, 1 | C4 | 3 | C | O/C | C | A | CC | RR | 2203 | RFJ-007 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-007 | |
| | | Valve Name 1B21A003S INST AIR SUPPLY CK VALVE TO ACCUMU | | | | | | | | | | | | | |
| 1B21-F041A | 8x10 | RV | AO | 1002, 1 | C6 | 1 | C | O/C | C | A | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F041B | 8x10 | RV | AO | 1002, 1 | F7 | 1 | C | O/C | C | A | FO | RR | 2203 | RFJ-004 | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F041C | 8x10 | RV | AO | 1002, 1 | B8 | 1 | C | O/C | C | A | FO | RR | 2203 | RFJ-004 | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F041D | 8x10 | RV | AO | 1002, 1 | D8 | 1 | C | O/C | C | A | FO | RR | 2203 | RFJ-004 | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F041F | 8x10 | RV | AO | 1002, 1 | F5 | 1 | C | O/C | C | A | FO | RR | 2203 | RFJ-004 | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F041G | 8x10 | RV | AO | 1002, 1 | B6 | 1 | C | O/C | C | A | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F041L | 8x10 | RV | AO | 1002, 1 | B4 | 1 | C | O/C | C | A | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F047A | 8x10 | RV | AO | 1002, 1 | C6 | 1 | C | O/C | C | A | FO | RR | 2203 | RFJ-004 | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F047B | 8x10 | RV | AO | 1002, 1 | F8 | 1 | C | O/C | C | A | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F047C | 8x10 | RV | AO | 1002, 1 | B5 | 1 | C | O/C | C | A | FO | RR | 2203 | RFJ-004 | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F047D | 8x10 | RV | AO | 1002, 1 | D7 | 1 | C | O/C | C | A | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |

## Main Steam (Page 7)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F047F | 8x10 | RV | AO | 1002, 1 | F4 | 1 | C | O/C | C | A | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F051B | 8x10 | RV | AO | 1002, 1 | F6 | 1 | C | O/C | C | A | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F051C | 8x10 | RV | AO | 1002, 1 | B7 | 1 | C | O/C | C | A | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F051D | 8x10 | RV | AO | 1002, 1 | D6 | 1 | C | O/C | C | A | PI | Y2 | | | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F051G | 8x10 | RV | AO | 1002, 1 | B4 | 1 | C | O/C | C | A | FO | RR | 2203 | RFJ-004 | |
| | | | | | | | | | | | RT | Y6.5 | 2202 | | |
| | | Valve Name MAIN STEAM SAFETY/RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F067A | 1.5 | GL | MO | 1002, 2 | C6 | 1 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name OUTBOARD MSIV ABOVE SEAT DRAIN VALVE | | | | | | | | | | | | | |
| 1B21-F067B | 1.5 | GL | MO | 1002, 2 | E6 | 1 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name OUTBOARD MSIV ABOVE SEAT DRAIN VALVE | | | | | | | | | | | | | |
| 1B21-F067C | 1.5 | GL | MO | 1002, 2 | A6 | 1 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name OUTBOARD MSIV ABOVE SEAT DRAIN VALVE | | | | | | | | | | | | | |
| 1B21-F067D | 1.5 | GL | MO | 1002, 2 | D6 | 1 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name OUTBOARD MSIV ABOVE SEAT DRAIN VALVE | | | | | | | | | | | | | |
| 1B21-F078A | 10 | CK | SA | 1002, 1 | C6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |

## Main Steam (Page 8)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F078B | 10 | CK | SA | 1002, 1 | E6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | |
| 1B21-F078C | 10 | CK | SA | 1002, 1 | A7 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | |
| 1B21-F078D | 10 | CK | SA | 1002, 1 | D7 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | |
| 1B21-F078E | 10 | CK | SA | 1002, 1 | E4 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | |
| 1B21-F078F | 10 | CK | SA | 1002, 1 | A5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | |
| 1B21-F078G | 10 | CK | SA | 1002, 1 | A4 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | |
| 1B21-F078H | 10 | CK | SA | 1002, 1 | C5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | |
| 1B21-F078J | 10 | CK | SA | 1002, 1 | E7 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | |
| 1B21-F078K | 10 | CK | SA | 1002, 1 | A5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | |

## Main Steam (Page 9)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F078L | 10 | CK | SA | 1002, 1 | D6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F078M | 10 | CK | SA | 1002, 1 | E3 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F078N | 10 | CK | SA | 1002, 1 | E5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F078P | 10 | CK | SA | 1002, 1 | A6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F078R | 10 | CK | SA | 1002, 1 | D5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F078S | 10 | CK | SA | 1002, 1 | A3 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | CMP | | | |
| | | Valve Name MAIN STEAM SRV VACUUM RELIEF VALVE | | | | | | | | | | | | | |
| 1B21-F379A | 2 | CK | SA | 1002, 1 | F7 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 1B21-F047B SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | | |
| 1B21-F379B | 2 | CK | SA | 1002, 1 | F6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 1B21-F041B SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | | |
| 1B21-F379C | 2 | CK | SA | 1002, 1 | F5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 1B21-F051B SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | | |
| 1B21-F379D | 2 | CK | SA | 1002, 1 | F4 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 1B21-F041F SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | | |

## Main Steam (Page 10)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F379E | 2 | CK | SA | 1002, 1 | F3 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F047F SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379F | 2 | CK | SA | 1002, 1 | E7 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F041D SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379G | 2 | CK | SA | 1002, 1 | E6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F047D SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379H | 2 | CK | SA | 1002, 1 | E5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F051D SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379J | 2 | CK | SA | 1002, 1 | C6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F041A SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379K | 2 | CK | SA | 1002, 1 | C5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F047A SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379L | 2 | CK | SA | 1002, 1 | B7 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F041C SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379M | 2 | CK | SA | 1002, 1 | B6 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F051C SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379N | 2 | CK | SA | 1002, 1 | B5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F041G SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379P | 2 | CK | SA | 1002, 1 | B5 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F047C SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379Q | 2 | CK | SA | 1002, 1 | B4 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F041L SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |
| 1B21-F379R | 2 | CK | SA | 1002, 1 | B3 | 3 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name | 1B21-F051G SRV VENT LINE VAC BKR VALVE | | | | | | | | | | | | |

## Nuclear Boiler (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B21-F001 | 2 | GL | MO | 1071, 2 | D4 | 1 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name RPV HEAD VENTILATION VALVE | | | | | | | | | | | | | |
| 1B21-F002 | 2 | GL | MO | 1071, 2 | E4 | 1 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name RPV HEAD VENTILATION VALVE | | | | | | | | | | | | | |

## Process Sampling (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1PS004 | 0.75 | GA | SO | 1045, 12 | E6 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-116 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | Valve Name | DRYWELL RF SUMP SAMPLE INBOARD ISOLATION VALVE | | | | | | | | | | |
| 1PS005 | 0.75 | GA | SO | 1045, 12 | E6 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | Valve Name | DRYWELL RF SUMP SAMPLE OUTBOARD ISOLATION VALVE | | | | | | | | | | |
| 1PS009 | 0.75 | GA | SO | 1045, 12 | E5 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-116 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | Valve Name | DRYWELL RE SUMP SAMPLE INBOARD ISOLATION VALVE | | | | | | | | | | |
| 1PS010 | 0.75 | GA | SO | 1045, 12 | E5 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | Valve Name | DRYWELL RE SUMP SAMPLE OUTBOARD ISOLATION VALVE | | | | | | | | | | |
| 1PS016 | 0.75 | GA | SO | 1045, 12 | E5 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-116 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | Valve Name | CNMT FLOOR DRAIN SUMP SAMPLE INBOARD ISOLATION | | | | | | | | | | |
| 1PS017 | 0.75 | GA | SO | 1045, 12 | E5 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | Valve Name | CNMT FLOOR DRAIN SUMP SAMPLE OUTBOARD ISOLATION | | | | | | | | | | |
| 1PS022 | 0.75 | GA | SO | 1045, 12 | E4 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-116 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | Valve Name | CNMT EQUIPT DRAIN SUMP SAMPLE INBOARD ISOLATION | | | | | | | | | | |
| 1PS023 | 0.75 | GA | SO | 1045, 12 | E4 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | Valve Name | CNMT EQUIPT DRAIN SUMP SAMPLE OUTBOARD ISOLATION | | | | | | | | | | |
| 1PS031 | 0.75 | GA | SO | 1045, 12 | E2 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-116 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | | Valve Name | DRYWELL SAMPLE INBOARD ISOLATION VALVE | | | | | | | | | | |

## Process Sampling (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1PS032 | 0.75 | GA | SO | 1045, 12 | E2 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name DRYWELL ATMOSPHERE SAMPLE OUTBOARD ISOLATION VLV | | | | | | | | | | | | |
| 1PS034 | 0.75 | GA | SO | 1045, 12 | E1 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-116 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name CNMT ATMOSPHERE SAMPLE INBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1PS035 | 0.75 | GA | SO | 1045, 12 | E1 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name CNMT ATMOSPHERE SAMPLE OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1PS043A | 0.75 | GA | SO | 1045, 12 | F2 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name RHR PUMP 1A SAMPLE IB ISOLATION VALVE | | | | | | | | | | | | |
| 1PS043B | 0.75 | GA | SO | 1045, 12 | F3 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name RHR PUMP 1B SAMPLE IB ISOLATION VALVE | | | | | | | | | | | | |
| 1PS044A | 0.75 | GA | SO | 1045, 12 | E2 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name RHR PUMP 1A SAMPLE OB ISOLATION VALVE | | | | | | | | | | | | |
| 1PS044B | 0.75 | GA | SO | 1045, 12 | E3 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name RHR PUMP 1B SAMPLE OB ISOLATION VALVE | | | | | | | | | | | | |
| 1PS055 | 0.75 | GA | SO | 1045, 12 | C3 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name GAS SAMPLE RETURN OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1PS056 | 0.75 | GA | SO | 1045, 12 | C3 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-116 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name GAS SAMPLE RETURN INBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1PS069 | 0.75 | GA | SO | 1045, 12 | B3 | 2 | C | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name LIQUID SAMPLE RETURN OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |

## Process Sampling (Page 3)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1PS070 | 0.75 | GA | SO | 1045, 12 | B3 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-116 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |

Valve Name LIQUID SAMPLE RETURN OUTBOARD ISOLATION VALVE

## Breathing Air (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0RA026 | 1 | GA | AO | 1065, 7 | D8 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | CONTAINMENT RA OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 0RA027 | 1 | GA | AO | 1065, 7 | D7 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | CONTAINMENT RA INBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 0RA028 | 1 | GA | AO | 1065, 7 | E5 | 2 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name | DRYWELL RA OUTBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 0RA029 | 1 | GA | AO | 1065, 7 | E2 | 2 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name | DRYWELL RA INBOARD ISOLATION VALVE | | | | | | | | | | | | |
| 1RA016A | 1x1.5 | RV | SA | 1065, 8 | C7 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name | DIV 1 RA BOTTLES UPSTRM PRESS REGULATOR RELIEF VLV | | | | | | | | | | | | |
| 1RA016B | 1x1.5 | RV | SA | 1065, 8 | C3 | 3 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name | DIV 2 RA BOTTLES UPSTRM PRESS REGULATOR RELIEF VLV | | | | | | | | | | | | |

