Exelon Generation

Clinton Power Station
8401 Power Road
Clinton IL 61727

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Clinton Power Station Fourth Ten-Year Interval Inservice Testing Program Plan Revision 2

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 2 of the Inservice Testing (IST) Program for the fourth ten-year interval. The fourth ten-year interval IST Program Plan complies with the requirements of the ASME OM 2012 Code Edition. The fourth ten-year interval began on July 1, 2020, and concludes on June 30, 2030.

There are no regulatory commitments contained in this report.

Should you have any questions concerning this report, please contact Mr. Garrett Sanders, Acting Regulatory Assurance Manager, at (217) 937-2803.

Sincerely,

Norha Plumey
Plant Manager
Clinton Power Station

Attachment: Clinton Power Station Fourth Ten-Year Interval Inservice Testing Program Plan Revision 2

cc:

NRC Regional Administrator - Region III
NRC Senior Resident Inspector - Clinton Power Station
NRC Clinton Power Station Project Manager – NRR
Illinois Emergency Management Agency – Division of Nuclear Safety

Exelon Generation Company
4300 Winfield Road
Warrenville, IL
60555

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

Inservice Testing (IST) Program
Program Plan

4th Ten-Year Interval

07/01/20– 06/30/30

Revision 2
4/07/2022

REVISION RECORD

Effective Date	Revision Description	Sign & Date		
		Prepared: Site IST Engineer	Reviewed: Corporate IST Engineer	Approved; Engr. Programs Manager
7/1/2020	Rev 0 implementation	Fred Sarantakos 6/29/20	Glenn Weiss 6/30/20	Marcellus Ruff 6/30/20
5/14/21	Rev 1 • Relief Request 2205 for SRVs • Relief Request 2206 for OMN-26 • Implementing OMN-16 • Updated reference to NUREG 1482 Rev 3 • Updating Technical Positions	Fred Sarantakos 5/7/21	Glenn Weiss 5/7/21	Marcellus Ruff 5/10/21
3/25/22	Rev 2 • Relief Request 2207 for OMN-28	Sarantakos, Fredrick W. Digitally signed by Sarantakos, Fredrick W. DN: cn=Sarantakos, Fredrick W. Date: 2022.03.28 10:50:43 -05'00'	Weiss, Glenn D. Digitally signed by Weiss, Glenn D. DN: cn=Weiss, Glenn D. Date: 2022.03.29 16:13:01 -04'00'	Ruff, Marcellus R. Digitally signed by Ruff, Marcellus R. DN: cn=Ruff, Marcellus R. Date: 2022.03.30 10:47:00 -05'00'

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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 4th 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 4th ten-year IST interval, which began on July 1, 2020 and is scheduled to end on June 30, 2030.

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 within the scope of the ASME OM Code 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 4th ten-year interval is required by 10 CFR 50.55a(f)(4)(ii) to comply with the requirements of the ASME OM-2012, 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 and other safety-related 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, and other safety-related 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.

NOTE: On August 17, 2017, a revision to the Code of Federal Regulations became effective with a revision to the wording of 10CFR50.55a(f)(4). Paragraph (f)(4) now states, in part, "The inservice test requirements for pumps and valves that are within the scope of the ASME OM Code but are not classified as ASME BPV Code Class 1, Class 2, or Class 3 may be satisfied as an augmented IST program in accordance with paragraph (f)(6)(ii) of this section without requesting relief under paragraph (f)(5) of this section or alternatives under paragraph (z) of this section. This use of an augmented IST program may be acceptable provided the basis for deviations from the ASME OM Code, as incorporated by reference in this section, demonstrates an acceptable level of quality and safety, or that implementing the Code provisions would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety, where documented and available for NRC review."

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 may be relied upon to operate to perform a function with some significance to safety. 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 and other safety-related 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 <u>Discussion</u>

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-2012, Operation and Maintenance of Nuclear Power Plant Components.

1.4.3 Regulatory Guide 1.192, "Operations and Maintenance Code Case Acceptability, ASME OM Code", Revision 3, dated October 2019.

1.4.4 NUREG 1482, Revision 3, "Guidelines for Inservice Testing at Nuclear Power Plants".

1.4.5 Clinton Technical Specification

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

1.4.7 ASME OMN-28 Code Case Evaluation - Clinton IST Program (IR 04473166)

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-2012 Code Edition, “Operation and Maintenance of Nuclear Plants."
- NUREG-1482, Revision 3, "Guidelines for Inservice Testing at Nuclear Power Plants"

The pumps included in this program are all ASME Class 1, 2, or 3 and other safety-related 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, “Inservice Testing of Pumps in Light Water Reactor Nuclear Power Plants,” with the exception of specific relief requests contained in Attachment 3.

Mandatory Appendix V “Pump Periodic Verification Test Program,” contains requirements to augment the rules of Subsection ISTB. The Owner is not required to perform a pump periodic verification test, if the design basis accident flow rate (DBAFR) in the Owner’s safety analysis is bounded by the Comprehensive Pump Test (CPT) or Group A Test.

A pump periodic verification test (PPVT) verifies a pump can meet the required (differential or discharge) pressure, as applicable, at its highest design basis accident flowrate.

Mandatory Appendix V General Requirements include the following:

a. Identify those certain applicable pumps with specific design basis accident flow rates in the credited safety analysis (e.g., technical specifications, technical requirements program, or updated safety analysis report) for inclusion in this program.

b. Perform the pump periodic verification test atleast once every 2 years.

c. Determine whether the pump periodic verification test is required before declaring the pump operable following replacement, repair, or maintenance on the pump.

d. Declare the pump inoperable if the pump periodic verification test flow rate and associated differential pressure (or discharge pressure for positive displacement pumps) cannot be achieved.

e. Maintain the necessary records for the pump periodic verification tests, including the applicable test parameters (e.g., flow rate and associated differential pressure, or flow rate and associated discharge pressure, and speed for variable speed pumps) and their basis.

f. Account for the pump periodic verification test instrument accuracies in the test acceptance criteria.

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: C Centrifugal PD Reciprocating Positive Displacement VLS Vertical Line Shaft
Driver	The type of driver with which the pump is equipped. A Air-motor D Diesel M Motor (electric) 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: N Speed (for variable speed pumps, only) DP Differential Pressure PD Discharge Pressure (positive displacement pumps) Q Flow Rate V Vibration

Freq — An abbreviation which designates the frequency at which the associated test is performed:

- M3 Quarterly (92 Days)
- Y2 Once every 2 years

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-2012 Code Edition, “Operation and Maintenance of Nuclear Plants."
- NUREG-1482, Revision 3, "Guidelines for Inservice Testing at Nuclear Power Plants"

The valves included in this program are all ASME Class 1, 2, and 3 and other safety-related valves 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.

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.

MOV Valves

Effective on August 17, 2017 the NRC added a new condition as 10CFR50.55a(b)(3)(ii)(D), "MOV stroke time," to require that, when applying Paragraph III-3600, "MOV Exercising Requirements," of Appendix III to the OM Code, licensees shall verify that the stroke time of the MOVs specified in plant technical specifications satisfies the assumptions in the plant's safety analyses. This condition retains the MOV stroke time requirement for a smaller set of MOVs than was specified in previous editions and addenda of the OM Code. For these MOVs, a stroke time test is listed in Attachment 15, "Inservice Testing Valve Table."

Check Valves

ASME OM-2012 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-2012. An administrative procedure and site implementing procedures will perform the specified tests identified in the individual 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.

Valves included in the CVCM Program will be annotated with "CM" in the "Frequency" column of the Valve Tables. The Code testing specified in the Tables is replaced by the activities/tests identified in the specific CMP Plan.

Trending and evaluation shall support the determination that the valve or group of valves is capable of performing its intended function(s) over the entire interval. At least one of the Appendix II condition monitoring activities for a valve group shall be performed on each valve of the group at approximate equal intervals not to exceed the maximum interval shown in the following table and as specified in NRC condition 10CFR50.55a(b)(3)(iv).

Group size	Maximum interval between activities of member valves in the groups (years)	Maximum interval between activities of each valve in the group (years)
≥4	4.5	16
3	4.5	12
2	6	12
1	Not applicable	10

Position Indication (PI) Verification (ISTC-3700)

Verification of proper remote position indication will normally be accomplished by locally observing the position of the valve and comparing it with the remote indication. Some valves are not equipped with a local means to verify position. Therefore, position will be verified by the observation of system parameters such as flow, pressure, temperature, or level. For valves having remote position indicators at multiple locations that include the control room, the control room remote position indicator will be verified for accuracy and the remote position indicator used for exercise testing and stroke timing the valve will also be verified for accuracy. If exercise testing and stroke timing are performed using only the control room remote position indicator, then only the control room remote position indicator needs to be verified for accuracy.

Effective on August 17, 2017 the NRC added a new condition as 10CFR50.55a(b)(3)(xi), "Valve Position Indication," to emphasize, when implementing OM Code (2012 Edition), Subsection ISTC-3700, "Position Verification Testing," licensees shall implement the OM Code provisions to verify that valve operation is accurately indicated (i.e., Supplemental Position Indication). This condition emphasizes the OM Code requirements for valve position indication and is not a change to those requirements.

CPS evaluated all valves in the IST Program where an IST-3700 position indication test was listed in Attachment 15 to ensure the requirements of the 10CFR50.55a(b)(3)(xi) condition were met. Steps in the implementing procedures which were specifically credited by this evaluation have been identified by [IST/SPI].

3.2 IST Plan Valve Table Description

The valves included in the Clinton Nuclear Station IST 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:

0	Common Unit
1	Unit 1
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

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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. Note that some of the abbreviations are different that the ones found in ER-AA-321-1002. This is due to historic Database being used for the pump and valve table creation. 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
DT	Category D Test
ET	Manual Valve Exercise
EX	Full Exercise without stroke timing
FC	Fail-Safe Exercise Test - Timed Closed
FO	Fail-Safe Exercise Test – Timed 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	Time Exercise Closed
SD	Solenoid De-energize
SE	Solenoid Energize
SO	Time Exercise Open
SP	Partial Exercise (Cat. A or B)

[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". LT, without a third letter, is a low pressure water test.

- 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	Appendix III interval
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

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

Relief Request #	Description	Date Submitted	Date Approved	Remarks
3201	Flow Rate Measurement for Water Leg Pumps	5/23/2019	1/27/20	No RAIs

ATTACHMENT 3

PUMP RELIEF REQUESTS

PUMP RELIEF REQUEST 3201

Proposed Alternative In Accordance with 10CFR50.55a(z)(1)

1. ASME Code Component(s) Affected

The following waterleg pumps are affected:

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

2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) 2012 Edition with no Addenda.

3. Applicable Code Requirement

Table ISTB-3000-1, *Inservice Test Parameters*, specifies the parameters to be measured during Inservice tests.

ISTB-3300, *Reference Values*, paragraph (e)(2) states, “Reference values shall be established at the comprehensive pump test flow rate for the Group A and Group B tests, 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, *Group A Test Procedure*, states, in part, “Group A tests shall be conducted with the pump operating as close as practical to a specified reference point and within the variances from the reference point as described in this paragraph…”

Subparagraph ISTB-5121(b) states, “The resistance of the system shall be varied until the flow rate is as close as practical to the reference point with the variance not to exceed +2% or −1% of 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 is as close as practical to the reference point with the variance not to exceed +1% or −2% of the reference point and the flow rate determined and compared with the reference flow rate.”

4. Reason for Request

Pursuant to 10 CFR 50.55a, *Codes and Standards*¸ paragraph (z)(1), an alternative is proposed to the Group A pump testing requirements in the OM-2012 Code paragraphs cited above. The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety.

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 rated flow and differential pressure for the waterleg pumps are contained in the table below.

Component ID	Description	Rated Flow (gpm)	Rated Differential Pressure (ft)
1E12-C003	**RHR Loop B/C Waterleg Pump**	**43**	**199**
1E21-C002	**LPCS and RHR A Waterleg Pump**	**43**	**199**
1E51-C003	**RCIC Waterleg Pump**	**50**	**130**

The subject waterleg pumps' piping systems have been designed with suction pressure instruments on the pump suction headers, and flow and pressure instruments on the pump discharge recirculation piping to allow for testing. These instruments are isolated during normal plant operation by closed isolation valves and are only placed into service to support waterleg pump testing. To use the instrumented recirculation flow paths requires isolating the waterleg pump from its associated supported system. In addition, although there is flow instrumentation in the main system header piping, the ranges of these instruments are not suitable for measuring the low flow rates at which the waterleg pumps are tested."

LPCS and RHR A waterleg pump, 1E21-C002, services the LPCS system piping and Loop A of the RHR system. Testing of 1E21-C002 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 Loop A discharge header pressurized and full of water. RHR Loop B/C Waterleg Pump,1E12-C003, services RHR Loops B and C. A similar alignment is required for testing 1E12-C003, rendering RHR Loop C inoperable during the test.

OM Code testing of the RHR and LPCS waterleg pumps requires declaring portions of the RHR and LPCS systems inoperable. Testing the 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.

The suction pressure for these waterleg pumps is essentially constant because the suction water sources (suppression pool and RCIC storage tank) are maintained within a narrow band (historically a 5-inch band). This allows the waterleg pumps' operational readiness to be confirmed by monitoring the supported system's main header pressure (the pressure resulting from the pressure head supplied by the waterleg pumps) eliminating the need to reconfigure the system to allow use of the pressure and flow instrumentation on the waterleg pump recirculation piping.

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.

Alternative testing is being requested to eliminate the impact that OM Code compliant waterleg pump testing has on the plant without a compensating increase in the level of quality or safety.

5. Proposed Alternative and Basis for Use

Quarterly monitoring of the discharge pressure (main system header pressure) and bearing vibration as discussed in Section 5.11 of NUREG-1482, *Guidelines for Inservice Testing at Nuclear Power Plants*, will be performed to monitor for pump degradation and to assess pump performance (Reference 1).

The RHR and LPCS waterleg pump surveillances are 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 (TS) Section 3.6.2.2. A review of plant data showed that the suppression pool level has been maintained within a five-inch band, except during refueling outages. 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, 1E51-C003, surveillance is performed with the RCIC storage tank as the suction source. RCIC storage tank volume is also controlled. A review of plant data showed that, except during refueling outages and tank maintenance activities, the RCIC tank water level was maintained within a band of approximately five inches. Therefore, 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 it is a result of a change in pump performance.

The CPS waterleg pumps will be monitored for degradation on a quarterly basis by observing pump discharge pressure (supported system's main header 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 continue to 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 allows 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 in operation, 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 frequency in accordance with TS Surveillance Requirement (SR) 3.5.1.1. 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 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 pursuant to 10 CFR 50.55a(z)(1). 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 of a low-pressure condition indicative of a waterleg pump malfunction (not maintaining the piping pressure above the set alarm level) or any other condition that allows pressure to degrade (e.g., excessive leakage beyond waterleg pump make-up capabilities). 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 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 verification of the supported system's pump discharge header piping being full in accordance with CPS TS will verify that the associated waterleg pump is performing its safety function.

6. Duration of Proposed Alternative

This request, upon approval, will be applied to the CPS fourth 10-year IST interval, which begins on July 1, 2020, and is scheduled to end on June 30, 2030.

7. Precedence

1. This relief request was previously approved for the third 10-year interval at CPS, as documented in NRC safety evaluation, "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)," dated June10, 2010 (ML101340691).
2. Letter from D. J. Wrona (NRC) toD. B. Hamilton (FENOC), Perry Nuclear Power Plant, Unit No. 1 – Request for Alternatives Related to Inservice Testing Program for the Fourth 10-Year Inservice Testing Interval (EPID L-2018-LLR-0092, L-2018-LLR-0093, L-2018-LLR-0094, L-2018-LLR-0095, andL-2018-LLR-0096), dated February 25, 2019 (ML19029A090)

8. References

1. NUREG-1482, *Guidelines for Inservice Testing at Nuclear Power Plants*, Revision 3.
2. CPS Technical Specifications, Section 3.6.2.2 and Surveillance Requirement SR 3.5.1.1

ATTACHMENT 4

VALVE RELIEF REQUEST INDEX

Relief Request #	Description	Date Submitted	Date Approved	Remarks
2202	Relief From 5-Year Test Interval for Safety Relief Valves	5/23/2019	9/5/19	No RAIs
2205	Extension of The Safety Relief Valve Testing Interval	2/4/20	1/14/21	3 RAIs
2206	Alternative Request to Use ASME OM Code Case OMN-26	1/31/20	9/1/20	1 RAI
2207	Alternative To Use ASME OM Code Case OMN-28	8/5/21	9/3/21	No RAIs

ATTACHMENT 5

VALVE RELIEF REQUESTS

VALVE RELIEF REQUEST 2202

Proposed Alternative In Accordance with 10CFR50.55a(z)(1)

1. ASME Code Component(s) Affected

The following Main Steam Safety/Relief Valves are affected:

Component ID	Description	Code Class	Category
1B21-F041A	Main Steam Safety/Relief Valve (SRV)	1	C
1B21-F041B	Main Steam SRV	1	C
1B21-F041C	Main Steam SRV	1	C
1B21-F041D	Main Steam SRV	1	C
1B21-F041F	Main Steam SRV	1	C
1B21-F041G	Main Steam SRV	1	C
1B21-F041L	Main Steam SRV	1	C
1B21-F047A	Main Steam SRV	1	C
1B21-F047B	Main Steam SRV	1	C
1B21-F047C	Main Steam SRV	1	C
1B21-F047D	Main Steam SRV	1	C
1B21-F047F	Main Steam SRV	1	C
1B21-F051B	Main Steam SRV	1	C
1B21-F051C	Main Steam SRV	1	C
1B21-F051D	Main Steam SRV	1	C
1B21-F051G	Main Steam SRV	1	C

2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) 2012 Edition with no Addenda.

3. Applicable Code Requirement

ISTA-3130, *Application of Code Cases*, subparagraph *(b)*, states, “Code Cases shall be applicable to the edition and addenda specified in the test plan.”

4. Reason for Request

Pursuant to 10 CFR 50.55a, *Codes and standards*, paragraph (z)(1), an alternative is proposed to ISTA-3130(b) requirements for implementing Code Case OMN-17, *Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves*. The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety.

ISTA-3130(b) states, “Code Cases shall be applicable to the edition and addenda specified in the test plan.” ASME has approved Code Case OMN-17, Revision 0. This Code Case is unconditionally approved for use in Regulatory Guide (RG) 1.192, *Operation and Maintenance Code Case Acceptability, ASME OM Code*, Revision 2. The Clinton Power Station (CPS)Code-of-Record for the 4th IST interval is the ASME OM-2012 Edition. However, Code Case OMN-17 indicates in the Inquiry (Applicability) section that it is applicable for use in lieu of the ASME OM Code 1995 Edition through the OMb-2006 Addenda. CPS will be implementing the ASME Code

OM-2012 Edition and proposes to also implement Code Case OMN-17 for extending the test frequencies of the Class 1 Main Steam Line SRVs to a 72-month (6-year) test interval, with the allowed 6-month grace period, providing all the requirements of the Code Case continue to be satisfied. The previously authorized request 2202 for the CPS 3rd interval (Reference 1) provided alternative testing requirements equivalent to Code Case OMN-17.

5. Proposed Alternative and Basis for Use

The alternative to ISTA-3130(b) being proposed will allow CPS to implement Code Case OMN-17, although the Code Case Inquiry (Applicability) statement addresses only the 1995 Edition through the 2006 Addenda and ISTA-3130(b) requires applicability to the edition specified in the test plan, which would be the ASME OM-2012 Edition. Code CaseOMN-17 was issued in 2007 and first published in the ASME OM-2009 Edition. A review of the 2012 Edition of the OM Code and Code CaseOMN-17 confirmed that there are no changes in the applicable Code sections referenced within the Code Case when comparing the 2009 edition to the 2012 edition.

RG 1.192, Revision 2, Table 1, Acceptable OM Code Cases, lists Code CaseOMN-17 (2012 Edition) as acceptable to the NRC for application in a licensee's IST program without conditions.

Using the provisions of this request as an alternative to the requirements of ISTA-3130(b) will continue to provide assurance of the Main Steam SRVs' operational readiness and provides an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1).

6. Duration of Proposed Alternative

This request, upon approval, will be applied to the CPS fourth 10-year IST interval, which begins on July 1, 2020, and is scheduled to end on June 30, 2030.

7. Precedent

None.

8. References

1. Letter from S. J. Campbell (NRC) to M. J. Pacilio(CPS), "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)," dated June 10, 2010 (ML101340691).
2. Code Case OMN-17, *Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves*.
3. NRC Regulatory Guide 1.192, *Operation and Maintenance Code Case Acceptability, ASME OM Code*, Revision 2, dated March 2017; published January 2018 (ML16321A337).

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1),
RR 2205 - Reactor Pressure Vessel Safety Relief Valve (SRV) Testing
8-Year Test Interval

1. ASME Code Component(s) Affected

Component ID	Description	Code Class	Category
1B21-F041A	Main Steam Line Safety/Relief Valve	1	C
1B21-F041B	Main Steam Line Safety/Relief Valve	1	C
1B21-F041C	Main Steam Line Safety/Relief Valve	1	C
1B21-F041D	Main Steam Line Safety/Relief Valve	1	C
1B21-F041F	Main Steam Line Safety/Relief Valve	1	C
1B21-F041G	Main Steam Line Safety/Relief Valve	1	C
1B21-F041L	Main Steam Line Safety/Relief Valve	1	C
1B21-F047A	Main Steam Line Safety/Relief Valve	1	C
1B21-F047B	Main Steam Line Safety/Relief Valve	1	C
1B21-F047C	Main Steam Line Safety/Relief Valve	1	C
1B21-F047D	Main Steam Line Safety/Relief Valve	1	C
1B21-F047F	Main Steam Line Safety/Relief Valve	1	C
1B21-F051B	Main Steam Line Safety/Relief Valve	1	C
1B21-F051C	Main Steam Line Safety/Relief Valve	1	C
1B21-F051D	Main Steam Line Safety/Relief Valve	1	C
1B21-F051G	Main Steam Line Safety/Relief Valve	1	C

2. Applicable Code Edition and Addenda

American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code), 2012 Edition with no addenda.

3. Applicable Code Requirement

Division 1, Mandatory Appendix I, Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants, paragraph 1-1320, Test Frequencies, Class 1 Pressure Relief Valves, subparagraph (a) 5-Year Test Interval, which states:

"Class 1 pressure relief valves shall be tested at least once every 5 yr, starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested within each interval; however, a minimum of 20% of the valves from each valve group shall be tested within any 24-mo interval. This 20% shall consist of valves that have not been tested during the current 5-yr interval, if they exist. The test interval for any installed valve shall not exceed 5 yr. The 5-yr test interval shall begin from the date of the as-left set pressure test for each valve."

4. Reason for Request

Pursuant to 10 CFR 50.55a, Codes and standards, paragraph (z)(1), an alternative is proposed to SRV testing requirements of the ASME OM-2012 Code. The basis of the request is that an SRV set pressure performance assessment supports conclusion that the proposed alternative would provide an acceptable level of quality and safety.

At Clinton Power Station (CPS) there are 16 Dikkers Model G-471 Main Steam SRVs installed on the Main Steam lines inside the Primary Containment. These valves are classified into the same IST program valve group. Mandatory Appendix I, paragraph 1-1320 requires the installed SRVs be pressure tested within five years from the date of the as-left set pressure test for each valve. As discussed in the NRC-approved CPS Relief Request 2202 (Reference 1) and the submitted Relief Request 2202 (Reference 2), ASME Code Case OMN-17 is being utilized to extend the I-1320(a), five-year test interval to six years, along with the potential use of a six-month grace period. CPS is currently operating on a 24-month refueling cycle. This relief request allowed CPS to go from testing all of the 16 SRVs over two refueling outages, to testing the 16 SRVs over three refueling outages, potentially reducing the number of SRVs being tested over three refueling outages by seven SRVs. The CPS SRVs have continued to show reliable set pressure test performance as described in Section 5 below.

A performance assessment of the CPS Dikkers Model G-471 SRVs concluded that there is reasonable assurance that each SRV will retain the set pressure within the required drift tolerances after extending the test interval from the current six-year interval to a proposed eight-year interval. Extending the SRV test interval from six to eight years will further reduce the number of valves required to be tested every outage, thereby reducing occupational radiological exposures.

5. Proposed Alternative and Basis for Use

As an alternative to the Code-required 5-year test interval per Mandatory Appendix I, paragraph I-1320(a), CPS has been utilizing NRC-approved Relief Request MSS-VR-01 (Reference 1). This Relief Request allows CPS to establish a six-year test interval for the subject Class 1 SRVs provided CPS adheres to the additional requirements stipulated within ASME Code Case OMN-17.