## Control Rod Drive (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C11-114 | 0.75 | CK | SA | 1078, 2 | E-3 | O | C | O/C | C | A | CC | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | Valve Name CRD HCU SCRAM DISCHARGE CHECK VALVE (Typ. 145) | | | | | | | | | | | | | |
| 1C11-115 | 0.5 | CK | SA | 1078, 2 | E-6 | O | O | C | C | A | BDO | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-009 | |
| | | Valve Name CRD HCU CHARGING WATER CHECK VALVE | | | | | | | | | | | | | |
| 1C11-126 | 1 | DIA | AO | 1078, 2 | E-5 | O | C | O | B | A | FO | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | | | | | | | | | | SO | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | Valve Name CRD SCRAM INLET VALVE (Typ. 145) | | | | | | | | | | | | | |
| 1C11-127 | 0.75 | DIA | AO | 1078, 2 | F-4 | O | C | O | B | A | FO | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | | | | | | | | | | SO | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | Valve Name CRD SCRAM OUTLET VALVE (Typ. 145) | | | | | | | | | | | | | |
| 1C11-138 | 0.5 | CK | SA | 1078, 2 | E-5 | O | O | C | A/C | A | BDO | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | | | | | | | | | | CC | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | Valve Name CRD HCU COOLING WATER CHECK VALVE (Typ. 145) | | | | | | | | | | | | | |
| 1C11-139 | 0.75 | 3W | SO | 1078, 2 | F-3 | O | E | D | B | A | FO | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | | | | | | | | | | SD | RR | 2203 | RFJ-009 | CTP-IST-007 |
| | | Valve Name CRD HCU SCRAM PILOT VALVE (Typ. 145) | | | | | | | | | | | | | |
| 1C11-F010 | 1 | GL | AO | 1078, 3 | F-7 | 2 | O | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SCRAM VENT LINE FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1C11-F011 | 2 | GL | AO | 1078, 3 | B-8 | 2 | O | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SCRAM DRAIN LINE FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1C11-F083 | 2 | GL | MO | 1078, 1 | E-1 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name CRD CONTAINMENT ISOLATION VALVE | | | | | | | | | | | | | |
| 1C11-F122 | 2 | CK | SA | 1078, 1 | C-7 | 2 | O | C | A/C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name CRD DRIVE WATER SUPPLY HDR CHECK VALVE | | | | | | | | | | | | | |

## Control Rod Drive (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C11-F180 | 1 | GL | AO | 1078, 3 | F-7 | 2 | O | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SCRAM VENT LINE FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1C11-F181 | 2 | GL | AO | 1078, 3 | B-8 | 2 | O | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SCRAM DRAIN LINE FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1C11-F376A | 0.25 | CK | SA | 1078, 1 | C-6 | O | O | O/C | A/C | A | CC | RR | 2203 | RFJ-010 | |
| | | | | | | | | | | | CO | NO | | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name RPV LEVEL CONDENSING CHAMBER KEEP-FILL CHECK VLV | | | | | | | | | | | | | |
| 1C11-F376B | 0.25 | CK | SA | 1078, 1 | B-6 | O | O | O/C | A/C | A | CC | RR | 2203 | RFJ-010 | |
| | | | | | | | | | | | CO | NO | | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name RPV LEVEL CONDENSING CHAMBER KEEP-FILL CHECK VLV | | | | | | | | | | | | | |
| 1C11-F377A | 0.25 | CK | SA | 1078, 1 | C-6 | O | O | O/C | A/C | A | CC | RR | 2203 | RFJ-010 | |
| | | | | | | | | | | | CO | NO | | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name RPV LEVEL CONDENSING CHAMBER KEEP-FILL CHECK VLV | | | | | | | | | | | | | |
| 1C11-F377B | 0.25 | CK | SA | 1078, 1 | B-6 | O | O | O/C | A/C | A | CC | RR | 2203 | RFJ-010 | |
| | | | | | | | | | | | CO | NO | | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name RPV LEVEL CONDENSING CHAMBER KEEP-FILL CHECK VLV | | | | | | | | | | | | | |

## Equipment Drains (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1RE019 | 3.0 | GL | AO | 1046, 4 | A7 | 2 | O | C | B | A | FC | CS | 2203 | CSJ-102 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL RE INBOARD ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1RE020 | 3.0 | GL | AO | 1046, 3 | A4 | 2 | O | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL RE OUTBOARD ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1RE021 | 3.0 | GL | AO | 1046, 3 | B5 | 2 | O | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name EQUIP DRAIN SUMP DISCHARGE CNMT INBOARD ISOLATION | | | | | | | | | | | | | |
| 1RE022 | 3.0 | GL | AO | 1046, 3 | B6 | 2 | O | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name EQUIP DRAIN SUMP DISCHARGE CNMT OUTBOARD ISOLATION | | | | | | | | | | | | | |

## Floor Drains (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1RF019 | 3.0 | GL | AO | 1047, 3 | B2 | 2 | O | C | B | A | FC | CS | 2203 | CSJ-102 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL RF INBOARD ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1RF020 | 3.0 | GL | AO | 1047, 3 | B3 | 2 | O | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL RF OUTBOARD ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1RF021 | 3.0 | GL | AO | 1047, 3 | B6 | 2 | O | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name CONTAINMENT RF INBOARD ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1RF022 | 3.0 | GL | AO | 1047, 3 | B7 | 2 | O | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name CONTAINMENT RF OUTBOARD ISOLATION CONTROL VALVE | | | | | | | | | | | | | |

## Residual Heat Removal (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F003A | 14 | GL | MO | 1075, 4 | C-2 | 2 | O | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name RHR HX 1A SHELL SIDE OUTLET VALVE | | | | | | | | | | | | | |
| 1E12-F003B | 14 | GL | MO | 1075, 4 | C-7 | 2 | O | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name RHR HX 1B SHELL SIDE OUTLET VALVE | | | | | | | | | | | | | |
| 1E12-F004A | 20 | GA | MO | 1075, 1 | A-4 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RHR PUMP 1A SUCTION VALVE | | | | | | | | | | | | | |
| 1E12-F004B | 20 | GA | MO | 1075, 2 | A-6 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RHR PUMP 1B SUCTION VALVE | | | | | | | | | | | | | |
| 1E12-F005 | 1.5x2 | RV | SA | 1075, 1 | B-5 | 2 | C | O/C | A/C | A | RT | Y10 | | | |
| | | Valve Name SDC SUCTION RELIEF TO SUPPRESSION POOL | | | | | | | | | | | | | |
| 1E12-F006A | 16 | GA | MO | 1075, 1 | A-5 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name RHR SHUTDOWN COOLING SUCTION VALVE | | | | | | | | | | | | | |
| 1E12-F006B | 16 | GA | MO | 1075, 2 | A-6 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name RHR SHUTDOWN COOLING SUCTION VALVE | | | | | | | | | | | | | |
| 1E12-F008 | 18 | GA | MO | 1075, 1 | B-4 | 1 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name SHUTDOWN COOLING OUTBOARD SUCT ISOL VALVE | | | | | | | | | | | | | |
| 1E12-F009 | 18 | GA | MO | 1075, 1 | B-2 | 1 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name SHUTDOWN COOLING INBOARD SUCT ISOL VALVE | | | | | | | | | | | | | |
| 1E12-F010 | 12 | GA | M | 1075,1 | C-2 | 1 | LO | O | B | P | PI | Y2 | | | |
| | | Valve Name SHUTDOWN COOLING MANUAL SHUTOFF VALVE | | | | | | | | | | | | | |
| 1E12-F011A | 4 | GL | M | 1075, 4 | D-4 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | Valve Name RHR HEAT EXCHANGER 1A FLOW TO SUP POOL VALVE | | | | | | | | | | | | | |

## Residual Heat Removal (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F011B | 4 | GL | M | 1075, 2 | C-3 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name RHR HEAT EXCHANGER 1B FLOW TO SUP POOL VALVE | | | | | | | | | | | | |
| 1E12-F014A | 18 | GA | MO | 1052, 1 | D-2 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | Valve Name RHR HEAT EXCHANGER 1A SSW INLET VALVE | | | | | | | | | | | | |
| 1E12-F014B | 18 | GA | MO | 1052, 2 | D-2 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | Valve Name RHR HEAT EXCHANGER 1B SSW INLET VALVE | | | | | | | | | | | | |
| 1E12-F017A | 1.5x2 | RV | SA | 1075, 1 | B-6 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | | Valve Name RHR PUMP A SUCTION RELIEF VLV TO SUPPRESSION POOL | | | | | | | | | | | | |
| 1E12-F017B | 1.5x2 | RV | SA | 1075, 2 | B-6 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | | Valve Name RHR PUMP B SUCTION RELIEF VLV TO SUPPRESSION POOL | | | | | | | | | | | | |
| 1E12-F021 | 14 | GL | MO | 1075, 3 | D-3 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name RHR PUMP 1C TEST RETURN TO SUP POOL VALVE | | | | | | | | | | | | |
| 1E12-F023 | 4 | GL | MO | 1075, 2 | C-5 | 1 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | | Valve Name RH B SUPP TO RX HEAD SPRAY VALVE | | | | | | | | | | | | |
| 1E12-F024A | 10 | GA | MO | 1075, 1 | C-7 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name RHR PUMP 1A TEST RET TO SUP POOL VALVE | | | | | | | | | | | | |
| 1E12-F024B | 10 | GA | MO | 1075, 2 | C-2 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name RHR PUMP 1B TEST RETURN TO SUP POOL VALVE | | | | | | | | | | | | |
| 1E12-F025A | 1x1.5 | RV | SA | 1075, 1 | D-4 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | | Valve Name RHR PUMP A DISCHARGE RELIEF VALVE TO SUPRSN POOL | | | | | | | | | | | | |

## Residual Heat Removal (Page 3)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F025B | 1x1.5 | RV | SA | 1075, 2 | E-5 | 2 | . C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name RHR PUMP B DISCHARGE RELIEF VALVE TO SUPRSN POOL | | | | | | | | | | | | | |
| 1E12-F025C | 1x1.5 | RV | SA | 1075, 3 | F-3 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name RHR PUMP C DISCHARGE RELIEF VLV TO SUPRSION POOL | | | | | | | | | | | | | |
| 1E12-F027A | 12 | GA | MO | 1075, 1 | D-4 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RHR PUMP 1A LPCI INJ SHUTOFF VALVE | | | | | | | | | | | | | |
| 1E12-F027B | 12 | GA | MO | 1075, 2 | D-5 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RHR PUMP 1B LPCI INJ SHUT OFF VALVE | | | | | | | | | | | | | |
| 1E12-F028A | 10 | GA | MO | 1075, 1 | F-3 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RHR SYS 1A CNMT SPRAY VALVE | | | | | | | | | | | | | |
| 1E12-F028B | 10 | GA | MO | 1075, 2 | F-6 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RHR SYS 1B CNMT SPRAY VALVE | | | | | | | | | | | | | |
| 1E12-F031A | 14 | CK | SA | 1075, 1 | B-8 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RHR PUMP A DISCHARGE CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F031B | 14 | CK | SA | 1075, 2 | B-1 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RHR PUMP B DISCHARGE CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F031C | 14 | CK | SA | 1075, 3 | D-1 | 2 | C | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RHR PUMP C DISCHARGE CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F036 | 4x6 | RV | SA | 1075, 4 | E-5 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name RHR CONDENSATE TO RCIC PUMP SUCTION RELIEF VLV | | | | | | | | | | | | | |