Exelon proposes that the subject SRVs be tested at least once every eight years from the date of the as-left set pressure test for each valve. Exelon proposes that relief be granted to allow for the utilization of ASME Code Case OMN-17, with two modifications. The first change extends the OMN-17 testing interval from 6 years to 8 years, with an allowed six-month grace period to coincide with the combined certification testing and refueling outage time periods, and with the interval not to exceed 8.5 years. The second change increases the minimum number of SRVs from each valve group to be tested from '20% within any 24-month interval' to '40% within any 48-month interval' with the 40% population made up of SRVs which have not been tested during the previous 96-month interval, if they exist. The additional requirements stipulated within ASME Code Case OMN-17 will be retained.

At CPS, Exelon implemented an SRV Best Practices Maintenance program in 2010 and incorporated several enhancements between 2010 and 2014 that resulted in improved SRV set point drift performance. Improvements to this program continued after 2014 to further increase the SRV reliability. Exelon recently performed an assessment pertaining to the performance of the CPS Dikkers SRVs. The SRV set point drift performance of the CPS SRVs has steadily improved due to this enhanced maintenance program. This assessment concluded that there is reasonable assurance that each SRV will retain the set pressure within the required drift tolerances after extending the test interval from the current six-year interval to a proposed eight-year interval which is two years longer than the current Code Case OMN-17, six-year allowed test interval.

This assessment reviewed As-Left/As-Found set pressure data going back to 2002 and identified: 1) The valves' set pressure drift up or down, and 2) The absolute set pressure change between tests. Based on the time between the As-left and As-Found set pressure test of each SRV, the set pressure drift was then linearly extrapolated to determine whether the SRV's set pressure would still be within the site's required ± 3.0% tolerance following an eight-year period. An evaluation concluded that use of a linear extrapolation method provided the best mathematical approach.

Since 2015, 12 CPS valves were removed and as-found tested, and, using the linear extrapolation method, all 12 valves were projected to have lift set points within the ± 3.0% set pressure tolerance for more than eight years. Table 1 summarizes the setpoint drift projection, in years of service, predicting when each SRV would exceed the± 3.0% set pressure tolerance for SRVs removed and tested since 2015.

The improved valve performance can be attributed to both the utilization of ASME Code Case OMN-17 which requires that all valves be disassembled and inspected prior to As-Left testing and installation, and the implementation of an Exelon SRV Best Practices Maintenance program. This program is comprised of methods and philosophies concerning maintenance, inspection and techniques which uses the SRV manufacturer's recommended maintenance practices and enhancements identified by Exelon that have been broadly termed "Best Practices." This includes as-left testing for setpoint and seat leakage. Exelon SRV Best Practices are developed from the application of the EPRI/NMAC Safety and Relief Valve Testing and Maintenance Guide (Reference 3) and from Exelon Operational Experience (OE). The Exelon SRV Best Practices have been implemented through Exelon's oversight of the valve vendor's test and rebuild processes.

The Code Case OMN-17 includes a requirement that at least 20% of the SRVs be tested every 24 months, with these 20% made up of SRVs which have not been tested during the previous 72-month interval, if they exist. Testing of a minimum number of SRVs from each valve group within any 24-month interval is intended to have some SRVs tested throughout the six-year interval that would allow for more timely discovery of performance issues than would happen if all the testing was scheduled at the end of the six-year interval. This relief request proposes to revise the 20% and 24-month testing requirements to a '48-month interval' with at least a minimum of 40% of the SRVs to be tested every 48 months, with these 40% made up of SRVs which have not been tested during the previous 96-month interval, if they exist. The '40% sample size testing within any 48-month interval' continues to meet the intent of this OM N-17 requirement.

CPS will continue to implement all other requirements contained within ASME Code Case OMN-17. During outages when there is only a partial complement of SRVs replaced, those SRVs removed shall be As-Found tested prior to resumption of electrical generation. For each SRV that fails to meet the CPS set pressure acceptance criteria tolerance, two additional

SRVs shall be tested. If either of these two additional SRVs are found to not meet their CPS set pressure acceptance criteria, then all remaining SRVs within the same group shall be tested.

CPS shall also continue to disassemble and inspect each subject SRV following As-Found set pressure testing to verify that parts are free of defects resulting from time-related degradation or service-induced wear. Each valve shall also be disassembled and inspected prior to As-Left testing and installation to the requirements provided above as well as all other requirements stipulated in ASME OM Code Case OMN-17.

Extending the test interval from six to eight years and revising the intervening outage testing sample size and frequency are viewed acceptable based upon past performance and a mathematical evaluation which shows that the CPS Dikkers SRVs are capable of maintaining their set point within tolerance over an eight-year period. This proposed relief request will also contribute to the principals of maintaining radiation dose As Low As Reasonably Achievable (ALARA).

Using recent dose measurements associated with CPS SRVs' removal and replacement, the average radiological exposure incurred per valve has been 0.65 Rem. Extending the OMN-17 SRV testing interval from six to eight years would allow extending the schedule for testing of the 16 SRVs from three to four refueling outages, potentially providing a reduction of three SRVs tested every ten years with a potential radiological exposure savings of approximately 1.95 Rem.

Based on the application of the Exelon SRV Best Practices Maintenance program, the past performance of the SRVs at CPS and a mathematical evaluation of valve performance, there is reasonable assurance that each SRV will remain within the set point tolerance over the extended eight-year testing interval. This proposal provides an alternative which would maintain an acceptable level of valve operational readiness, provide an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1) and provide for reduced occupational radiological exposure.

Table 1
SRV Setpoint Performance Projection

Year As-Found Tested	Projection to Exceeding ± 3% Setpoint Tolerance (Years) For Each SRV Removed and Tested					
	1	2	3	4	5	6
2015	10.0	17.1	21.0	46.5	72.2	192.3
2017	11.5	19.9	21.2	22.7	23.6	24.8

6. <u>Duration of Proposed Alternative</u>

This proposed alternative will be utilized for the remainder of the current IST interval.

7. Precedent:

None

8. References:

1. Letter from S. J. Campbell, (USNRC Branch Chief) to M. J. Pacilio (Exelon Generation Company, LLC), "Clinton Power Station, Unit No. 1 -Safety Evaluation of Relief Request Nos. 2201, 2202, and 3201, for Third 10-Year Inservice Testing Interval", dated June 10, 2010, (Accession Number ML 101340691)

2. Exelon letter to the NRC, "Relief Requests Associated with the Fourth Inservice Testing Interval," dated May 23, 2019 (ADAMS Accession No. ML 19143A305)

3. Electric Power Research Institute I Nuclear Maintenance Applications Center (EPRI/NMAC) Safety and Relief Valve Testing and Maintenance Guide, Revision of TR-105872, Technical Report 3002005362, August 2015

EXELON GENERATION COMPANY, LLC
IST PROGRAM - RELIEF REQUEST
Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
2206 Relief Request to Utilize Code Case OMN-26

1. <u>ASME Code Component(s) Affected</u>:

Active safety related motor operated valves (MOVs) that are required by Subsection ISTC of the 2012 Edition of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code to be tested in accordance with ASME OM Code Mandatory Appendix III.

2. <u>Applicable ASME OM Code Edition:</u>

Plant	Interval	OM Edition	START	END
Clinton Power Station, Unit 1	**Fourth**	**2012 Edition**	**July 1, 2020**	**June 30, 2030**

3. <u>Applicable Code Requirements:</u>

The ASME OM Code Mandatory Appendix 111, Preservice and Inservice testing of Active Electric Motor-Operated Valve Assemblies in Water Cooled Reactor Nuclear Power Plants.

The following Appendix III Paragraphs are affected by this Relief Request to adopt Code Case OMN-26, "Alternate Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves."

111-3310 (c).
111-3700 Risk-Informed MOV Inservice Testing.
111-3721 HSSC MOVs.
111-3722 (d).

For each of these paragraphs, relief is being sought for alternative treatments described in Section 5 of this relief request based on the ASME Board of Nuclear Codes and Standards (BNCS) approved Code Case OMN-26.

4. <u>Reason for Request:</u>

In accordance with 10 CFR 50.55a(z)(1), Exelon Generation Company, LLC (Exelon) is requesting approval to adopt ASME OM Code Case OMN-26 in conjunction with implementing Mandatory Appendix III for all Exelon plants identified in Section 2.

Code Case OMN-26 better aligns OM Code Mandatory Appendix III to the Risk and Margin Based Licensee Motor Operated Valve (MOV) Programs developed in response to NRC Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," that have been in effect since 1998. The Appendix III ten-year maximum inservice test interval was originally established to align with the maximum test interval allowed under the Generic Letter 96-05 MOV Programs that, for most Licensees, was established by the Joint Owners Group (JOG) MOV Periodic

Verification Program. There is no formal technical basis for the current Appendix III tenyear maximum interval that applies to all MOVs regardless of Risk and Margin. Over the past twenty years, Exelon MOV Programs have demonstrated many margin stable MOVs that can be readily justified to extend from their current MOV Program maximum inservice test intervals of six years (for High Risk) and ten years (for Low Risk).

5. <u>Proposed Alternative and Basis for Use:</u>

Proposed Alternative:
Exelon proposes to implement the ASME OM Code Case OMN-26 alternative risk and margin informed rules for inservice testing of MOVs in its entirety as described below:

Proposed Alternative to 111-3310
(c) The maximum inservice test interval shall not exceed 10 years unless Risk Informed Inservice Testing applies under the provisions of para. 111-3700. MOV inservice tests conducted per para. 111-3400 may be used to satisfy this requirement.

Proposed Alternative to 111-3700
Risk-informed MOV inservice testing that incorporate risk insights in conjunction with MOV Functional Margin to establish MOV grouping, acceptance criteria, exercising requirements and test interval may be implemented.

Proposed Alternative to 111-3721
111-3721 HSSC MOVs. HSSC MOVs shall be tested in accordance with para. 111-3300 and exercised in accordance with para. 111-3600 while applying the following HSSC MOV Risk insights and limitations:

(a) HSSC MOVs that can be operated during plant operation shall be exercised quarterly, unless the potential increase in core damage frequency (CDF) and large early release (LER) associated with a longer exercise interval is small.

(b) For HSSC MOVs, the maximum inservice test interval shall be established in accordance with Table 1 of OMN-26 (see below)

OMN-26 Table 1
HSSC MOV - Margin Based Maximum Inservice Test Intervals

HSSC MOV Functional Margin (D)	Maximum Inservice Test Interval (Years)	If MOV is routinely (A) operated at Design Basis Pressure Conditions - Max Inservice Test Interval (Years) (B)
Low(< 5%)	2	4
Medium (≥ 5% and < 10%)	4	9
High (≥ 10% and< 20%)	9	9
Very High (≥ 20%)	9	12

OMN-26 Table 1 - Notes

(A) Occurs at a periodicity no less frequent than once a refueling outage.

(B) To utilize these intervals, test strokes at or exceeding design basis system conditions must be in the applicable safety function direction(s) and have no applicable operating experience, degradation or diagnostic test anomaly with the potential for adverse impact on MOV functional margin or the capability of the MOV to perform its design basis function.

(D) For the purpose of this code case, the MOV functional margin limits apply to the Aslett MOV condition at the start of the inservice test interval and include applicable test uncertainties and allowance for service- related degradation.

Proposed Alternative to 111-3722 (d)

(d) For LSSC MOVs, the maximum inservice test interval shall be established in accordance with Table 2 of OMN-26 (see below)

OMN-26 Table 2
LSSC MOV - Margin Based Maximum Inservice Test Intervals

LSSC MOV Functional Margin (D)	Maximum Inservice Test Interval (Years)	If MOV is routinely (A) operated at Design Basis Pressure Conditions - Max Inservice Test Interval (Years) (B)
Low(< 5%)	**4**	**9**
Medium (≥ 5% and < 10%)	**9**	**12**
High (≥ 10% and< 20%)	**12**	**12**
Very High (≥ 20%)	**12**	**16 (c)**

OMN-26 Table 2 Notes:

(A) Occurs at a periodicity no less frequent than once a refueling outage.

(B) To utilize these intervals, test strokes at or exceeding design basis system conditions must be in the applicable safety function direction(s) and have no applicable operating experience, degradation or diagnostic test anomaly with the potential for adverse impact on MOV functional margin or the capability of the MOV to perform its design basis function.

(C) Operating plants that have acquired the requisite test data to satisfy Appendix III, paragraphs 111-331 O(b) or III-3722(c) must complete one cycle of collecting diagnostic test data at an extended test interval, minimum 9 and maximum 12 years, before extending the test interval by engineering evaluation to the maximum 16-year test interval.

(D) For the purpose of this code case, the MOV functional margin limits apply to the Aslett MOV condition at the start of the inservice test interval and include applicable test uncertainties and allowance for service- related degradation.

Basis for Use:

The requested relief to adopt OMN-26 is in line with the current JOG MOV Periodic Verification Test Program that Exelon has implemented since the late 1990's in response to NRC Generic Letter 96-05. Both the JOG MOV PV Program and Code Case OMN-26 provide a Risk-Margin based methodology that establishes limitations for maximum inservice test intervals for MOVs. Code Case OMN-26 simply provides a reasonable extension of this Risk-Informed philosophy based on the lessons learned and accumulated MOV performance data gathered over more than 25 years of MOV Performance Verification Testing. Appendix III alone, in isolation from OMN-26, provides no such methodology other than a maximum limit for the inservice test interval regardless of Risk or Margin.

The requested allowed maximum inservice test intervals are modest extensions with many of the Low Risk MOVs extending from 10 to 12 years (20% increase). This test interval change can be readily adopted with no loss of MOV performance and/or safety system reliability provided that no adverse performance trends are indicated. Exelon's MOV Performance Trending Governance will ensure that only MOV's with good performance history, high stable margins and no adverse diagnostic trends would be candidates for the OMN-26 based inservice test interval extensions.

The requested High Margin Maximum interval changes afforded by OMN-26 align with Exelon's desire to adopt a divisional MOV outage testing strategy that reduces the implementation burden of MOV Inservice Testing and allows greater flexibility in optimizing safety system availability. The current six and ten-year JOG Program based High-Margin Maximum Intervals do not support this strategy.

The requested relief reduces the maximum test interval for High Safety Significant Component (HSSC) MOVs allowed by Appendix III from ten years to nine years commensurate with Risk Informed Methodology. Further under this relief request, Exelon will treat MOVs currently classified as Medium Risk by the 3-Tier JOG Risk Ranking as High Risk (HSSC) thereby providing more rigorous periodic verification requirements for the applicable valves especially those with less than high margin.

The requested relief takes credit for routine design basis differential pressure testing (DBDPT) of MOVs to justify extending the maximum Inservice test interval to 12 Years for Very High Margin HSSC MOVs and 16 years for Very High Margin low Safety Significant Component (lSSC) MOVs.

With the exception of low Risk MOVs routinely operated at design basis differential pressure (D-P) conditions, Code Case OMN-26 does not allow maximum MOV Inservice Test intervals to exceed ten years unless the associated MOVs are classified as High Margin. Most High Risk MOVs are limited to four years or less for low/Medium Margins and most low Risk MOVs are limited to nine years or less for low/Medium Margins. Code Case OMN-26 provides more rigorous requirements targeted specifically to low/Medium Margin MOVs than currently allowed under Appendix III. This Risk/Margin approach is in line with accepted Risk-Informed Strategies such as the JOG MOV Periodic Verification Program.

Use of the proposed alternative is expected to result in improved MOV Margins at each Exelon station in order to attain higher margin status to allow use of the extended maximum inservice test intervals permitted by the OMN-26 Code Case.

For the majority of applicable MOVs (i.e., those MOVs not subject to periodic stroking under design basis D-P conditions), the Code Case limited the scope to only High Margin Valves for extending test intervals incrementally beyond current limits:

- Test intervals for High Risk MOVs go from six to nine years (Note: Nine years is aligned to Pressurized Water Reactor nuclear power plants (PWRs) on 18-month refueling cycles)

- Test intervals for Low Risk MOVs go from ten to 12 years (Note: 12 years is aligned for all Boiling Water Reactor nuclear power plants (BWRs) and PWRs with either 18- or 24- month refueling cycles)

The Table below provides a detailed comparison of the Maximum MOV Test Intervals for the JOG MOV Program, Mandatory Appendix III and Code Case OMN-26 that Exelon seeks to adopt via this relief request. MOVs identified with Bold type have maximum MOV inservice test intervals exceeding the current Appendix III ten-year limit.

Exelon Maximum MOV Test Intervals Based on Code Case OMN-26

	Maximum Inservice Test Intervals (Years)							
	HSSC MOVs				LSSC MOVs			
MOV Margin	JOG MOV PV Program	Appendix III	OMN-26	OMN-26 w/DBDPT (6)	JOG MOV PV Program	Appendix III	OMN-26	OMN-26 w/DBDPT (6)
Low(< 5%)	2	10	2 (1,2)	4 (5)	6	10	4 (1,3,5)	9 (5)
Medium (≥ 5% and < 10%)	4	10	4 (1,2,5)	9 (5)	10	10	9 (1,3,5)	12 (4,5)
High (≥ 10% and< 20%)	6	10	9 (5)	9(5)	10	10	12 (4,5)	12 (4,5)
Very High (≥ 20%)	N/A	10	9 (5)	12 (4,5)	N/A	10	12 (4,5)	16 (4,5,7)
Description ->	Existing Industry Standard	Existing ASME OM Code	Relief Request	Relief Request	Existing Standard	Existing ASME OM Code	Relief Request	Relief Request

<u>Table Notes</u>

1. Code Case Maximum Inservice Test Intervals for all Low/Medium Margin MOVs are less than or equal to current ten-year Appendix III limit. (i.e., Code Case is more conservative than Appendix III for Low/Medium Margin MOVs).
2. Code Case Maximum Inservice Test Intervals for Low/Medium Margin HSSC MOVs are equal to the current JOG MOV PV Program limits of two/four years respectively. (Code Case intervals are aligned with JOG MOV).

3. Code Case Maximum Inservice Test Intervals for Low/Medium Margin LSSC MOVs (four/nine years) are less than the current JOG MOV PV Program limits of six/ten years respectively.
4. The following four categories of MOVs have maximum inservice test intervals that exceed the current ten-year limit:
   a. High Margin, LSSC MOVs. (12 Years)
   b. Very High Margin, HSSC MOVs that are periodically stroked at design basis DP conditions (DBDPT) (12 Years)
   c. Medium Margin, LSSC MOVs that are periodically DBDPT (12 Years)
   d. Very High Margin, LSSC MOVs that are periodically DBDPT (16 Years).
5. Except for Low Margin HSSC MOVs, the Maximum MOV Inservice Test Intervals are optimized for Divisional Outage Scheduling (i.e., 4, 9, 12, 16 years). Nine years is optimal for PWRs restricted to 18 month refueling outages. 12 years is optimal for both PWRs and BWRs and supports both 18-month and 24-month refueling outages.
6. To utilize these intervals, strokes at or exceeding design basis system conditions must be in the applicable safety function direction(s) and have no known applicable operating experience, degradation or diagnostic test anomaly that potentially impacts MOV functional margin or the capability of the MOV to perform its design basis function.
7. Operating plants that have acquired the requisite test data to satisfy III-3310(b) or III-3722(c) must complete one cycle of collecting diagnostic test data at an extended test interval, minimum 9 and maximum 12 years, before extending the test interval by engineering evaluation to the maximum 16-year test interval.

6. <u>Duration of Proposed Alternative:</u>

The proposed alternative is for use of the Code Case for the remainder of each plant's ten-year Inservice Testing interval as specified in Section 2.

7. <u>Precedent:</u>

None

8. <u>References:</u>

1. ASME OM Code Case OMN-26, Alternative Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves, approved by ASME Board of Nuclear Codes and Standards (BNCS) December 2019.

Request to Utilize OMN-28
In Accordance with 10 CFR 50.55a(z)(1), 2207

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

The valves covered by this Code Case are those stem-disk separation non-susceptible valves with remote position indication within the scope of Subsection ISTC including its mandatory appendices and their verification methods and frequencies, in accordance with regulatory requirements.

A listing of the valves requiring position indication and testing in accordance with ISTC-3700 was submitted as part of the Inservice Testing Program update performed as part of the interval update and latest revisions for each of the plants identified below.

2. **Applicable ASME OM Code Edition:**

American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code), 2012 Edition with no Addenda. The Intervals dates are:

Station	Code in Effect	Start of Interval	End of Interval
Braidwood Station, Units 1 and 2	OM-2012 Edition, no Addenda	7/29/2018	7/28/2028
Calvert Cliffs Nuclear Power Plant, Units 1 and	OM-2012 Edition, no Addenda	7/1/2018	6/30/2028
Clinton Power Station, Unit 1	OM-2012 Edition, no Addenda	7/1/2020	6/30/2030
R. E. Ginna Nuclear Power Plant	OM-2012 Edition, no Addenda	1/1/2020	12/31/2029
Limerick Generating Station, Units 1	OM-2012 Edition, no Addenda	1/8/2020	1/7/2030
Nine Mile Point Nuclear Station, Units 1 and 2	OM-2012 Edition, no Addenda	1/1/2019	12/31/2028

Peach Bottom Atomic Power Station, Units 2 and 3	OM-2012 Edition, no Addenda	11/16/2018	8/14/2028

3. **Applicable Code Requirements:**

ISTC-3700, *Position Verification Testing,* states: "Valves with remote position indicators shall be observed locally at least once every 2 yr to verify that valve operation is accurately indicated. Where practicable, this local observation should be supplemented by other indications such as use of flow meters or other suitable instrumentation to verify obturator position. These observations need not be concurrent. Where local observation is not possible, other indications shall be used for verification of valve operation. Position verification for active MOVs shall be tested in accordance with Mandatory Appendix III of this Division."

10 CFR 50.55a(b)(3)(xi) *OM condition: Valve Position Indication* states: "When implementing paragraph ISTC–3700, "Position Verification Testing," in the ASME OM Code, 2012 Edition through the latest edition and addenda of the ASME OM Code incorporated by reference in paragraph (a)(1)(iv) of this section, licensees shall verify that valve operation is accurately indicated by supplementing valve position indicating lights with other indications, such as flow meters or other suitable instrumentation to provide assurance of proper obturator position for valves with remote position indication within the scope of Subsection ISTC including its mandatory appendices and their verification methods and frequencies."

4. **Reason for Request:**

Pursuant to 10 CFR 50.55a, *Codes and standards*, paragraph (z)(1), an alternative is proposed to the requirement of ASME OM Code ISTC-3700. The position verification with Supplemental Position Indication (SPI) requires the valves to be exercised in the open and closed direction and the valve's position verified by other indications such as use of flow meters or other suitable instrumentation to verify obturator position.

Code Case OMN-28, "Alternative Valve Position Verification Approach to Satisfy ISTC-3700 for Valves Not Susceptible to Stem-Disk Separation," has been determined to satisfy the valve position verification requirements in ASME OM Code, Subsection ISTC, paragraph ISTC-3700, for valves that are not susceptible to stem-disk separation.

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

In lieu of compliance with the ISTC-3700, Exelon Generation Company, LLC (Exelon) proposes to implement Code Case OMN-28 on the basis that it provides an acceptable level of quality and safety in accordance with 10 CFR 50.55a, "Codes and standards," paragraph (z)(1).

The valves covered by this Code Case are those stem-disk separation non-susceptible valves with remote position indication within the scope of Subsection ISTC including its mandatory appendices and their verification methods and frequencies, in accordance with regulatory requirements. Valves with remote position indication within the scope of ASME OM Code, Subsection ISTA, paragraph ISTA-1100, not satisfying the scope and provisions of this Code Case shall meet the valve position verification requirements in ASME OM Code, Subsection ISTC-3700, in accordance with regulatory requirements.

To categorize a valve as not susceptible to stem-disk separation, the valve shall have a documented justification that the stem-disk connection is not susceptible to separation based on the internal design, service conditions, applications and evaluation of the stem-disk connection using plant-specific and industry operating experience, and vendor recommendations. The plants subject to this relief request will prepare this justification.

Valves with remote position indicators that are not susceptible to stem-disk separation shall be verified to accurately represent valve operation as discussed in Section 1.4, "Position

Verification Testing Requirements for Valves Not Susceptible to Stem-Disk Separation" of the Code Case.

Code Case OMN-28 was approved for use by ASME on March 4, 2021.

No deviations from the Code Case are being proposed.

6. Duration of Proposed Alternative:

The proposed alternative is for the remainder of the current intervals as provided in Section 2.