## Residual Heat Removal (Page 4)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F037A | 10 | GL | MO | 1075, 1 | F-2 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RHR SYS 1A SHUTDOWN CLG UPPER POOL VALVE | | | | | | | | | | | | | |
| 1E12-F037B | 10 | GL | MO | 1075, 2 | F-7 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RH SYSTEM 1B SHUTDOWN CLG UPPER POOL VALVE | | | | | | | | | | | | | |
| 1E12-F039A | 12 | GA | M | 1075, 1 | D1 | 1 | LO | O | B | P | PI | Y2 | | | |
| | | Valve Name RHR MAN INJ ISOL VALVE | | | | | | | | | | | | | |
| 1E12-F039B | 12 | GA | M | 1075, 2 | D-7 | 1 | LO | O | B | P | PI | Y2 | | | |
| | | Valve Name RHR MAN INJ ISOL VALVE | | | | | | | | | | | | | |
| 1E12-F039C | 12 | GA | M | 1075, 3 | E-7 | 1 | LO | O | B | P | PI | Y2 | | | |
| | | Valve Name RHR MAN INJ ISOL VALVE | | | | | | | | | | | | | |
| 1E12-F040 | 3 | GL | MO | 1075, 2 | E-1 | 2 | C | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name RHR SYS 1B RADWASTE DRAIN OUTBD ISOL VALVE | | | | | | | | | | | | | |
| 1E12-F041A | 12 | CK | SA | 1075, 1 | D-2 | 1 | C | O/C | A/C | A | CC | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR A REACTOR PRESS VESSEL ISOL CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F041B | 12 | CK | SA | 1075, 2 | D-7 | 1 | C | O/C | A/C | A | CC | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR B REACTOR PRESS VESSEL ISOL CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F041C | 12 | CK | SA | 1075, 3 | E-7 | 1 | C | O/C | A/C | A | CC | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-005 | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR C REACTOR PRESS VESSEL ISOL CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F042A | 12 | GA | MO | 1075, 1 | D-3 | 1 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-111 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR PUMP 1A LPCI INJECTION VALVE | | | | | | | | | | | | | |

## Residual Heat Removal (Page 5)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F042B | 12 | GA | MO | 1075, 2 | D-6 | 1 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-111 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR PUMP 1B LPCI INJECTION VALVE | | | | | | | | | | | | | |
| 1E12-F042C | 12 | GA | MO | 1075, 3 | E-5 | 1 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-111 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR PUMP 1C LPCI INJECTION VALVE | | | | | | | | | | | | | |
| 1E12-F046A | 4 | CK | SA | 1075, 1 | B-7 | 2 | C | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RHR PUMP A MIN FLOW LINE CHECK VLV | | | | | | | | | | | | | |
| 1E12-F046B | 4 | CK | SA | 1075, 2 | B-2 | 2 | C | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RHR PUMP B MIN FLOW LINE CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F046C | 4 | CK | SA | 1075, 3 | B-2 | 2 | C | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RHR PUMP C MIN FLOW LINE CHK VALVE | | | | | | | | | | | | | |
| 1E12-F047A | 14 | GA | MO | 1075, 4 | C-2 | 2 | O | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name RHR HX 1A SHELL SIDE INLET VALVE | | | | | | | | | | | | | |
| 1E12-F047B | 14 | GA | MO | 1075, 4 | C-8 | 2 | O | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name RHR HX 1B SHELL SIDE INLET VALVE | | | | | | | | | | | | | |
| 1E12-F048A | 14 | GL | MO | 1075, 1 | C-8 | 2 | O | O/C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | Valve Name RHR HX 1A SHELL SIDE BYPASS VALVE | | | | | | | | | | | | | |
| 1E12-F048B | 14 | GL | MO | 1075, 2 | C-1 | 2 | O | O/C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | Valve Name RHR HX 1B SHELL SIDE BYPASS VALVE | | | | | | | | | | | | | |
| 1E12-F049 | 3 | GA | MO | 1075, 2 | E-1 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name RHR SYS 1B RADWASTE DRAIN INBD ISOL VALVE | | | | | | | | | | | | | |

## Residual Heat Removal (Page 6)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F050A | 10 | CK | SA | 1075, 1 | D-5 | 2 | C | C | A/C | A | BDO | CS | 2203 | CSJ-105 | |
| | | | | | | | | | | | CC | CS | 2203 | CSJ-105 | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | | Valve Name RHR A SHUTDOWN COOLING RETURN LINE CHECK VLV | | | | | | | | | | | | |
| 1E12-F050B | 10 | CK | SA | 1075, 2 | E-5 | 2 | C | C | A/C | A | BDO | CS | 2203 | CSJ-105 | |
| | | | | | | | | | | | CC | CS | 2203 | CSJ-105 | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | | Valve Name RHR B SHUTDOWN COOLING RETURN LINE CHECK VLV | | | | | | | | | | | | |
| 1E12-F051A | 6 | GL | AO | 1075, 4 | F-2 | 2 | C | C | A | P | LT | Y2 | | | |
| | | | Valve Name SPLY STEAM TO RHR HT EXCH 1A PRESSURE CONTROL VLV | | | | | | | | | | | | |
| 1E12-F051B | 6 | GL | AO | 1075, 4 | F-6 | 2 | C | C | A | P | LT | Y2 | | | |
| | | | Valve Name SUPP STEAM TO RHR HT EXCH 1B PRESS CONTROL VALVE | | | | | | | | | | | | |
| 1E12-F053A | 10 | GL | MO | 1075, 1 | D-6 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | | Valve Name RHR SHUTDOWN COOLING INJECTION VALVE | | | | | | | | | | | | |
| 1E12-F053B | 10 | GL | MO | 1075, 2 | E-4 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | | Valve Name RHR SHUTDOWN COOLING INJECTION VALVE | | | | | | | | | | | | |
| 1E12-F055A | 8x12 | RV | SA | 1075, 4 | C-2 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name RHR HEAT EXCHANGER 1A STEAM SUPPLY RELIEF VALVE | | | | | | | | | | | | |
| 1E12-F055B | 8x12 | RV | SA | 1075, 4 | C-7 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name RHR HEAT EXCHANGER 1B STEAM SUPPLY RELIEF VALVE | | | | | | | | | | | | |
| 1E12-F060A | 0.75 | GL | SO | 1075, 4 | B-4 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name RHR A HX OUT TO PROCESS SAMP PNL VALVE | | | | | | | | | | | | |
| 1E12-F060B | 0.75 | GL | SO | 1075, 4 | B-5 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name RHR B HX OUTLT TO PROCESS SMPL PNL VALVE | | | | | | | | | | | | |
| 1E12-F063A | 3 | GA | M | 1075,1 | E6 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name CY to RHR FILL VALVE | | | | | | | | | | | | |
| 1E12-F063B | 3 | GA | M | 1075,2 | F4 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name CY TO RHR FILL VALVE | | | | | | | | | | | | |

## Residual Heat Removal (Page 7)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F063C | 3 | GA | M | 1075,3 | F5 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | Valve Name CY to RHR FILL VALVE | | | | | | | | | | | | |
| 1E12-F064A | 4 | GA | MO | 1075, 1 | B-8 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name RHR PUMP 1A MINIMUM FLOW VALVE | | | | | | | | | | | | |
| 1E12-F064B | 4 | GA | MO | 1075, 2 | B-1 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name RHR PUMP 1B MINIMUM FLOW VALVE | | | | | | | | | | | | |
| 1E12-F064C | 4 | GA | MO | 1075, 3 | B-1 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | Valve Name RHR PUMP 1C MINIMUM FLOW VALVE | | | | | | | | | | | | |
| 1E12-F068A | 18 | GA | MO | 1052, 1 | C-1 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | Valve Name RHR HX 1A SSW OUTLET VALVE | | | | | | | | | | | | |
| 1E12-F068B | 18 | GA | MO | 1052, 2 | C-1 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | Valve Name RHR HX 1B SSW OUTLET VALVE | | | | | | | | | | | | |
| 1E12-F075A | 0.75 | GL | SO | 1075, 4 | B-4 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name RHR A HX OUTLT TO PROCESS SAMP PNL VALVE | | | | | | | | | | | | |
| 1E12-F075B | 0.75 | GL | SO | 1075, 4 | B-5 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | | Valve Name RHR B HX OUTLT TO PROCESS SAMP PNL VALVE | | | | | | | | | | | | |
| 1E12-F084A | 2 | CK | SA | 1075, 1 | B-7 | 2 | O | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | Valve Name LPCS WATER LEG PUMP DISCH CHK VLV TO RHR A | | | | | | | | | | | | |
| 1E12-F084B | 2 | CK | SA | 1075, 2 | B-2 | 2 | O | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | Valve Name RH C WATER LEG PUMP DISCH CHK VLV TO RHR B | | | | | | | | | | | | |
| 1E12-F084C | 2 | CK | SA | 1075, 3 | E-2 | 2 | O | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | Valve Name RH C WATER LEG PUMP DISCH CHK VLV TO RHR C | | | | | | | | | | | | |

## Residual Heat Removal (Page 8)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F085A | 2 | CK | SA | 1075, 1 | B-8 | 2 | O | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name LPCS WATER LEG PUMP DISCH CHK VLV TO RHR A | | | | | | | | | | | | | |
| 1E12-F085B | 2 | CK | SA | 1075, 2 | B-1 | 2 | O | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RH C WATER LEG PUMP DISCH CHK VLV TO RHR B | | | | | | | | | | | | | |
| 1E12-F085C | 2 | CK | SA | 1075, 3 | E-1 | 2 | O | O/C | C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RH C WATER LEG PUMP DISCH CHK VLV TO RHR C | | | | | | | | | | | | | |
| 1E12-F086 | 3 | GA | M | 1075,2 | C4 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | Valve Name CY to RHR FILL VALVE | | | | | | | | | | | | | |
| 1E12-F087A | 6 | GL | M | 1075, 4 | E-3 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | Valve Name RCIC STEAM TO RHR HEAT EXCH IA VALVE | | | | | | | | | | | | | |
| 1E12-F087B | 6 | GL | M | 1075, 4 | E-7 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | Valve Name RCIC STEAM TO RHR HEAT EXCH 1B VALVE | | | | | | | | | | | | | |
| 1E12-F094 | 4 | GA | MO | 1075, 4 | E-7 | 3 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name RHR SSW CROSS TIE VALVE | | | | | | | | | | | | | |
| 1E12-F096 | 4 | GA | MO | 1075, 4 | E-7 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RHR/SSW CROSS TIE VALVE | | | | | | | | | | | | | |
| 1E12-F098 | 4 | CK | SA | 1075, 4 | D-7 | 2 | C | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RHR CONTAINMENT FLOODING LINE CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F101 | 1x1.5 | RV | SA | 1075, 3 | C-5 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name RHR PUMP C SUCTION RELIEF VALVE | | | | | | | | | | | | | |
| 1E12-F105 | 20 | GA | MO | 1075, 3 | B-5 | 2 | O | O/C | A | a | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RHR PUMP 1C SUCTION VALVE | | | | | | | | | | | | | |
| 1E12-F112A | 0.75x1 | RV | SA | 1075,4 | C-2 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name RHR A HX Thermal Relief Valve | | | | | | | | | | | | | |