7. Precedent:

None

8. References:

None

ATTACHMENT 6
RELIEF REQUEST RAIs AND SERs

Revision 2
4/07/2022

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

September 5, 2019

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 1 – PROPOSED ALTERNATIVE TO THE REQUIREMENTS OF THE ASME CODE (EPID L-2019-LLR-0053)

Dear Mr. Hanson:

By letter dated May 23, 2019, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19143A305), Exelon Generation Company, LLC (EGC, the licensee), submitted a request for the use of an alternative to the requirements of certain American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code), requirements at Clinton Power Station (CPS), Unit 1.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use alternative rules for testing certain pressure relief/safety valves on the basis that the alternative provides an acceptable level of quality and safety.

The U.S. Nuclear Regulatory Commission (NRC or Commission) staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that EGC has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1). The NRC staff finds that the proposed alternative RR-2202 provides an acceptable level of quality and safety. Therefore, the NRC staff authorizes the proposed alternative RR-2202 for the fourth 10-year inservice testing (IST) interval at CPS, Unit 1, which is currently scheduled to start on July 1, 2020, and end on June 30, 2030.

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

If you have any questions, please contact the Senior Project Manager, Joel S. Wiebe, at (301) 415-6606 or Joel.Wiebe@nrc.gov.

Sincerely,

/RA/

Lisa M. Regner, Acting Branch Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosure:
Safety Evaluation

cc: Listserv

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST TO USE PROPOSED ALTERNATIVE RR-2202

REGARDING THE TESTING OF CERTAIN PRESSURE RELIEF/SAFETY VALVES

EXELON GENERATION COMPANY, LLC

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated May 23, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19143A305), Exelon Generation Company, LLC (EGC, the licensee), submitted a request to the U.S. Nuclear Regulatory Commission (NRC) to use an alternative test plan in lieu of certain inservice testing (IST) requirements of the 2012 Edition of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) for the inservice testing (IST) program at Clinton Power Station (CPS), Unit 1, during the fourth 10-year IST program interval.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.55a(z)(1), the licensee requested to use proposed alternative RR-2202 on the basis that the alternative provides an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

As required by 10 CFR 50.55a(f), "Inservice Testing Requirements," 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 10 CFR, paragraphs 50.55a(z)(1) or 10 CFR 50.55a(z)(2).

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 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)).

Enclosure

3.0 TECHNICAL EVALUATION

3.1 The Licensee's Request for Alternative

3.1.1 Applicable ASME OM Code

The request is an alternative test plan in lieu of certain IST requirements of the 2012 Edition of the ASME OM Code for the IST program at CPS, Unit 1, for the fourth interval which is currently scheduled to start on July 1, 2020, and end on June 30, 2030.

ASME OM Code Requirements:

> ISTA-3130 "Application of Code Cases", (b) states that "Code Cases shall be applicable to the edition and addenda specified in the test plan."
>
> Appendix I, paragraph I-1320, "Test Frequencies, Class 1 Pressure Relief Valves" (a) "*5Year Test Interval"* states that, Class 1 pressure relief valves shall be tested at least once every five years, starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested within each 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.
>
> ASME OM Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves," from the 2009 Edition of ASME OM Code, allows a six-year test interval plus an additional six months grace period coinciding with a refueling outage, in order to accommodate extended shutdown periods.

3.1.2 Licensee's Request RR-2202

Alternative testing is requested for the following valves:

Table 1

Valve ID	Function	Class	Cat
1B21-F041A	Main Steam Safety Relief Valve (SRV)	1	C
1B21-F041B	Main Steam SRV	1	C
1B21-F041C	Main Steam SRV	1	C
1B21-F041D	Main Steam SRV	1	C
1B21-F041F	Main Steam SRV	1	C
1B21-F041G	Main Steam SRV	1	C
1B21-F041L	Main Steam SRV	1	C
1B21-F047A	Main Steam SRV	1	C
1B21-F047B	Main Steam SRV	1	C
1B21-F047C	Main Steam SRV	1	C
1B21-F047D	Main Steam SRV	1	C
1B21-F047F	Main Steam SRV	1	C
1B21-F051B	Main Steam SRV	1	C
1B21-F051C	Main Steam SRV	1	C
1B21-F051D	Main Steam SRV	1	C
1B21-F051G	Main Steam SRV	1	C

The licensee states, in part:

> Reason for Request
>
> ISTA-3130(b) states, "Code Cases shall be applicable to the edition and addenda specified in the test plan." ASME has approved Code Case OMN-17, Revision 0. This Code Case is unconditionally approved for use in Regulatory Guide (RG) 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," Revision 2. The Clinton Power Station (CPS) Code-of-Record for the 4th IST interval is the ASME OM Code-2012. However, Code Case OMN-17 indicates in the Inquiry (Applicability) section that it is applicable for use in lieu of the ASME OM Code 1995 Edition through the OMb-2006 Addenda. CPS will be implementing the ASME Code OM-2012 and proposes to also implement Code Case OMN-17 for extending the test frequencies of the Class 1 Main Steam Line SRVs to a 72-month (6-year) test interval, with the allowed 6-month grace period, providing all the requirements of the Code Case continue to be satisfied. The previously authorized request 2202 for the CPS 3rd interval (i.e., Reference 1) provided alternative testing requirements equivalent to Code Case OMN-17.
>
> Proposed Alternative
>
> The proposed alternative to ISTA-3130(b) would allow CPS, Unit No. 1, to implement Code Case OMN-17, although the Code Case Inquiry (Applicability) statement addresses only the 1995 Edition through the 2006 Addenda and ISTA-3130(b) requires applicability to the edition specified in the test plan, which would be the ASME OM Code-2012. Code Case OMN-17 was issued in 2007 and first published in the ASME OM Code-2009 Edition. A review of the 2012 Edition of the OM Code and Code Case OMN-17 confirmed that there are no changes in the applicable Code sections referenced within the Code Case when comparing the 2009 edition to the 2012 edition.
>
> RG 1.192, Revision 2, Table 1, "Acceptable OM Code Cases," lists Code Case OMN-17 (2012 Edition) as acceptable to the NRC for application in a licensee's IST program without conditions.
>
> Using the provisions of this request as an alternative to the requirements of ISTA-3130(b) will continue to provide assurance of the Main Steam SRVs' operational readiness and provides an acceptable level of quality and safety pursuant to 10 CFR 50.55a(z)(1).
>
> The request upon approval, will be applied to the CPS fourth 10-year IST interval, which begins on July 1, 2020, and is scheduled to end on June 30, 2030.

3.1.3 NRC Staff Evaluation

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 6 years 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 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.

The NRC staff finds that extending the test interval of SRVs listed in Table 1 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, inspected, and reworked to defect free condition prior to the start of the extended test interval. The additional maintenance which is beyond what is required by OM Code Mandatory Appendix I when testing SRVs on a 5-year interval justifies extension of the test interval for up to 72 months plus a six-month grace period while providing 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 RR-2202 provides an acceptable level of quality and safety for components listed in Table 1. 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). Therefore, the NRC staff authorizes the proposed alternative RR-2202 for the fourth 10-year IST interval at CPS, Unit 1, which is currently scheduled to start on July 1, 2020, and end on June 30, 2030.

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

Principle Contributor: MFarnan, NRR

Date of issuance: September 5, 2019

SUBJECT: CLINTON POWER STATION, UNIT 1 – PROPOSED ALTERNATIVE TO THE REQUIREMENTS OF THE ASME CODE (EPID L-2019-LLR-0053) DATED SEPTEMBER 5, 2019

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200 Exelon Way
Kennett Square, PA 19348
www.exeloncorp.com

10 CFR 50.55a

June 12, 2020

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

Dresden Nuclear Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

Nine Mile Point Nuclear Station, Unit 2
Renewed Facility Operating License No. NPF-69
NRC Docket No. 50-410

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR 29 and DPR 30
NRC Docket Nos. 50-254 and 50-265

Subject: Proposed Alternative to Extend Reactor Pressure Vessel Safety Relief Valve Testing Frequency – Response to Request for Additional Information

References:
1. Exelon letter to the NRC, "Proposed Alternative to Extend Reactor Pressure Vessel Safety Relief Valve Testing Frequency," dated February 4, 2020 (ADAMS Accession No. ML20036D962)
2. Email from B. Purnell (USNRC) to D. Neff (Exelon), "Exelon Generation Company, LLC - Request for Additional Information Regarding Request to Extend Safety Relief Valve Test Interval," dated May 14, 2020 (ADAMS Accession No. ML20135H197)

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (z)(1), Exelon Generation Company, LLC (Exelon) requested NRC approval of a proposed relief request associated with the Inservice Testing (IST) Program for the cited Exelon Nuclear Power Plants (NPPs) (Reference 1). Specifically, the request proposes to extend the Safety Relief Valve (SRV) IST Program testing frequency to 48 months for group one of one valves and to eight years for the other grouped valves. During their technical review of the application, the NRC Staff identified the need for additional information. Reference 2 provided the Request for Additional Information (RAI). The attachment to this letter provides the responses to the RAIs.

Additionally, the NRC staff noted in Reference 2 that the relief request for the Clinton Power Station, Unit 1 (CPS), was only for the remainder of the current inservice testing interval, which ends in June 2020. This letter serves to provide a revision to the CPS relief request for the duration of the relief request. The proposed relief request for CPS will be utilized for the fourth IST Interval which is scheduled to begin on July 1, 2020.

There are no regulatory commitments contained in this response.

Should you have any questions concerning this letter, please contact Mr. David Neff at (267) 533-1132.

Respectfully,

David P. Helker
Sr. Manager - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Responses to Request for Additional Information

cc: Regional Administrator - NRC Region I
Regional Administrator - NRC Region III
NRC Senior Resident Inspector - Clinton Power Station
NRC Senior Resident Inspector – Dresden Nuclear Power Station
NRC Senior Resident Inspector - Nine Mile Point Nuclear Station
NRC Senior Resident Inspector – Peach Bottom Atomic Power Station
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station
NRC Project Manager – Exelon Fleet
NRC Project Manager - Clinton Power Station
NRC Project Manager - Dresden Nuclear Power Station
NRC Project Manager – Nine Mile Point Nuclear Station
NRC Project Manager - Peach Bottom Atomic Power Station
NRC Project Manager - Quad Cities Nuclear Power Station
Illinois Emergency Management Agency - Department of Nuclear Safety
R. R. Janati - Bureau of Radiation Protection, Commonwealth of Pennsylvania
A. L. Peterson - NYSERDA

Attachment

Clinton Power Station, Unit 1
Dresden Nuclear Power Station, Units 2 and 3
Nine Mile Point Nuclear Station, Unit 2
Peach Bottom Atomic Power Station, Units 2 and 3
Quad Cities Nuclear Power Station, Units 1 and 2

Proposed Alternative to Extend Reactor Pressure Vessel SRV Testing Frequency

Responses to Request for Additional Information

Responses to NRC Staff's
Request for Additional Information

By application dated February 4, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20036D962), Exelon Generation Company, LLC (Exelon) submitted a request in accordance with paragraph 50.55a(z)(1) of Title 10 of the Code of Federal Regulations (10 CFR) for a proposed alternative to the requirements of 10 CFR 50.55a and the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) at Clinton Power Station (Clinton), Unit No. 1; Dresden Nuclear Power Station (Dresden), Units 2 and 3; Nine Mile Point Nuclear Station, Unit 2 (NMP-2); Peach Bottom Atomic Power Station (Peach Bottom), Units 2 and 3; and Quad Cities Nuclear Power Station (Quad Cities), Units 1 and 2. The proposed alternative would allow the licensee to extend the safety relief valve (SRV) test interval at these facilities.

In an email dated May 14, 2020, from the NRC (Blake Purnell) to Exelon (David Neff) (ADAMS Accession No. ML20135H197), the NRC provided Request for Additional Information (RAI) seeking clarification of certain issues related to those RAIs. Exelon agreed to provide responses to the RAIs within 30 days of May 14, 2020.

RAI 1

Currently, each of the licensee's facilities is required to test at least 20 percent of the SRVs every 24 months. As an alternative to this requirement, the licensee proposes to test 40 percent of the SRVs at each facility within a 48-month interval. For each facility, the SRV models affected by the proposed alternative are listed in the table below. Under the proposed alternative, it is possible for more than 24 months to elapse between tests of an SRV model.

Facility	SRV Models
Clinton	Dikkers Model G-471
Dresden Units 2 and 3	Target Rock 3-Stage Model 67F
Nine Mile Point Unit 2	Dikkers Model G-471
Peach Bottom Units 2 and 3	Target Rock Models 73-67F and 74-67F
Quad Cities Units 1 and 2	Target Rock 3-Stage Model 74-67F and Dresser Model 3777Q

Describe any plans to coordinate and share data regarding the SRV testing program at different units and sites that have the same SRV model. Describe any measures to obtain information on the performance of the various model SRVs at intervals more frequent than once every 48 months, such as staggering the testing at different reactor units that have the same SRV model.