## Residual Heat Removal (Page 9)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E12-F112B | 0.75x1 | RV | SA | 1075,4 | C-7 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name RHR B HX Thermal Relief Valve | | | | | | | | | | | | | |
| 1E12-F495A | 2 | CK | SA | 1075, 2 | E-3 | 2 | C | O/C | A/C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR TO FEEDWATER KEEP FILL CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F495B | 2 | CK | SA | 1075, 2 | E-3 | 2 | C | O/C | A/C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR TO FEEDWATER KEEP FILL CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F496 | 2 | GL | MO | 1075, 2 | E-4 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR TO FEEDWATER "B" KEEP FILL VALVE | | | | | | | | | | | | | |
| 1E12-F497 | 2 | GL | MO | 1075, 1 | E-7 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR TO FEEDWATER "A" KEEP FILL VALVE | | | | | | | | | | | | | |
| 1E12-F499A | 2 | CK | SA | 1075, 1 | E-7 | 2 | C | O/C | A/C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR TO FEEDWATER KEEP FILL CHECK VALVE | | | | | | | | | | | | | |
| 1E12-F499B | 2 | CK | SA | 1075, 1 | E-7 | 2 | C | O/C | A/C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RHR TO FEEDWATER KEEP FILL CHECK VALVE | | | | | | | | | | | | | |

## Reactor Core Isolation Cooling (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E51-C002E | 4 | GA | MO | 1079,1 | D3 | 2 | O | C | B | A | PI | Y2 | | | |
| | | | | | | | | | | | SC | M3 | | | |
| | | Valve Name RCIC TURB TRIP & THROTTLE VALVE | | | | | | | | | | | | | |
| 1E51-D001 | 8 | RPD | SA | 1079, 1 | F1 | 2 | C | O/C | D | A | DT | Y5 | | | |
| | | Valve Name RCIC VENT/DRAIN LINE RUPTURE DISC (DRAIN SIDE) | | | | | | | | | | | | | |
| 1E51-D002 | 8 | RPD | SA | 1079, 1 | F1 | 2 | C | O/C | D | A | DT | Y5 | | | |
| | | Valve Name RCIC VENT/DRAIN LINE RUPTURE DISC(VENT SIDE) | | | | | | | | | | | | | |
| 1E51-F004 | 1 | GL | AO | 1079, 1 | B-1 | 2 | O | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name RCIC TURBINE EXHAUST DRAIN CONTROL VALVE | | | | | | | | | | | | | |
| 1E51-F005 | 1 | GL | AO | 1079, 1 | B-2 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name RCIC TURBINE EXHAUST DRAIN CONTROL VALVE | | | | | | | | | | | | | |
| 1E51-F010 | 6 | GA | MO | 1079, 2 | A6 | 2 | O | O/C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RCIC SUCTION FROM RCIC STOR TANK VALVE | | | | | | | | | | | | | |
| 1E51-F011 | 6 | CK | SA | 1079, 2 | A4 | 2 | SYS | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RCIC PUMP SUCTION TESTABLE CHECK VALVE | | | | | | | | | | | | | |
| 1E51-F013 | 6 | GA | MO | 1079, 2 | F6 | 1 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-111 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | Valve Name RCIC INJECTION SHUT OFF VALVE | | | | | | | | | | | | | |
| 1E51-F018 | 2x3 | RV | SA | 1079, 2 | C5 | 2 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name RCIC TURBINE LUBE OIL COOLING CIRCUIT PRESS RELIEF | | | | | | | | | | | | | |
| 1E51-F019 | 3 | GL | MO | 1079, 2 | D6 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RCIC RECIRC TO SUPP POOL VALVE | | | | | | | | | | | | | |
| 1E51-F021 | 2.5 | CK | SA | 1079, 2 | D5 | 2 | SYS | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RCIC RECIRC TO SUPPRESSION POOL CHECK VALVE | | | | | | | | | | | | | |
| 1E51-F022 | 4 | GL | MO | 1079, 2 | E5 | 2 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name RCIC TEST RETURN TO RCIC STOR TANK VALVE | | | | | | | | | | | | | |

## Reactor Core Isolation Cooling (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass. | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E51-F025 | 1 | GL | AO | 1079, 1 | D5 | 2 | SYS | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name RCIC CONDENSATE RETURN ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1E51-F026 | 1 | GL | AO | 1079, 1 | D5 | 2 | SYS | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name RCIC CONDENSATE RETURN ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1E51-F030 | 6 | CK | SA | 1079, 2 | B4 | 2 | SYS | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name RCIC PUMP SUCTION CHECK VALVE FROM SUPP POOL | | | | | | | | | | | | | |
| 1E51-F031 | 6 | GA | MO | 1079, 2 | C6 | 2 | C | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RCIC PUMP SUCTION FROM SUPP POOL VALVE | | | | | | | | | | | | | |
| 1E51-F040 | 12 | CK | SA | 1079, 1 | C4 | 2 | SYS | O/C | A/C | A | CC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RCIC TURBINE EXHAUST LINE CHECK VALVE | | | | | | | | | | | | | |
| 1E51-F045 | 4 | GL | MO | 1079, 1 | D4 | 2 | C | O/C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | Valve Name RCIC STEAM TO TURBINE VALVE | | | | | | | | | | | | | |
| 1E51-F059 | 4 | GA | MO | 1079, 2 | E5 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name RCIC TEST RETURN TO RCIC STOR TANK VALVE | | | | | | | | | | | | | |
| 1E51-F061 | 2.5 | CK | SA | 1079, 2 | B4 | 2 | SYS | O | C | A | BDC | CMP | | | |
| | | | | | | | | | | | CP | CMP | | | |
| | | | | | | | | | | | DI | CMP | | | |
| | | Valve Name RCIC WTR LEG PUMP DISCHG CHECK VALVE | | | | | | | | | | | | | |
| 1E51-F062 | 2 | SCK | SA | 1079, 2 | B4 | 2 | SYS | O | C | A | BDC | CMP | | | |
| | | | | | | | | | | | CP | CMP | | | |
| | | | | | | | | | | | DI | CMP | | | |
| | | Valve Name RCIC WATER LEG DISCHARGE STOP CHECK VALVE | | | | | | | | | | | | | |

## Reactor Core Isolation Cooling (Page 3)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E51-F063 | 8 | GA | MO | 1079, 1 | E8 | 1 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-108 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RCIC STEAM LINE INBOARD ISOLATION VALVE | | | | | | | | | | | |
| 1E51-F064 | 8 | GA | MO | 1079, 1 | E5 | 1 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-108 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RCIC STEAM LINE OUTBOARD ISOLATION VALVE | | | | | | | | | | | |
| 1E51-F065 | 4 | CK | SA | 1079, 2 | E6 | 1 | SYS | O | C | A | BDC | CS | 2203 | CSJ-110 | |
| | | | | | | | | | | | CO | CS | 2203 | CSJ-110 | |
| | | | | Valve Name RCIC PUMP DISCHARGE HEADER CHECK VALVE | | | | | | | | | | | |
| 1E51-F066 | 4 | CK | SA | 1079, 2 | F8 | 1 | SYS | O | A/C | A | CC | RR | 2203 | RFJ-002 | |
| | | | | | | | | | | | CO | CS | 2203 | CSJ-105 | |
| | | | | | | | | | | | PIV | Y2 | | | |
| | | | | Valve Name RCIC RPV ISOLATION CHECK VALVE | | | | | | | | | | | |
| 1E51-F068 | 12 | GA | MO | 1079, 1 | C5 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RCIC TURBINE EXHAUST TO SUPP POOL VALVE | | | | | | | | | | | |
| 1E51-F076 | 1 | GL | MO | 1079, 1 | E8 | 1 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RCIC STM LINE WARMUP INBOARD ISOL VALVE | | | | | | | | | | | |
| 1E51-F077 | 1.5 | GL | MO | 1079, 1 | C5 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RCIC EXHAUST VACUMM BKR OUTBOARD ISOL VALVE | | | | | | | | | | | |
| 1E51-F078 | 3 | GA | MO | 1079, 1 | C6 | 2 | O | O/C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RCIC EXH VACUUM BKR INBOARD ISOL VALVE | | | | | | | | | | | |
| 1E51-F079 | 2 | CK | SA | 1079, 1 | C6 | 2 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | Y4 | | | |
| | | | | Valve Name RCIC TURB EXH VAC BRKR CHECK VALVE | | | | | | | | | | | |

## Reactor Core Isolation Cooling (Page 4)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1E51-F081 | 2 | CK | SA | 1079, 1 | C6 | 2 | C | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | | | | | | | | RT | Y4 | | | |
| | | Valve Name RCIC TURB EXH VAC BRKR CHECK VALVE | | | | | | | | | | | | | |
| 1E51-F090 | 0.75x1 | RV | SA | 1079, 2 | E5 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name RCIC STORAGE TANK BYPASS LINE RELIEF ANGLE VALVE | | | | | | | | | | | | | |

## Reactor Recirculation (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1B33-F019 | 0.75 | GL | AO | 1072, 1 | E5 | 2 | O | C | B | A | FC<br>PI | CS<br>Y2 | 2203 | CSJ-115 | |
| Valve Name RR SAMPLE LINE DRYWELL INBOARD ISOL. VALVE | | | | | | | | | | | | | | | |
| 1B33-F020 | 0.75 | GL | AO | 1072, 1 | E8 | 2 | O | C | B | A | FC<br>PI | CS<br>Y2 | 2203 | CSJ-115 | |
| Valve Name RR SAMPLE LINE DRYWELL OUTBOARD ISOL. VALVE | | | | | | | | | | | | | | | |

## Reactor Water Cleanup (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1G33-F001 | 6 | GA | MO | 1076, 4 | B8 | 1 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-112 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RWCU PUMP SUCTION INBOARD ISOL VALVE | | | | | | | | | | | |
| 1G33-F004 | 6 | GA | MO | 1076, 4 | B5 | 1 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | CS | 2201&04 | CSJ-112 | Relief 2203 |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RWCU PUMP SUCTION OUTBOARD ISOL VALVE | | | | | | | | | | | |
| 1G33-F028 | 4 | GA | MO | 1076, 4 | E8 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RWCU TO CONDENSER INBOARD ISOL VALVE | | | | | | | | | | | |
| 1G33-F034 | 4 | GA | MO | 1076, 4 | E7 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RWCU TO CONDENSER OUTBOARD ISOL VALVE | | | | | | | | | | | |
| 1G33-F039 | 4 | GA | MO | 1076, 4 | D7 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RWCU RETURN LINE OUTBOARD ISOLATION VALVE | | | | | | | | | | | |
| 1G33-F040 | 4 | GA | MO | 1076, 4 | D8 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name RWCU RETURN LINE INBOARD ISOL VALVE | | | | | | | | | | | |
| 1G33-F051 | 4 | CK | SA | 1076, 4 | D6 | 2 | O | C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | Valve Name RWCU CK VLV TO RHR SHUTDOWN COOLING RETURN | | | | | | | | | | | |
| 1G33-F052A | 4 | CK | SA | 1076, 4 | D5 | 2 | O | C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | Valve Name RWCU CHECK VALVE TO RHR SUCTION STRAINER | | | | | | | | | | | |
| 1G33-F052B | 4 | CK | SA | 1076, 4 | D5 | 2 | O | C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | | | Valve Name RWCU CHECK VALVE TO RHR SUCTION STRAINER | | | | | | | | | | | |

## Reactor Water Cleanup (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1G33-F053 | 4 | GA | MO | 1076, 4 | C8 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | RWCU PUMP DISCH INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1G33-F054 | 4 | GA | MO | 1076, 4 | C7 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name | RWCU PUMP DISCH OUTBD ISOLATION VALVE | | | | | | | | | | | | |

## Service Air (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SA029 | 3.0 | GL | AO | 1048, 6 | D2 | 2 | O | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name CNMT SA OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1SA030 | 3.0 | GL | AO | 1048, 6 | D3 | 2 | O | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name CNMT SA INBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1SA031 | 3.0 | GL | AO | 1048, 6 | D4 | 2 | C | C | B | A | FC | M3 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL SA OUTBOARD ISOLATION CONTROL VALVE | | | | | | | | | | | | | |
| 1SA032 | 3.0 | GL | AO | 1048, 6 | D5 | 2 | C | C | B | A | FC | CS | 2203 | CSJ 103 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name DRYWELL SA INBOARD ISOLATION VALVE | | | | | | | | | | | | | |

## Standby Liquid Control (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C41-F001A | 3 | GL | MO | 1077 | C6 | 2 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | Valve Name STANDBY LIQUID CONTROL TANK OULET VALVE A | | | | | | | | | | | | | |
| 1C41-F001B | 3 | GL | MO | 1077 | E6 | 2 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | Valve Name STANDBY LIQUID CONTROL TANK OULET VALVE B | | | | | | | | | | | | | |
| 1C41-F004A | 1.5 | SHR | EXP | 1077 | C3 | 1 | C | O | D | A | DT | S2 | | | |
| | | Valve Name SLC PUMP A DISCHARGE EXPLOSIVE VALVE | | | | | | | | | | | | | |
| 1C41-F004B | 1.5 | SHR | EXP | 1077 | D3 | 1 | C | O | D | A | DT | S2 | | | |
| | | Valve Name SLC PUMP B DISCHARGE EXPLOSIVE VALVE | | | | | | | | | | | | | |
| 1C41-F006 | 3 | CK | SA | 1077 | D2 | 1 | C | O/C | C | A | CC | RR | 2203 | RFJ-001 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-001 | |
| | | Valve Name STBY LIQUID CONTROL PUMP DISCHARGE CK VLV | | | | | | | | | | | | | |
| 1C41-F029A | 1.5x2 | RV | SA | 1077 | C4 | 2 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name STBY LIQUID CONTROL PUMP 1A RELIEF VALVE | | | | | | | | | | | | | |
| 1C41-F029B | 1.5x2 | RV | SA | 1077 | E4 | 2 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name STBY LIQUID CONTROL PUMP 1B RELIEF VALVE | | | | | | | | | | | | | |
| 1C41-F033A | 1.5 | CK | SA | 1077 | C4 | 2 | SYS | O/C | C | A | CC | RR | 2203 | RFJ-011 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-011 | |
| | | Valve Name STBY LIQUID CONTROL PUMP 1A DISCHARGE CK VLV | | | | | | | | | | | | | |
| 1C41-F033B | 1.5 | CK | SA | 1077 | D4 | 2 | SYS | O/C | C | A | CC | RR | 2203 | RFJ-011 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-011 | |
| | | Valve Name STBY LIQUID CONTROL PUMP 1B DISCHARGE CK VLV | | | | | | | | | | | | | |
| 1C41-F336 | 4 | CK | SA | 1077 | E1 | 1 | SYS | O/C | C | A | CC | RR | 2203 | RFJ-012 | |
| | | | | | | | | | | | CO | RR | 2203 | RFJ-012 | |
| | | Valve Name STBY LIQUID CONTROL INJECTION CHECK VALVE | | | | | | | | | | | | | |

## Suppression Pool Cleanup & Transfer (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SF001 | 10 | GA | MO | 1060 | E5 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name SF RETURN LINE OUTBOARD ISOLATION | | | | | | | | | | | | | |
| 1SF002 | 10 | GA | MO | 1060 | E5 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name SF RETURN LINE INBOARD ISOLATION | | | | | | | | | | | | | |
| 1SF004 | 12 | GA | MO | 1060 | C5 | 2 | C | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name SF SUCTION LINE OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |

## Suppression Pool Makeup (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SM001A | 24 | BTF | MO | 1069 | D5 | 2 | C | O | B | A | DIA EX | MOV Y2 | 2201&04 | | |
| | | Valve Name SUP POOL MAKE-UP SYS DUMP SHUTOFF VALVE | | | | | | | | | | | | | |
| 1SM001B | 24 | BTF | MO | 1069 | D4 | 2 | C | O | B | A | DIA EX | MOV Y2 | 2201&04 | | |
| | | Valve Name SUP POOL MAKE-UP SYS DUMP SHUTOFF VALVE | | | | | | | | | | | | | |
| 1SM002A | 24 | BTF | MO | 1069 | D5 | 2 | C | O | B | A | DIA EX | MOV Y2 | 2201&04 | | |
| | | Valve Name SUP POOL MAKE-UP SYS DUMP SHUTOFF VALVE | | | | | | | | | | | | | |
| 1SM002B | 24 | BTF | MO | 1069 | D4 | 2 | C | O | B | A | DIA EX | MOV Y2 | 2201&04 | | |
| | | Valve Name SUP POOL MAKE-UP SYS DUMP SHUTOFF VALVE | | | | | | | | | | | | | |
| 1SM003A | 0.75x1 | RV | SA | 1069 | D5 | 2 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name SUPP POOL MAKE-UP FUEL POOL DUMP LINE RELIEF VALVE | | | | | | | | | | | | | |
| 1SM003B | 0.75x1 | RV | SA | 1069 | D4 | 2 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name SUPP POOL MAKE-UP FUEL POOL DUMP LINE RELIEF VALVE | | | | | | | | | | | | | |

## Shutdown Service Water (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX001A | 30 | CK | SA | 1052, 1 | D7 | 3 | SYS | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| Valve Name SHUTDOWN SERV WATER PUMP 1A DISCHG CHK VALVE | | | | | | | | | | | | | | | |
| 1SX001B | 30 | CK | SA | 1052, 2 | D7 | 3 | SYS | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| Valve Name SHUTDOWN SERV WATER PUMP 1B DISCHG CHK VALVE | | | | | | | | | | | | | | | |
| 1SX001C | 10 | CK | SA | 1052, 3 | D7 | 3 | SYS | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| Valve Name SHUTDOWN SERV WATER PUMP 1C DISCHG CHK VALVE | | | | | | | | | | | | | | | |
| 1SX003A | 30 | BTF | MO | 1052, 1 | D6 | 3 | O | O | B | P | PI | Y2 | | | |
| Valve Name SSW STRAINER 1A INLET VALVE | | | | | | | | | | | | | | | |
| 1SX003B | 30 | BTF | MO | 1052, 2 | D6 | 3 | O | O | B | P | PI | Y2 | | | |
| Valve Name SSW STRAINER 1B INLET VALVE | | | | | | | | | | | | | | | |
| 1SX003C | 10 | BTF | MO | 1052, 3 | D6 | 3 | O | O | B | P | PI | Y2 | | | |
| Valve Name SSW STRAINER 1C INLET VALVE | | | | | | | | | | | | | | | |
| 1SX004A | 30 | BTF | MO | 1052, 1 | D5 | 3 | O | O | B | P | PI | Y2 | | | |
| Valve Name SSW STRAINER 1A OUTLET VALVE | | | | | | | | | | | | | | | |
| 1SX004B | 30 | BTF | MO | 1052, 2 | D5 | 3 | O | O | B | P | PI | Y2 | | | |
| Valve Name SSW STRAINER 1B OUTLET VALVE | | | | | | | | | | | | | | | |
| 1SX004C | 10 | BTF | MO | 1052, 3 | D5 | 3 | O | O | B | P | PI | Y2 | | | |
| Valve Name SSW STRAINER 1C OUTLET VALVE | | | | | | | | | | | | | | | |
| 1SX006C | 8 | BTF | MO | 1052, 3 | D2 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| Valve Name DG 1C HEAT EXCHANGER OUTLET VALVE | | | | | | | | | | | | | | | |
| 1SX008A | 20 | BTF | MO | 1052, 1 | E6 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| Valve Name SSW STRAINER 1A BYPASS VALVE | | | | | | | | | | | | | | | |
| 1SX008B | 20 | BTF | MO | 1052, 2 | E6 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| Valve Name SSW STRAINER 1B BYPASS VALVE | | | | | | | | | | | | | | | |
| 1SX008C | 8 | BTF | MO | 1052, 3 | E6 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| Valve Name SSW STRAINER 1C BYPASS VALVE | | | | | | | | | | | | | | | |
| 1SX010A | 2 | GL | AO | 1052, 1 | E3 | 3 | C | O | B | A | FO | M3 | | | |
| Valve Name 1VH07SA FLOW CONTROL VALVE | | | | | | | | | | | | | | | |