RESPONSE

The proposed relief requests will allow for more than 24 months to elapse between tests of an SRV model at a given site. Under the current operating cycles for each station, the maximum time elapsed between tests would be 36 months for the dual unit sites (i.e., Dresden, Peach Bottom and Quad Cities) and 48 months for single unit sites (i.e., Clinton and NMP-2). (Note: Although NMP is a dual unit site, this RAI response does not apply to NMP-1.) Since 2014, Exelon has been collecting, trending and analyzing SRV test, maintenance, inspection and performance data for the Exelon units listed in the table in the RAI-1 table as well as for Limerick Generating Station, Units 1 and 2. Trending and analyzing test data between the stations, which have the same SRV model, reduce the effective maximum elapsed time between same model SRV tests. An Exelon SRV Best Practices Fleet Engineering program document will be established, prior to implementation of these Relief Requests, to define the program elements and will establish Exelon fleet-wide performance tracking and trending guidelines.

All of the Exelon Target Rock 3-Stage SRVs used at the Dresden (74-67F), Peach Bottom (73-67F and 74-67F), and Quad Cities (74-67F) stations are the same base model; Target Rock 3-Stage Safety Relief Valve Model 67F. The year the valve was designed was added in front of the Model number for tracking purposes. Over the years, the manufacturer changed some valve materials to improve the valves' structural integrity. Additionally, the manufacturer changed the relative valve component orientation to improve the in-plant valve replacement maintenance work to address plant-specific valve lifting-path clearances. None of these changes affected the valves' functions. The Exelon SRV Best Practices Maintenance program elements continue to be applied to each valve in a model group (e.g., Target Rock 3-Stage) regardless of the model year.

RAI 2

For each facility, Exelon is requesting an alternative to the requirements in paragraph I-1320(a) of the ASME OM Code, Mandatory Appendix I. However, the facilities are not all on the same edition and addenda of the ASME OM Code. Currently, the 2004 Edition through 2006 Addenda of the ASME OM Code is applicable to Dresden and Quad Cities, and the 2012 Edition of the ASME OM Code is applicable to Clinton, NMP-2, and Peach Bottom.

Paragraph I-1320(a) of the 2004 Edition of the ASME OM Code, Mandatory Appendix I, states:

> 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 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.

Paragraph I-1320(a) of the 2012 Edition of the ASME OM Code, Mandatory Appendix I, states:

> Class 1 pressure relief valves shall be tested at least once every 5 yr [years], starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested within each interval; however, a minimum of 20% of the valves from each valve group shall be tested within any 24-mo [month] interval. This 20% shall consist of valves that have not been tested during the current 5-yr interval, if they exist. The test interval for any installed valve shall not exceed 5 yr. The 5-yr test interval shall begin from the date of the as-left set pressure test for each valve.

Describe any differences in the implementation of the proposed alternative between sites that use the 2004 Edition of the ASME OM Code and sites that use the 2012 Edition of the ASME OM Code.

RESPONSE

There will be no differences in the implementation of the proposed alternative between sites that use the 2004 Edition of the ASME OM Code and sites that use the 2012 Edition of the ASME OM Code. Every station within the scope of this relief request has received NRC approval for a 72-month test interval plus a 6-month extension for SRVs equivalent to ASME Code Case OMN-17 for the SRVs which eliminates the only difference between the 2004 and 2012 I-1320(a) paragraph requirements; the 5-yr test interval shall begin from the date of the as-left set pressure test for each SRV.

Per code case OMN-17, 72-Mo Test Interval, valves shall be tested at least once every 72 months (i.e., six years). With the extension to 8 years requested in the IST relief requests (i.e., 2205 for Clinton Power Station, MSS-VR-02 for Nine Mile Point Station Unit 2, 01A-VRR-5 for Peach Bottom Atomic Power Station, and RV-09 for Quad Cities Nuclear Power Station), all SRVs would be required to be tested once every 96 months (i.e., eight years), not to exceed 102 months. The exception to this frequency is with the relief requests for the Group 1 of 1 SRVs (i.e., RV-02D for Dresden Nuclear Power Station and RV-08 for Quad Cities Nuclear Power Station); the SRVs would be tested once every 48 months (i.e., 4 years).

RAI 3

The proposed alternative relies, in part, on the implementation of the Exelon SRV Best Practices Maintenance program at the facilities. However, the application only provides limited information about this program. On June 4, 2019, Exelon described its SRV.[1] Best Practices Maintenance program at a public pre-application meeting for the proposed alternative (see ADAMS Accession No. ML19162A027). The Exelon presentation at the meeting identified four pillars of the program: (1) spring testing, which includes physical dimension measurements and compression rate evaluation; (2) SRV lapping techniques and tools; (3) SRV set pressure adjustment methodology precision; and (4) Target Rock SRV average delay time trending performance improvement.

Describe the SRV Best Practices Maintenance program and how it will be implemented to support the proposed alternative. The response should discuss each of the four pillars mentioned in the June 4, 2019, presentation.

[1] SRVs are also referred to as main steam safety valves (MSSVs) in Exelon's presentation

RESPONSE

The Exelon SRV Best Practices Maintenance program started as an SRV improvement initiative. The program is comprised of vendor procedures and additional specific testing, maintenance, inspection, and repair criteria that are approved by Exelon through purchase orders. Major program elements include specific performance and inspection criteria and maintenance steps that exceed Original Equipment Manufacturer (OEM) specifications and/or Industry established guidelines. The program elements include Spring Testing, Lapping Techniques and Tools, Set Pressure Adjustment Methodology Precision, Average Delay Time (ADT) trending, and Internal Component Condition Variations that are further discussed below. Collectively, use of these elements have supported a trend in improved setpoint retention of SRVs in service at the stations covered by these Relief Requests. An Exelon SRV Best Practices Fleet Engineering program document will be established, prior to implementation of these Relief Requests, to provide governance over the Exelon-approved vendor SRV maintenance procedures, to define the program elements, and to establish performance tracking and trending guidelines. This program document and the Exelon-approved vendor procedures are updated to incorporate advances in technology and operating experience from the Exelon fleet, the OEM and the industry. Major elements of the program are further described below:

Spring Testing

Spring testing is performed periodically based on valve type. The Exelon SRV Best Practices Maintenance program requires the spring characteristics meet physical dimensions requirements that are tighter than previous acceptance criteria based on Exelon operating experience. This has minimized spring compression rate variations.

Lapping Techniques and Tools

The lapping technique includes multiple lapping passes that develops tighter tolerances using an Exelon designed lapping tool based on Exelon operating experience. The Exelon SRV Best Practices Maintenance program requires this additional lapping to meet the tighter seat leakage tightness criteria. This technique has minimized variation of the seat-to-disk surfaces. Additionally, for the Dikkers SRVs, a second steam seat tightness test was added as an enhancement following post jack-and-lap maintenance to further verify seat integrity.

Set Pressure Adjustment Methodology Precision

The SRV set pressure adjustment process includes a spring adjustment factor methodology for the first set pressure adjustment. The Exelon SRV Best Practices Maintenance program document will include a calculated spring adjustment factor based on the SRV set pressure adjustment during the pre-certification testing and Exelon operating experience. A more accurate set pressure adjustment is obtained with fewer lifts and will minimize introducing variations of the seat-to-disk surfaces.

Average Delay Time Trending

For the Target Rock 3-Stage SRVs, the ADT measures the time between the pilot valve opening and the main disk opening. The Exelon SRV Best Practices Maintenance program has trended the ADTs for the Target Rock 3-Stage SRVs for determining if additional maintenance should be performed. The Exelon SRV Best Practices Maintenance program will include a tighter tolerance than the industry standard criteria for ADT. An SRV with an ADT value outside this criterion is further evaluated for additional maintenance prior to installation.

Internal Component Condition Variations

The SRV inspection and maintenance processes include additional inspections for internal components with criteria that are more restrictive than previous acceptance criteria based on Exelon operating experience. Specifically for the TR 3-Stage SRVs, tighter tolerances are applied to the pilot abutment and preload gaps which reduce the likelihood of vibration-induced seat leakage caused by pressure transients. Specifically for the Dresser 3777Q SRVs, tighter tolerances are applied to the spindle dimensions, replacement criteria for spindle runout, and disk to spindle movement (spindle tip rock), which reduce the likelihood of flow-induced vibration concerns. These additional inspections have minimized variation of the SRV internal components.

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

January 14, 2021

Mr. David P. Rhoades
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; DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3; NINE MILE POINT NUCLEAR STATION, UNIT 2; PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3; AND QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 — PROPOSED ALTERNATIVES TO EXTEND THE SAFETY RELIEF VALVE TESTING INTERVAL (EPID L-2020-LLR-0014 THROUGH -0018)

Dear Mr. Rhoades:

By application dated February 4, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20036D962), as supplemented by letter dated June 12, 2020 (ADAMS Accession No. ML20164A188), Exelon Generation Company, LLC (the licensee) submitted a request in accordance with paragraph 50.55a(z)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR) for proposed alternatives to the requirements of 10 CFR 50.55a and the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) at Clinton Power Station, Unit No. 1 (Clinton); Dresden Nuclear Power Station, Units 2 and 3 (Dresden); Nine Mile Point Nuclear Station, Unit 2 (NMP-2); Peach Bottom Atomic Power Station, Units 2 and 3 (Peach Bottom); and Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities). The proposed alternatives would allow the licensee to extend the safety relief valve test interval at these facilities.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluations, that Exelon has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes Exelon to use proposed alternative No. 2205 at Clinton, RV-02D at Dresden, MSS-VR-02 at NMP-2, 01A-VRR-5 at Peach Bottom, RV-08 at Quad Cities, and RV-09 at Quad Cities, as described in its application, as supplemented. This authorization is for the remainder of the current 10-year inservice testing interval for each of these facilities.

All other ASME Code requirements for which relief was not been specifically requested and approved 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,

Nancy L. Salgado

Digitally signed by Nancy L. Salgado
Date: 2021.01.14 12:24:16 -05'00'

Nancy L. Salgado, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-461, 50-237, 50-249, 50-410,
50-277, 50-278, 50-254, and 50-265

Enclosures:
1. Safety Evaluation for Clinton Proposed Alternative No. 2205
2. Safety Evaluation for Dresden Proposed Alternative RV-02D
3. Safety Evaluation for NMP-2 Proposed Alternative MSS-VR-02
4. Safety Evaluation for Peach Bottom Proposed Alternative 01A-VRR-5
5. Safety Evaluation for Quad Cities Proposed Alternative RV-08
6. Safety Evaluation for Quad Cities Proposed Alternative RV-09

cc: Listserv

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROPOSED ALTERNATIVE NO. 2205 REGARDING

EXTENSION OF THE SAFETY RELIEF VALVE TESTING INTERVAL

EXELON GENERATION COMPANY, LLC

CLINTON POWER STATION, UNIT NO. 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By application dated February 4, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20036D962), as supplemented by letter dated June 12, 2020 (ADAMS Accession No. ML20164A188), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request in accordance with paragraph 50.55a(z)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR) for a proposed alternative to specific requirements of 10 CFR 50.55a for Clinton Power Station, Unit No. 1 (Clinton); Dresden Nuclear Power Station, Units 2 and 3 (Dresden); Nine Mile Point Nuclear Station, Unit 2 (NMP-2); Peach Bottom Atomic Power Station, Units 2 and 3 (Peach Bottom); and Quad Cities Nuclear Power Station, Units 1 and 2 (Quad Cities). The licensee's June 12, 2020, letter was provided in response to a U.S. Nuclear Regulatory Commission (NRC) staff request for additional information issued on May 14, 2020 (ADAMS Accession No. ML20135H197). This safety evaluation (SE) provides the NRC staff's review of proposed alternative No. 2205 for Clinton, as described in the application, as supplemented. The NRC staff's review of the proposed alternative for the other facilities is described in separate SEs.

The proposed alternative would allow the licensee to extend the testing intervals for main steam line safety/relief valves (SRVs) at Clinton during the fourth 10-year inservice testing (IST) interval. The requirements for the SRV testing interval are described in the American Society of Mechanical Engineers (ASME), *Operation and Maintenance of Nuclear Power Plants*, Division 1, Section IST (OM Code).