## Shutdown Service Water (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX010B | 2 | GL | AO | 1052, 2 | E3 | 3 | C | O | B | A | FO | M3 | | | |
| Valve Name 1VH07SB FLOW CONTROL VALVE | | | | | | | | | | | | | | | |
| 1SX010C | 1.5 | GL | AO | 1052, 3 | E4 | 3 | C | O | B | A | FO | M3 | | | |
| Valve Name 1VH07SC SX PUMP RM 1C FLOW CONTROL VALVE | | | | | | | | | | | | | | | |
| 1SX011A | 16 | BTF | MO | 1052, 1 | D3 | 3 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name DIV I CROSS TIE VALVE | | | | | | | | | | | | | | | |
| 1SX011B | 16 | BTF | MO | 1052, 2 | E3 | 3 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name DIV 2 CROSS TIE VALVE | | | | | | | | | | | | | | | |
| 1SX012A | 14 | BTF | MO | 1052, 1 | C3 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| Valve Name FC HX 1A SSW INLET VALVE | | | | | | | | | | | | | | | |
| 1SX012B | 14 | BTF | MO | 1052, 2 | C3 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| Valve Name FC HX 1B SSW INLET VALVE | | | | | | | | | | | | | | | |
| 1SX013D | 3 | PLG | MO | 1052, 1 | D5 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| Valve Name SSW STRAINER 1A BACKWASH VALVE | | | | | | | | | | | | | | | |
| 1SX013E | 3 | PLG | MO | 1052, 2 | D5 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| Valve Name SSW STRAINER 1B BACKWASH VALVE | | | | | | | | | | | | | | | |
| 1SX013F | 2 | PLG | MO | 1052, 3 | C5 | 3 | C | O/C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| Valve Name SSW STRAINER 1C BACKWASH VALVE | | | | | | | | | | | | | | | |
| 1SX014A | 20 | BTF | MO | 1052, 1 | F3 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| Valve Name SSW SYSTEM 1A ISOLATION VALVE | | | | | | | | | | | | | | | |
| 1SX014B | 20 | BTF | MO | 1052, 2 | F3 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| Valve Name SSW SYS 1B ISOLATION VALVE | | | | | | | | | | | | | | | |

## Shutdown Service Water (Page 3)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX014C | 8 | BTF | MO | 1052, 3 | E4 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name SSW SYS 1C ISOLATION VALVE | | | | | | | | | | | | | |
| 1SX016A | 2.5 | GA | MO | 1052, 1 | D3 | 3 | C | O/C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name DIV 1 FUEL POOL MAKE-UP INLET VALVE | | | | | | | | | | | | | |
| 1SX016B | 2.5 | GA | MO | 1052, 2 | D3 | 3 | C | O/C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name DIV 2 FUEL POOL MAKE-UP INLET VALVE | | | | | | | | | | | | | |
| 1SX017A | 8 | BTF | MO | 1052, 1 | B8 | 3 | O | O | B | P | PI | Y2 | | | |
| | | Valve Name HVAC UNIT 1A HEAT EXCH INLET VALVE | | | | | | | | | | | | | |
| 1SX017B | 8 | BTF | MO | 1052, 2 | B8 | 3 | O | O | B | P | PI | Y2 | | | |
| | | Valve Name HVAC UNIT 1B HEAT EXCH INLET VALVE | | | | | | | | | | | | | |
| 1SX020A | 12 | BTF | MO | 1052, 1 | C4 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name DIV I DRYWELL CHILLER ISOLATION VALVE | | | | | | | | | | | | | |
| 1SX020B | 12 | BTF | MO | 1052, 2 | C4 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| | | Valve Name DIV 2 DRYWELL CHILLER ISOLATION VALVE | | | | | | | | | | | | | |
| 1SX023A | 2 | GL | AO | 1052, 1 | C2 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 1VY03S FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1SX023B | 2 | GL | AO | 1052, 2 | C2 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 1VY05S FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1SX027A | 2.5 | GL | AO | 1052, 4 | D6 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 1VY02S FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1SX027B | 2.5 | GL | AO | 1052, 4 | D2 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 1VY06S FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1SX027C | 2.5 | GL | AO | 1052, 4 | C2 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 1VY07S FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1SX033 | 2.5 | GL | AO | 1052, 4 | C6 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 1VY01S FLOW CONTROL VALVE | | | | | | | | | | | | | |

## Shutdown Service Water (Page 4)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX037 | 1.5 | GL | AO | 1052, 4 | B6 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 1VY04S FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1SX041A | 2.5 | GL | AO | 1052, 3 | C2 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 1VY08SA HPCS PUMP ROOM SX OUTLET FLOW CONTROL VLV | | | | | | | | | | | | | |
| 1SX041B | 2.5 | GL | AO | 1052, 3 | B2 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 1VY08SB HPCS RM EAC 1B SX OUTLET FLOW CONTROL VLV | | | | | | | | | | | | | |
| 1SX062A | 14 | BTF | MO | 1052, 1 | B4 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name FC HX 1A SSW OUTLET VALVE | | | | | | | | | | | | | |
| 1SX062B | 14 | BTF | MO | 1052, 2 | B4 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name FC HX 1B SSW OUTLET VALVE | | | | | | | | | | | | | |
| 1SX063A | 8 | BTF | MO | 1052, 1 | C2 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | Valve Name DIESEL GEN 1A HEAT EXCH OUTLET VALVE | | | | | | | | | | | | | |
| 1SX063B | 8 | BTF | MO | 1052, 2 | C2 | 3 | C | O | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | M3 | 2201&04 | | |
| | | Valve Name DIESEL GEN 1B HEAT EXCH OUTLET VALVE | | | | | | | | | | | | | |
| 1SX071A | 3 | GA | MO | 1052, 5 | F7 | 3 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name SBGT TRAIN A FIRE PROTECT DELUGE VALVE | | | | | | | | | | | | | |
| 1SX071B | 3 | GA | MO | 1052, 5 | F3 | 3 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name SBGT TRAIN B FIRE PROTECT DELUGE VALVE | | | | | | | | | | | | | |
| 1SX073A | 3 | GA | MO | 1052, 5 | F5 | 3 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SBGT TRAIN A FIRE PROTECT DELUGE VALVE | | | | | | | | | | | | | |
| 1SX073B | 3 | GA | MO | 1052, 5 | F2 | 3 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name SBGT TRAIN B FIRE PROTECT DELUGE VALVE | | | | | | | | | | | | | |
| 1SX074A | 3 | GA | MO | 1052, 5 | E7 | 3 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name CONT RM TRAIN A SUPPLY FILTER FP DELUGE VALVE | | | | | | | | | | | | | |
| 1SX074B | 3 | GA | MO | 1052, 5 | E3 | 3 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name CONT RM TRAIN B SUPPLY FILTER FP DELUGE VALVE | | | | | | | | | | | | | |
| 1SX076A | 3 | GA | MO | 1052, 5 | D7 | 3 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name CONT RM TRAIN A SUPPLY FILTER FP DELUGE VALVE | | | | | | | | | | | | | |

## Shutdown Service Water (Page 5)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX076B | 3 | GA | MO | 1052, 5 | D3 | 3 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CONT RM TRAIN B SUPPLY FILTER FP DELUGE VALVE | | | | | | | | | | | | | | | |
| 1SX082A | 3 | GA | MO | 1052, 1 | D1 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| Valve Name RHR HX 1A DEMIN WATER INLET VALVE | | | | | | | | | | | | | | | |
| 1SX082B | 3 | GA | MO | 1052, 2 | D1 | 3 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LT | Y2 | | | |
| Valve Name RHR HX 1B DEMIN WATER INLET VALVE | | | | | | | | | | | | | | | |
| 1SX105A | 3 | GA | MO | 1052, 5 | D7 | 3 | C | C | B | P | PI | Y2 | | | |
| Valve Name CONT RM TRAIN A MAKEUP FILTER FP DELUGE VALVE | | | | | | | | | | | | | | | |
| 1SX105B | 3 | GA | MO | 1052, 5 | D3 | 3 | C | C | B | P | PI | Y2 | | | |
| Valve Name CONT RM TRAIN B MAKEUP FILTER FP DELUGE VALVE | | | | | | | | | | | | | | | |
| 1SX107A | 3 | GA | MO | 1052, 5 | D7 | 3 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CONT RM TRAIN A MAKEUP FILTER FP DELUGE VALVE | | | | | | | | | | | | | | | |
| 1SX107B | 3 | GA | MO | 1052, 5 | D3 | 3 | C | C | A | P | LT | Y2 | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CONT RM TRAIN B MAKEUP FILTER FP DELUGE VALVE | | | | | | | | | | | | | | | |
| 1SX149 | 0.75x1 | RV | SA | 1052, 4 | C6 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name LPCS PUMP ROOM COOLER RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX150 | 0.75x1 | RV | SA | 1052, 4 | B6 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name RCIC PUMP ROOM COOLER RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX151A | 0.75x1 | RV | SA | 1052, 4 | E6 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name RHR PUMP ROOM COOLER 1A RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX151B | 0.75x1 | RV | SA | 1052, 4 | E2 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name RHR PUMP ROOM COOLER 1B RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX151C | 0.75x1 | RV | SA | 1052, 4 | C2 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name RHR PUMP ROOM COOLER 1C RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX152A | 0.75x1 | RV | SA | 1052, 1 | C3 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name RHR HX ROOM 1A COOLER RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX152B | 0.75x1 | RV | SA | 1052, 2 | C2 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name RHR HX ROOM 1B COOLER RELIEF VALVE | | | | | | | | | | | | | | | |

## Shutdown Service Water (Page 6)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX153A | 0.75x1 | RV | SA | 1052, 1 | C7 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name CONTROL ROOM CHILLER RELIEF VALVE | | | | | | | | | | | | | |
| 1SX153B | 0.75x1 | RV | SA | 1052, 2 | C6 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name CONTROL ROOM CHILLER RELIEF VALVE | | | | | | | | | | | | | |
| 1SX154A | 0.75x1 | RV | SA | 1052, 4 | E6 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name SWGR HEAT REMOVAL UNIT RELIEF VALVE | | | | | | | | | | | | | |
| 1SX154B | 0.75x1 | RV | SA | 1052, 4 | E2 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name SWGR HEAT REMOVAL UNIT RELIEF VALVE | | | | | | | | | | | | | |
| 1SX154C | 0.75x1 | RV | SA | 1052, 3 | C2 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name DIV III SWGR COND UNIT SX OUTLET RELIEF VALVE | | | | | | | | | | | | | |
| 1SX155A | 0.75x1 | RV | SA | 1052, 1 | E4 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name SX PUMP ROOM 1A COOLER RELIEF VALVE | | | | | | | | | | | | | |
| 1SX155B | 0.75x1 | RV | SA | 1052, 2 | E3 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name SX PUMP ROOM 1B COOLER RELIEF VALVE | | | | | | | | | | | | | |
| 1SX155C | 0.75x1 | RV | SA | 1052, 3 | D4 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name SX PUMP ROOM 1C COOLER RELIEF VALVE | | | | | | | | | | | | | |
| 1SX156A | 0.75x1 | RV | SA | 1052, 3 | B2 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name HPCS PUMP ROOM COOLER 1A RELIEF VALVE | | | | | | | | | | | | | |
| 1SX156B | 0.75x1 | RV | SA | 1052, 3 | B2 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name HPCS PUMP ROOM COOLER 1B RELIEF VALVE | | | | | | | | | | | | | |
| 1SX169A | 0.75x1 | RV | SA | 1052, 1 | C3 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name DIV 1 D/G HX RELIEF VALVE | | | | | | | | | | | | | |
| 1SX169B | 0.75x1 | RV | SA | 1052, 2 | C3 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name DIV 2 D/G HX RELIEF VALVE | | | | | | | | | | | | | |
| 1SX169C | 0.75x1 | RV | SA | 1052, 3 | D2 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name DIV 3 D/G HX RELIEF VALVE | | | | | | | | | | | | | |
| 1SX170A | 0.75x1 | RV | SA | 1052, 1 | B3 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name DIV 1 D/G HX RELIEF VALVE | | | | | | | | | | | | | |
| 1SX170B | 0.75x1 | RV | SA | 1052, 2 | B3 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name DIV 2 D/G HX RELIEF VALVE | | | | | | | | | | | | | |
| 1SX181A | 2.5 | GA | AO | 1052, 1 | F1 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 0VG05SA FLOW CONTROL VALVE | | | | | | | | | | | | | |
| 1SX181B | 2.5 | GA | AO | 1052, 2 | F1 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name 0VG05SB FLOW CONTROL VALVE | | | | | | | | | | | | | |

## Shutdown Service Water (Page 7)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX185A | 2.5 | GL | AO | 1052, 1 | E1 | 3 | C | O | B | A | FO | M3 | | | |
| Valve Name 0VG07SA FLOW CONTROL VALVE | | | | | | | | | | | | | | | |
| 1SX185B | 2.5 | GL | AO | 1052, 2 | E1 | 3 | C | O | B | A | FO | M3 | | | |
| Valve Name 0VG07SB FLOW CONTROL VALVE | | | | | | | | | | | | | | | |
| 1SX189 | 2.5 | GL | AO | 1052, 2 | A4 | 3 | C | O | B | A | FO | M3 | | | |
| Valve Name DIV IV INVERTER RM COOLER CONTROL VALVE | | | | | | | | | | | | | | | |
| 1SX193A | 1.5 | GL | AO | 1052, 1 | B7 | 3 | C | O | B | A | FO | M3 | | | |
| Valve Name DIV I INVERTER RM COOLING COIL CONTROL VALVE | | | | | | | | | | | | | | | |
| 1SX193B | 1.5 | GL | AO | 1052, 2 | B4 | 3 | C | O | B | A | FO | M3 | | | |
| Valve Name DIV II INVERTER RM COOL COIL CONTROL VALVE | | | | | | | | | | | | | | | |
| 1SX197 | 2 | GL | AO | 1052, 1 | B4 | 3 | C | O | B | A | FO | M3 | | | |
| Valve Name 1VY09S FLOW CONTROL VALVE | | | | | | | | | | | | | | | |
| 1SX200A | 0.75x1 | RV | SA | 1052, 1 | F1 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name SBGT RM 1A COOLING COIL RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX200B | 0.75x1 | RV | SA | 1052, 2 | F1 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name SBGT RM 1B COOLING COIL RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX201A | 0.75x1 | RV | SA | 1052, 1 | E1 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name H2 RECOMB RM 1A COOLING COIL RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX201B | 0.75x1 | RV | SA | 1052, 2 | E1 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name H2 RECOMB RM 1B COOLING COIL RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX202A | 0.75x1 | RV | SA | 1052, 1 | A7 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name INVERTER RM 1A COOLING COIL RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX202B | 0.75x1 | RV | SA | 1052, 2 | C5 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name INVERTER RM 1B COOLING COIL RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX203 | 0.75x1 | RV | SA | 1052, 2 | B5 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name DIV IV INVERT RM COOLING COIL RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX204 | 0.75x1 | RV | SA | 1052, 1 | B5 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name SX OUTLET RELIEF MSIV LEAKAGE RM COOLING COIL | | | | | | | | | | | | | | | |
| 1SX207 | 0.75x1 | RV | SA | 1052, 2 | B2 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name MSIV LEAKAGE OUTBD RM COOLING COIL RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX208A | 4x6 | RV | SA | 1052, 1 | C1 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name RHR HX 1A RELIEF VALVE | | | | | | | | | | | | | | | |
| 1SX208B | 4x6 | RV | SA | 1052, 2 | D1 | 3 | C | O | C | A | RT | Y10 | | | |
| Valve Name RHR HX 1B RELIEF VALVE | | | | | | | | | | | | | | | |

## Shutdown Service Water (Page 8)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX225 | 3.00 | GA | M | 1052, 3 | D4 | 3 | C | C | A | P | LT | Y2 | | | |
| | | Valve Name PASS SYSTEM SX INLET ISOLATION VALVE | | | | | | | | | | | | | |
| 1SX294 | 0.75x1 | RV | SA | 1052, 1 | D7 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name 0PR13A SX RELIEF VALVE | | | | | | | | | | | | | |
| 1SX303A | 4 | CK | SA | 1052, 1 | B7 | 3 | SYS | O/C | B | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 0VC13CA SSW INLET LINE VACUUM BREAKER VALVE | | | | | | | | | | | | | |
| 1SX303B | 4 | CK | SA | 1052, 2 | C6 | 3 | SYS | O/C | B | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 0VC13CB SSW INLET LINE VACUUM BREAKER VALVE | | | | | | | | | | | | | |
| 1SX315A | 3/4 | CK | SA | 1052, 3 | C2 | 3 | SYS | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name DIV. III SG RM COND. SX OUTLET VACUUM BRKR VALVE | | | | | | | | | | | | | |
| 1SX315B | 3/4 | CK | SA | 1052, 3 | C2 | 3 | SYS | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name DIV. III SG RM COND. SX OUTLET VACUUM BRKR VALVE | | | | | | | | | | | | | |
| 1SX316A | 3/4 | CK | SA | 1052, 3 | C3 | 3 | SYS | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name DIV. III SG RM COND. SX INLET VACUUM BRKR VALVE | | | | | | | | | | | | | |
| 1SX316B | 3/4 | CK | SA | 1052, 3 | C3 | 3 | SYS | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name DIV. III SG RM COND. SX INLET VACUUM BRKR VALVE | | | | | | | | | | | | | |
| 1SX346A | 4 | CK | SA | 1052, 4 | F7 | 3 | | O/C | C | A | CC | CS | 2203 | CSJ-118 | |
| | | | | | | | | | | | CO | CS | 2203 | CSJ-118 | |
| | | Valve Name 1VX06CA SSW INLET LINE VACUUM BREAKER VALVE | | | | | | | | | | | | | |
| 1SX346B | 4 | CK | SA | 1052,4 | E3 | 3 | | O/C | C | A | CC | CS | 2203 | CSJ-118 | |
| | | | | | | | | | | | CO | CS | 2203 | CSJ-118 | |
| | | Valve Name 1VX06CB SSW INLET LINE VACUUM BREAKER | | | | | | | | | | | | | |
| 1SX348A | 4 | CK | SA | 1052, 4 | F5 | 3 | | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 1VX06CA SSW OUTLET LINE VACUUM BREAKER VALVE | | | | | | | | | | | | | |
| 1SX348B | 4 | CK | SA | 1052,4 | F2 | 3 | | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | | Valve Name 1VX06CB SSW OUTLET LINE VACUUM BREAKER | | | | | | | | | | | | | |

## Shutdown Service Water (Page 9)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1SX350A | 3/4 | CK | SA | 1052,1 | A6 | 3 | SYS | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | Valve Name Vacuum Bkr Relief for Supply Side of Div. 1 SX | | | | | | | | | | | | | | |
| 1SX350B | 3/4 | CK | SA | 1052,2 | A7 | 3 | SYS | O/C | C | A | CC | CMP | | | |
| | | | | | | | | | | | CO | CMP | | | |
| | Valve Name Vacuum Bkr Relief for Supply Side of Div. 2 SX | | | | | | | | | | | | | | |

## Control Room Ventilation (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0VC010A | 2 | GL | AO | 1102, 5 | A7 | 3 | O | O | B | A | FO | M3 | | | |
| | | Valve Name AUTO FLOW REGULATOR VALVE | | | | | | | | | | | | | |
| 0VC010B | 2 | GL | AO | 1102, 6 | A7 | 3 | O | O | B | A | FO | M3 | | | |
| | | Valve Name AUTO FLOW REGULATOR VALVE | | | | | | | | | | | | | |
| 0VC016A | 2 | GL | M | 1102, 5 | F6 | 3 | C | O/C | B | A | ET | Y2 | | | |
| | | Valve Name MCR CWS M/U MANUAL ISOL VALVE | | | | | | | | | | | | | |
| 0VC016B | 2 | GL | M | 1102, 6 | F6 | 3 | C | O/C | B | A | ET | Y2 | | | |
| | | Valve Name MCR CWS M/U ISOL VALVE | | | | | | | | | | | | | |
| 0VC017A | 2 | CK | SA | 1102, 5 | F7 | 3 | SYS | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name MCR CWS M/U CHECK VALVE | | | | | | | | | | | | | |
| 0VC017B | 2 | CK | SA | 1102, 6 | F7 | 3 | SYS | O | C | A | BDC | M3 | | | |
| | | | | | | | | | | | CO | M3 | | | |
| | | Valve Name MCR CWS M/U CHECK VALVE | | | | | | | | | | | | | |
| 0VC020A | 2 | CK | SA | 1102, 5 | F7 | 3 | SYS | C | C | A | BDO | M3 | | | |
| | | | | | | | | | | | CC | M3 | | | |
| | | Valve Name MCR CWS MAKE UP CHECK VALVE | | | | | | | | | | | | | |
| 0VC020B | 2 | CK | SA | 1102, 6 | F7 | 3 | SYS | C | C | A | BDO | M3 | | | |
| | | | | | | | | | | | CC | M3 | | | |
| | | Valve Name MC MAKE UP CHECK VALVE | | | | | | | | | | | | | |
| 0VC022A | 1.5 | GL | AO | 1102, 5 | F7 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name MCR CHILLED M/U WATER CONTROL VALVE | | | | | | | | | | | | | |
| 0VC022B | 1.5 | GL | AO | 1102, 6 | F7 | 3 | C | O | B | A | FO | M3 | | | |
| | | Valve Name MCR CHILLED M/U WATER CONTROL VALVE | | | | | | | | | | | | | |
| 0VC025A | 1x1.5 | RV | SA | 1102, 5 | E6 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name COMPRESSION TANK A RELIEF VALVE | | | | | | | | | | | | | |
| 0VC025B | 1x1.5 | RV | SA | 1102, 6 | E6 | 3 | C | O | C | A | RT | Y10 | | | |
| | | Valve Name COMPRESSION TANK B RELIEF VALVE | | | | | | | | | | | | | |