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(f)(4) state, in part, that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the inservice test requirements (except design and access provisions) set forth in the ASME OM Code and addenda that become effective subsequent to editions and addenda specified in 10 CFR 50.55a(f)(2) and (3) and that are incorporated by reference in 10 CFR 50.55a(a)(1)(iv), to the extent practical within the limitations of design, geometry, and materials of construction of the components.

The regulations in 10 CFR 50.55a(z) state, in part, that alternatives to the requirements in paragraphs (b) through (h) of 10 CFR 50.55a 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.

The 2012 edition of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a with conditions, is applicable to the fourth 10-year IST interval at Clinton, which began on July 1, 2020, and is scheduled to end on June 30, 2030.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Request

The licensee requested an alternative to the valve testing requirements in Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," of the ASME OM Code (2012 edition). Subparagraph I-1320(a) of Mandatory Appendix I states:

> Class 1 pressure relief valves shall be tested at least once every 5 yr [years], starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested within each interval; however, a minimum of 20% of the valves from each valve group shall be tested within any 24-mo [month] interval. This 20% shall consist of valves that have not been tested during the current 5-yr interval, if they exist. The test interval for any installed valve shall not exceed 5 yr. This 5-yr test interval shall begin from the date of the as-left set pressure test for each valve.

The licensee has requested to use the proposed alternative at Clinton for the valves listed in Table 1 below.

Table 1: List of Valves at Clinton Affected by the Proposed Alternative

Component	Description	Class	Category
1B21-F041A	Main Steam Line SRV	1	C
1B21-F041B	Main Steam Line SRV	1	C
1B21-F041C	Main Steam Line SRV	1	C
1B21-F041D	Main Steam Line SRV	1	C
1B21-F041F	Main Steam Line SRV	1	C
1B21-F041G	Main Steam Line SRV	1	C
1B21-F041L	Main Steam Line SRV	1	C
1B21-F047A	Main Steam Line SRV	1	C
1B21-F047B	Main Steam Line SRV	1	C
1B21-F047C	Main Steam Line SRV	1	C
1B21-F047D	Main Steam Line SRV	1	C
1B21-F047F	Main Steam Line SRV	1	C
1B21-F051B	Main Steam Line SRV	1	C
1B21-F051C	Main Steam Line SRV	1	C
1B21-F051D	Main Steam Line SRV	1	C
1B21-F051G	Main Steam Line SRV	1	C

Reason for Request

At Clinton, there are 16 Dikkers Model G-471 main steam SRVs installed on the main steam lines inside the primary containment. These valves are all in the same IST program valve group. Subparagraph I-1320(a) of the ASME OM Code, Mandatory Appendix I, requires each installed SRV to be pressure tested within 5 years from the date of the as-left set pressure test. The licensee has implemented ASME Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves," which extends this 5-year test interval to 6 years, with the potential use of a 6-month grace period. The use of this Code Case allows the licensee to test all the SRVs in Table 1 over three refueling outages, instead of two, which could reduce the number of SRVs tested over three refueling outages by seven SRVs.

The licensee conducted a performance assessment of the valves listed in Table 1, and determined that there is reasonable assurance that these valves will retain their set pressure within the required drift tolerances if the test interval is extended from 6 years to 8 years. Reducing the number of valves tested every refueling outage would also reduce occupational radiological exposures.

Proposed Alternative and Basis for Use

For the testing of valves listed in Table 1, the licensee proposes to use the ASME Code Case OMN-17, with two modifications, as an alternative to the requirements in subparagraph I-1320(a) of the ASME OM Code, Mandatory Appendix I. The first modification to Code Case OMN-17 is to extend the test interval specified in the code case from 6 years to 8 years from the date of the as-left pressure test for each valve. With the 6-month grace period allowed by Code Case OMN-17, the test interval will not exceed 8.5 years. The second modification to Code Case OMN-17 is to change the minimum number of SRVs from each valve group to be tested from 20 percent within any 24-month interval to 40 percent within any 48-month interval, with the 40-percent population consisting of SRVs which have not been tested during the previous 96-month interval, if they exist. All other requirements of Code Case OMN-17 will be retained and implemented, including the requirement to disassemble and inspect all valves prior to as-left testing and installation.

Exelon stated that it implemented an SRV Best Practices Maintenance program at Clinton in 2010, and it has made several enhancements to the program since implementation. The program consists of methods and philosophies concerning maintenance, inspection, and techniques which uses the valve manufacturer's recommended maintenance practices and enhancements identified by the licensee. In its June 12, 2020, letter, Exelon described its SRV Best Practices Maintenance program. The elements of this program include spring testing, lapping techniques and tools, set pressure adjustment methodology precision, average delay time trending, and internal component condition variations.

The June 12, 2020, letter states that Exelon has been collecting, trending, and analyzing SRV test, maintenance, inspection and performance data since 2014 for Clinton, Dresden, NMP-2, Peach Bottom, Quad Cities, and Limerick Generating Station, Units 1 and 2. Prior to implementation of this proposed alternative, Exelon stated that it will establish an Exelon SRV Best Practices Fleet Engineering program document to provide governance over Exelon-approved vendor SRV maintenance procedures, to define the program elements, and to establish fleetwide performance tracking and trending guidelines. This program document and Exelon-approved vendor procedures are updated to incorporate advances in technology and operating experience from the Exelon fleet, the original equipment manufacturer, and the industry.

In its application, the licensee stated that it recently performed an assessment of the SRVs at Clinton. This assessment reviewed as-left and as-found set pressure data since 2002. The application states that the setpoint drift performance of the SRVs at Clinton has improved as a result of the SRV Best Practices Maintenance program. The licensee's assessment concluded that there is reasonable assurance that each SRV will retain the set pressure, within the required drift tolerances, through an 8-year interval.

3.2 NRC Staff's Evaluation

The NRC staff has unconditionally approved Code Case OMN-17 for voluntary use by licensees in NRC Regulatory Guide 1.192, Revision 3, "Operation and Maintenance Code Case Acceptability, ASME OM Code" (ADAMS Accession No. ML19128A261), which is incorporated by reference in 10 CFR 50.55a. As an alternative to the requirements in Section I-1320 in Mandatory Appendix I of the ASME OM Code (2001 edition through 2006 addenda), Code Case OMN-17 allows licensees to extend the test interval for SRVs to 6 years, with the potential use of a 6-month grace period, provided that additional maintenance requirements are met. Licensees on newer editions and addenda of the ASME OM Code are not allowed to use this code case without prior NRC approval because these newer editions and addenda are not listed in the *Inquiry* section of Code Case OMN-17. However, the NRC staff has authorized licensees to use Code Case OMN-17 provided that all requirements in the code case are met. By letter dated September 5, 2019 (ADAMS Accession No. ML19241A188), the NRC staff authorized the licensee to use ASME OM Code Case OMN-17 at Clinton for the fourth 10-year IST interval on the basis that this code case provides an acceptable level of quality and safety.

In its February 4, 2020, application, as supplemented, the licensee proposed to continue the use of the ASME Code Case OMN-17 at Clinton with two modifications. The NRC staff's review of this application focused on the proposed modifications to Code Case OMN-17. The first proposed modification to Code Case OMN-17 is to extend the test interval specified in the code case from 6 years to 8 years from the date of the as-left pressure test for each valve, while retaining the allowed 6-month grace period. The second proposed modification is to change the minimum number of valves to be tested from each group. Code Case OMN-17 specifies selecting 20 percent of the valves from each valve group to be tested within any 24-month interval. The licensee is requesting to change this provision to allow it to select 40 percent of the valves from each valve group to be tested within any 48-month interval, with the 40 percent population consisting of SRVs which have not been tested during the previous 96-month interval, if they exist. Although the number of SRVs tested in any 24-month interval could be reduced, the number of SRVs tested over any 48-month interval would not change with this proposed alternative.

As discussed above, the Exelon SRV Best Practices Maintenance program has been in place at Clinton since 2010. The elements of the program include spring testing, lapping techniques and tools, set pressure adjustment methodology precision, average delay trending, and internal component condition variations. The licensee disassembles and inspects the SRVs after as-found set pressure testing and before as-left set pressure testing.

In its application, the licensee stated that it recently performed an assessment of the SRVs at Clinton. This assessment reviewed as-left and as-found set pressure data since 2002. Based on the time between the as-left and as-found set pressure test for each SRV, the set pressure drift was linearly extrapolated to determine whether the SRV's set pressure would still be within the ± 3.0 percent tolerance following an 8-year interval. A linear extrapolation was used because the licensee determined that it provided the best mathematical approach. Since 2015, 12 SRVs were removed and as-found tested, and all the valves were projected to have lift setpoints within the ± 3.0 percent tolerance for more than 8 years. The application states that the setpoint drift performance of the SRVs at Clinton has improved as a result of the SRV Best Practices Maintenance program. The licensee's assessment concluded that there is reasonable assurance that each SRV will retain the set pressure, within the required drift tolerances, through an 8-year interval.

The licensee's June 12, 2020, letter states that the maximum time between SRV tests at Clinton would be 48 months. The letter also states that Exelon has been collecting, trending, and analyzing SRV test, maintenance, inspection and performance data since 2014 for Clinton, Dresden, NMP-2, Peach Bottom, Quad Cities, and Limerick Generating Station, Units 1 and 2. Clinton and NMP-2 both use Dikkers Model G-471 SRVs. The licensee stated that trending and analyzing test data between stations which have the same SRV model would reduce the effective maximum elapsed time between SRV tests for the same model. Prior to implementing this alternative request, the licensee will establish an SRV Best Practices Fleet Engineering program to define program elements and will establish fleetwide performance tracking and trending guidelines.

Based on its review of the licensee's application, as supplemented, the NRC staff finds that the proposed alternative No. 2205 for Clinton provides an acceptable level of quality and safety, because:

1. Exelon will continue to meet the provisions of ASME Code Case OMN-17 which are not being modified by this proposed alternative, including the requirement to disassemble and inspect all valves prior to as-left testing and installation;

2. Exelon's SRV Best Practices Maintenance program has been implemented for the SRVs affected by the proposed alternative;

3. Exelon's SRV Best Practices Fleet Engineering program, which includes the sharing of applicable SRV test data between Exelon nuclear power plant units, will be established prior to implementation of this proposed alternative; and

4. the results of the as-left and as-found set pressure test data for the Clinton SRVs indicate that the SRV set pressures will remain within acceptable tolerance levels for more than 8 years.

4.0 CONCLUSION

As set forth above, the NRC staff has determined that proposed alternative No. 2205 for Clinton provides an acceptable level of quality and safety for the valves listed in Table 1. 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). Therefore, the NRC staff authorizes the use of proposed alternative No. 2205, as described in the licensee's application, as supplemented, for the remainder of the fourth 10-year IST program interval at Clinton, which is currently scheduled to end on June 30, 2030.

All other ASME OM Code requirements for which relief or an alternative was not specifically requested and approved as part of this request remain applicable.

Principal Contributor: Robert Wolfgang, NRR/DEX/EMIB

Date: January 14, 2021

200 Exelon Way
Kennett Square, PA 19348
www.exeloncorp.com

10 CFR 50.55a

July 6, 2020

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

Braidwood Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-53 and DPR-69
NRC Docket Nos. 50-317 and 50-318

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

R.E. Ginna Nuclear Power Plant
Renewed Facility Operating License No. DPR-18
NRC Docket No. 50-244

Limerick Generating Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

Nine Mile Point Nuclear Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-63 and NPF-69
NRC Docket Nos. 50-220 and 50-410

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: Proposed Alternative to Utilize Code Case OMN-26 – Response to Request for Additional Information

References:
1. Exelon letter to the NRC, "Proposed Alternative to Utilize Code Case OMN-26," dated January 31, 2020 (ADAMS Accession No. ML20034C819)
2. Email from J. Wiebe (USNRC) to D. Neff (Exelon), "Preliminary RAI for Fleet Request to Use Alternative OMN-26," dated June 1, 2020 (ADAMS Accession No. ML20153A704)

In accordance with 10 CFR 50.55a, “Codes and standards,” paragraph (z)(1), Exelon Generation Company, LLC (Exelon), requested NRC approval of a proposed relief request associated with the Inservice Testing (IST) Programs for the cited Exelon Nuclear Power Plants (NPPs) (Reference 1). Specifically, the request proposes to implement the American Society of Mechanical Engineers (ASME) Code Case OMN-26, “Alternate Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves.” During their technical review of the application, the NRC Staff identified the need for additional information. Reference 2 provided the Request for Additional Information (RAI). Attachment 1 to this response provides the response to the RAI. Attachment 2 to this response provides a revision to the Relief Request to Utilize Code Case OMN-26 submitted in Reference 1 with the changes highlighted based on the RAI response provided in Attachment 1.