## Drywell Cooling (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1VP004A | 10 | GA | MO | 1109, 2 | D3 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name DRYWELL CHILLED WATER A SUPPLY OUTBOARD ISOLATION | | | | | | | | | | | |
| 1VP004B | 10 | GA | MO | 1109, 3 | D3 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name DRYWELL CHILLED WATER B SUPPLY OUTBOARD ISOLATION | | | | | | | | | | | |
| 1VP005A | 10 | GA | MO | 1109, 2 | D2 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name DRYWELL CLG 1A SPLY INBOARD ISOL VALVE | | | | | | | | | | | |
| 1VP005B | 10 | GA | MO | 1109, 3 | D2 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name DRYWELL CHILLED WATER B SUPPLY INBOARD ISOLATION | | | | | | | | | | | |
| 1VP014A | 10 | GA | MO | 1109, 2 | E3 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name DRYWELL CHILLED WATER A RETURN INBOARD ISOLATION | | | | | | | | | | | |
| 1VP014B | 10 | GA | MO | 1109, 3 | E2 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name DRYWELL CLG 1B RTRN INBOARD ISOL VALVE | | | | | | | | | | | |
| 1VP015A | 10 | GA | MO | 1109, 2 | E3 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name DRYWELL CHILLED WATER A RETURN OUTBOARD ISOLATION | | | | | | | | | | | |
| 1VP015B | 10 | GA | MO | 1109, 3 | E3 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | Valve Name DRYWELL CHILLED WATER B RETURN OUTBOARD ISOLATION | | | | | | | | | | | |
| 1VP023A | 0.75x1 | RV | SA | 1109, 2 | D3 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | | | Valve Name DW CHILLED WATER A SUPPLY LINE RELIEF VALVE | | | | | | | | | | | |

## Drywell Cooling (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1VP023B | 0.75x1 | RV | SA | 1109, 3 | D3 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name DW CHILLED WATER B SUPPLY LINE RELIEF VALVE | | | | | | | | | | | | | |
| 1VP027A | 0.75x1 | RV | SA | 1109, 2 | F3 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name DW COOL SYS COIL CAB 1C RELIEF VALVE | | | | | | | | | | | | | |
| 1VP027B | 0.75x1 | RV | SA | 1109, 3 | F3 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name DW COOL SYS COIL CAB 1D RELIEF VALVE | | | | | | | | | | | | | |

## Primary Containment Purge (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1VQ001A | 24 | BTF | AO | 1110, 2 | C8 | 2 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name | DW PURGE TO CONTAINMENT EXHAUST FAN ISOLATION DMPR | | | | | | | | | | | | |
| 1VQ001B | 24 | BTF | AO | 1110, 2 | C7 | 2 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name | DW PURGE MOIST SEP B INLET DRN VALVE | | | | | | | | | | | | |
| 1VQ002 | 24 | BTF | AO | 1110, 2 | C6 | 2 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name | DRYWELL PURGE SYS EXHAUST DRYWELL ISOLATION VALVE | | | | | | | | | | | | |
| 1VQ003 | 36 | BTF | AO | 1110, 2 | C5 | 2 | C | C | B | A | FC | CS | 2203 | CSJ-104 | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | EXHAUST OUTBOARD DRYWELL ISOLATION VALVE | | | | | | | | | | | | |
| 1VQ004A | 36 | BTF | AO | 1110, 2 | D4 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-107 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | DW PURGE CONTAINMENT OUTBOARD ISOLATION DAMPER | | | | | | | | | | | | |
| 1VQ004B | 36 | BTF | AO | 1110, 2 | D5 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-107 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | CONTAINMENT BUILDING EXH PURGE INBOARD ISOL VALVE | | | | | | | | | | | | |
| 1VQ005 | 10 | BTF | AO | 1110, 2 | D6 | 2 | C | C | B | P | PI | Y2 | | | |
| | | Valve Name | EXHAUST INBOARD SYSTEM DRYWELL ISOL VALVE | | | | | | | | | | | | |
| 1VQ006A | 4 | GL | MO | 1110, 2 | C4 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | CNMT EXHAUST OUTBOARD ISOLATION BYPASS VALVE | | | | | | | | | | | | |
| 1VQ006B | 4 | GL | MO | 1110, 2 | C4 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name | CNMT EXHAUST INBOARD ISOLATION BYPASS VALVE | | | | | | | | | | | | |

## Containment Building Ventilation (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1VR001A | 36 | BTF | AO | 1111, 1 | E2 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-107 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CONTAINMENT VENT OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | | | |
| 1VR001B | 36 | BTF | AO | 1111, 1 | E1 | 2 | C | C | A | A | FC | CS | 2203 | CSJ-107 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CONTAINMENT VENT INBOARD ISOLATION VALVE | | | | | | | | | | | | | | | |
| 1VR002A | 4 | GL | MO | 1111, 1 | E2 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name FUEL BLDG VR SUPPLY OUTBOARD ISOL. BYPASS VALVE | | | | | | | | | | | | | | | |
| 1VR002B | 4 | GL | MO | 1111, 1 | E1 | 2 | C | C | A | P | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CNMT VR SUPPLY INBOARD ISOLATION BYPASS VALVE | | | | | | | | | | | | | | | |
| 1VR006A | 12 | BTF | AO | 1111, 5 | E3 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-104 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CONTINUOUS CNMT HVAC SUPPLY OUTBOARD ISOLATION | | | | | | | | | | | | | | | |
| 1VR006B | 12 | BTF | AO | 1111, 5 | E2 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-104 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CONTINUOUS CNMT HVAC SUPPLY INBOARD ISOLATION | | | | | | | | | | | | | | | |
| 1VR007A | 12 | BTF | AO | 1111, 5 | B7 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-104 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CCP OUTBOARD EXHAUST ISOLATION VALVE | | | | | | | | | | | | | | | |
| 1VR007B | 12 | BTF | AO | 1111, 5 | B7 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-104 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name CCP INBOARD EXHAUST ISOLATION VALVE | | | | | | | | | | | | | | | |
| 1VR035 | 0.75 | PLG | SO | S 1111,3 | B22 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-104 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| Valve Name 1PDCVR020 AIR LINE ISOLATION VALVE | | | | | | | | | | | | | | | |

## Containment Building Ventilation (Page 2)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1VR036 | 0.75 | PLG | SO | S 1111,3 | B22 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-104 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name 1PDCVR020 CNMT PURGE AIR LINE ISOLATION VALVE | | | | | | | | | | | | | |
| 1VR040 | 0.75 | PLG | SO | S 1111,3 | B22 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-104 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name CCP AIR LINE ISOLATION VALVE | | | | | | | | | | | | | |
| 1VR041 | 0.75 | PLG | SO | S 1111,3 | B22 | 2 | O | C | A | A | FC | CS | 2203 | CSJ-104 | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name 1TSVR166 ISOLATION VALVE | | | | | | | | | | | | | |

## Plant Chilled Water (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1WO001A | 6 | GA | MO | 1117, 19 | E5 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name PLANT CHILLED WATER OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1WO001B | 6 | GA | MO | 1117, 19 | E6 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name PLANT CHILLED WATER INBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1WO002A | 6 | GA | MO | 1117, 19 | F5 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name PLANT CHILLED WATER OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1WO002B | 6 | GA | MO | 1117, 19 | F6 | 2 | O | C | A | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | Valve Name PLANT CHILLED WATER INBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1WO551A | 4 | GA | MO | 1117, 26 | E7 | 2 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name DRYWELL OUTBOARD ISOL VALVE | | | | | | | | | | | | | |
| 1WO551B | 4 | GA | MO | 1117, 26 | E7 | 2 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name DRYWELL INBOARD ISOL VALVE | | | | | | | | | | | | | |
| 1WO552A | 4 | GA | MO | 1117, 26 | D7 | 2 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name PLANT CHILL WATER OUTBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1WO552B | 4 | GA | MO | 1117, 26 | D7 | 2 | O | C | B | A | DIA | MOV | | | |
| | | | | | | | | | | | EX | Y2 | 2201&04 | | |
| | | Valve Name PLANT CHILL WATER INBOARD ISOLATION VALVE | | | | | | | | | | | | | |
| 1WO570A | 0.75x1 | RV | SA | 1117, 26 | F7 | 2 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name PLANT CHILLED WATER SYSTEM SAFETY RELIEF VLV | | | | | | | | | | | | | |
| 1WO570B | 0.75x1 | RV | SA | 1117, 26 | D7 | 2 | C | O/C | C | A | RT | Y10 | | | |
| | | Valve Name PLANT CHILLED WATER SAFETY RELIEF VLV | | | | | | | | | | | | | |

## Solid Radwaste Reprocessing and Disposal (Page 1)

| Valve EIN | Size | Valve Type | Actu Type | P&ID | Sheet/ Coord | Class | Normal Position | Safety Position | Category | Act/Pass | Test Type | Test Freq. | Relief Request | Deferred Just. | Tech. Pos. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1WX019 | 2 | PLG | AO | 1089, 2 | F6 | 2 | O | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name INBOARD CNMT ISOLATION VALVE | | | | | | | | | | | | | |
| 1WX020 | 2 | PLG | AO | 1089, 2 | F5 | 2 | O | C | A | A | FC | M3 | | | |
| | | | | | | | | | | | LTJ | AJ | | | |
| | | | | | | | | | | | PI | Y2 | | | |
| | | Valve Name OUTBOARD CNMT ISOLATION VALVE | | | | | | | | | | | | | |
| 1WX080 | 3/4 | RV | SA | 1089, 2 | F5 | 2 | C | O/C | A/C | A | LTJ | AJ | | | |
| | | | | | | | | | | | RT | Y10 | | | |
| | | Valve Name RADWASTE CONT. PEN RELIEF VALVE | | | | | | | | | | | | | |

# ATTACHMENT 16
# CHECK VALVE CONDITION MONITORING PLAN INDEX

Revision 9
7/12/2018

| CVCM PLAN NUMBER | REV # | TITLE |
|---|---|---|
| CMP-01 | 0 | Control Rod Drive Containment Isolation Check Valve |
| CMP-02 | 1 | Instrument Air Containment Isolation Check Valve |
| CMP-03 | 0 | 4" Service Water System Vacuum Breakers |
| CMP-04 | 0 | 3/4" Service Water System Vacuum Breakers |
| CMP-05 | 0 | Shutdown Service Water Pump Discharge Check Valves |
| CMP-06 | 0 | RCIC Turbine Exhaust Vacuum Breakers |
| CMP-07 | 0 | RHR to Feedwater Keep Fill Check Valves |
| CMP-08 | 0 | RWCU Check Valves to RHR |
| CMP-09 | 0 | Safety Relief Valve Vacuum Breakers |
| CMP-10 | 0 | Safety Relief Valve Vent Line Vacuum Breakers |
| CMP-11 | 0 | Shutdown Service Water Pump Discharge Check Valve |
| CMP-12 | 0 | HPCS Suction Check Valve from RCIC Storage Tank |
| CMP-13 | 1 | RCIC Water Leg Pump Discharge Check Valve |
| CMP-14 | 1 | RCIC Water Leg Pump Discharge Stop Check Valve |
| CMP-15 | 0 | New 3/4" Service Water System Vacuum Breakers |
| CMP-16 | 0 | A and B DO Fuel Transfer Pump Discharge Check Valve |