There are no regulatory commitments contained in this response.

If you have any questions, please contact Mr. David Neff at (267) 533-1132.

Respectfully,

David P. Helker
Sr. Manager - Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachments:

1. Response to Request for Additional Information
2. Relief Request to Utilize Code Case OMN-26, Revision 1

cc: Regional Administrator - NRC Region I
Regional Administrator - NRC Region III
NRC Senior Resident Inspector - Braidwood Station
NRC Senior Resident Inspector - Calvert Cliffs Nuclear Power Plant
NRC Senior Resident Inspector - Clinton Power Station
NRC Senior Resident Inspector – R.E Ginna Nuclear Power Plant
NRC Senior Resident Inspector - Limerick Generating Station
NRC Senior Resident Inspector - Nine Mile Point Nuclear Station
NRC Senior Resident Inspector – Peach Bottom Atomic Power Station
NRC Project Manager - Braidwood Station
NRC Project Manager - Calvert Cliffs Nuclear Power Plant
NRC Project Manager - Clinton Power Station
NRC Project Manager – R.E. Ginna Nuclear Power Plant
NRC Project Manager - Limerick Generating Station
NRC Project Manager - Nine Mile Point Nuclear Station
NRC Project Manager – Peach Bottom Atomic Power Station
Illinois Emergency Management Agency - Department of Nuclear Safety
R. R. Janati - Bureau of Radiation Protection, Commonwealth of Pennsylvania
S. Seaman - State of Maryland
A. L. Peterson - NYSERDA

Attachment 1

Braidwood Station, Units 1 and 2
Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Clinton Power Station, Unit No. 1
R.E. Ginna Nuclear Power Plant
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

Proposed Alternative to Utilize Code Case OMN-26

Response to Request for Additional Information

Response to NRC Staff's
Request for Additional Information

By application dated January 31, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20034C819), Exelon Generation Company, LLC (Exelon) submitted a request in accordance with paragraph 50.55a(z)(1) of Title 10 of the Code of Federal Regulations (10 CFR) for a proposed alternative to the requirements of 10 CFR 50.55a and the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) at Braidwood Station, Units 1 and 2, Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Clinton Power Station, Unit No. 1, R.E. Ginna Nuclear Power Plant, Limerick Generating Station, Units 1 and 2, Nine Mile Point Nuclear Station, Units 1 and 2, and Peach Bottom Atomic Power Station, Units 2 and 3. The proposed alternative would provide a Risk-Margin based methodology that establishes limitations for maximum inservice test intervals for Motor Operated Valves (MOVs).

In an email dated June 1, 2020, from the NRC (Joel Wiebe) to Exelon (David Neff) (ADAMS Accession No. ML20153A704), the NRC provided a draft Request for Additional Information (RAI) seeking clarification of certain issues related to the RAI. A clarification call was conducted on June 8, 2020, with representatives from Exelon and the NRC where the draft RAI text was confirmed with no changes. Exelon agreed to provide the response to the RAI within 30 days of June 8, 2020. The response to the RAI is provided below. A revised version of the subject Relief Request is provided in Attachment 2 with changes highlighted based on the RAI response provided below.

RAI 1

In its submittal dated January 31, 2020, Exelon is requesting the implementation of American Society of Mechanical Engineers (ASME) Code Case OMN-26, "Alternate Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves," for the diagnostic testing intervals for active motor-operated valves (MOVs) as an alternative to the provisions in ASME *Operation and Maintenance of Nuclear Power Plants*, Division 1, OM Code: Section IST (OM Code), 2012 Edition, Mandatory Appendix III, "Preservice and Inservice Testing of Active Electric Motor Operated Valve Assemblies in Light-Water Reactor Power Plants," as incorporated by reference in 10 CFR 50.55a, in accordance with 10 CFR 50.55a(z)(1). Code Case OMN-26 provides separate tables with notes for the diagnostic test intervals for the High Safety Significant Component (HSSC) MOVs and Low Safety Significant Component (LSSC) MOVs. In its submittal, Exelon has combined the OMN-26 tables into one table. It is not clear that the table in the Exelon submittal has accurately included all of the provisions specified in OMN-26 to allow the extended diagnostic test intervals. For example, the HSSC and LSSC tables in OMN-26 specify that to implement the extended diagnostic test intervals allowed in the code case, an MOV must be routinely operated at Design Basis Pressure Conditions with Note (A) in the OMN-26 tables specifying that this routine operation occurs at a periodicity no less frequent than once a refueling outage. The Exelon submittal as detailed in the proposed Exelon table does not appear to include these OMN-26 provisions. Exelon is requested to justify that all of the provisions in both of the OMN-26 tables have been accurately combined into the single table in its submittal, or specify in its submittal that the actual OMN-26 tables will be implemented.

RESPONSE

Exelon will implement the relief request (RR) in compliance with Code Case OMN-26 in its entirety, including all tables and associated notes. A complete review of the RR submittal versus the Code Case OMN-26 was performed and identified that all of the provisions in the code case were included in the RR submittal except for Notes A and D. Notes A and D were omitted from the RR submittal as both the design basis stroking frequency (Note A) and the inservice test intervals (Note D) are deemed to be covered by existing processes and procedures at Exelon. Minor editorial changes are also made to Notes 6 and 7 to align with the language in the corresponding OMN-26 Table notes.

In order to incorporate Code Case OMN-26 Note A from Tables 1 and 2, Note 6 of the Exelon Table in the RR submittal is revised as follows to include all the text in Note A. A clarification is added regarding the routine stroking of MOVs during normal operations. A second clarification is added regarding the periodicity of test strokes; once a refueling outage is replaced with once a refueling cycle. The stations included in this relief request are on either an 18- or a 24-month refueling cycle. The Code Case OMN-26 Note A language unnecessarily restricts the test strokes to occur during a refueling outage. Changes are shown with revision markers.

6. To utilize these intervals, **test** strokes at or exceeding design basis system conditions **must occur at a periodicity no less frequent than once a refueling ~~outage~~ cycle,** must be in the applicable safety function direction(s)**, and the MOV** ~~and~~ must have no ~~known~~ applicable operating experience, degradation or diagnostic test anomaly **with the potential for adverse** ~~that potentially~~ impact~~s~~ **on** MOV functional margin or the capability of the MOV to perform its design basis function. **These routine strokes during the inservice test interval are not required to be diagnostically monitored.**

In order to incorporate editorial changes, Note 7 is revised as follows with revision markers.

7. Operating plants that have acquired the requisite test data to satisfy **Appendix III, paragraphs** III-3310(b) or III 3722(c) must complete one cycle of collecting diagnostic test data at an extended test interval, minimum 9 and maximum 12 years, before extending the test interval by engineering evaluation to the maximum 16-year test interval.

In order to incorporate Code Case OMN-26 Note D from Tables 1 and 2, a new Note 8 to the Exelon Table in the RR submittal is added as follows to include all the text in Note D. A clarification is added regarding the inservice test interval for MOVs.

8. The MOV functional margin limits apply to the As-Left MOV condition at the start of the inservice test interval and includes applicable test uncertainties and allowance for service-related degradation. The inservice test interval is uniquely established for each MOV based on margin and risk classification of the MOV.

ATTACHMENT 2

Relief Request to Utilize Code Case OMN-26, Revision 1

1. ASME Code Component(s) Affected:

Active safety related motor operated valves (MOVs) that are required by Subsection ISTC of the 2012 Edition of the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code to be tested in accordance with ASME OM Code Mandatory Appendix III.

2. Applicable ASME OM Code Edition:

PLANT	INTERVAL	OM EDITION	START	END
Braidwood Station Units 1 and 2	Fourth	2012 Edition	July 29, 2018	July 28, 2028
Calvert Cliffs Nuclear Power Plant, Units 1 and 2	Fifth	2012 Edition	July 1, 2018	June 30, 2028
Nine Mile Point Nuclear Station, Unit 1 and 2	Fifth - U1 Fourth-U2	2012 Edition	January 1, 2019	December 31, 2028
Peach Bottom Atomic Power Station, Unit 2 and 3	Fifth	2012 Edition	November 16, 2018	August 14, 2028
R.E. Ginna Nuclear Power Plant Unit 1	Sixth	2012 Edition	January 1, 2020	December 31, 2029
Limerick Generating Station, Units 1 and 2	Fourth	2012 Edition	January 8, 2020	January 7, 2030
Clinton Power Station, Unit 1	Fourth	2012 Edition	July 1, 2020	June 30, 2030

3. Applicable Code Requirements:

The ASME OM Code Mandatory Appendix III, Preservice and Inservice testing of Active Electric Motor-Operated Valve Assemblies in Water Cooled Reactor Nuclear Power Plants.

The following Appendix III Paragraphs are affected by this Relief Request to adopt Code Case OMN-26, “Alternate Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves.”

III-3310 (c).

III-3700 Risk-Informed MOV Inservice Testing.

III-3721 HSSC MOVs.

III-3722 (d).

For each of these paragraphs, relief is being sought for alternative treatments described in Section 5 of this relief request based on the ASME Board of Nuclear Codes and Standards (BNCS) approved Code Case OMN-26.

4. Reason for Request:

In accordance with 10 CFR 50.55a(z)(1), Exelon Generation Company, LLC (Exelon) is requesting approval to adopt ASME OM Code Case OMN-26 in conjunction with implementing Mandatory Appendix III for all Exelon plants identified in Section 2.

Code Case OMN-26 better aligns OM Code Mandatory Appendix III to the Risk and Margin Based Licensee Motor Operated Valve (MOV) Programs developed in response to NRC Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," that have been in effect since 1998. The Appendix III ten-year maximum inservice test interval was originally established to align with the maximum test interval allowed under the Generic Letter 96-05 MOV Programs that, for most Licensees, was established by the Joint Owners Group (JOG) MOV Periodic Verification Program. There is no formal technical basis for the current Appendix III ten-year maximum interval that applies to all MOVs regardless of Risk and Margin. Over the past twenty years, Exelon MOV Programs have demonstrated many margin stable MOVs that can be readily justified to extend from their current MOV Program maximum inservice test intervals of six years (for High Risk) and ten years (for Low Risk).

5. Proposed Alternative and Basis for Use:

Proposed Alternative:
Exelon proposes to implement the ASME OM Code Case OMN-26 alternative risk and margin informed rules for inservice testing of MOVs in its entirety as described below:

Proposed Alternative to III-3310
(c) The maximum inservice test interval shall not exceed 10 years unless Risk Informed Inservice Testing applies under the provisions of para. III-3700. MOV inservice tests conducted per para. III-3400 may be used to satisfy this requirement.

Proposed Alternative to III-3700
Risk-informed MOV inservice testing that incorporate risk insights in conjunction with MOV Functional Margin to establish MOV grouping, acceptance criteria, exercising requirements and test interval may be implemented.

Proposed Alternative to III-3721

III-3721 HSSC MOVs. HSSC MOVs shall be tested in accordance with para. III-3300 and exercised in accordance with para. III-3600 while applying the following HSSC MOV Risk insights and limitations:

(a) HSSC MOVs that can be operated during plant operation shall be exercised quarterly, unless the potential increase in core damage frequency (CDF) and large early release (LER) associated with a longer exercise interval is small.

(b) For HSSC MOVs, the maximum inservice test interval shall be established in accordance with Table 1 of OMN-26 (see below)

OMN-26 Table 1
HSSC MOV – Margin Based Maximum Inservice Test Intervals

HSSC MOV Functional Margin[(D)]	Maximum Inservice Test Interval (Years)	If MOV is routinely[(A)] operated at Design Basis Pressure Conditions - Max Inservice Test Interval (Years) [(B)]
Low (< 5%)	2	4
Medium (≥ 5% and < 10%)	4	9
High (≥ 10% and < 20%)	9	9
Very High (≥ 20%)	9	12

OMN-26 Table 1 – Notes

(A) Occurs at a periodicity no less frequent than once a refueling outage.
(B) To utilize these intervals, test strokes at or exceeding design basis system conditions must be in the applicable safety function direction(s) and have no applicable operating experience, degradation or diagnostic test anomaly with the potential for adverse impact on MOV functional margin or the capability of the MOV to perform its design basis function.
(D) For the purpose of this code case, the MOV functional margin limits apply to the As-Left MOV condition at the start of the inservice test interval and include applicable test uncertainties and allowance for service- related degradation.

Proposed Alternative to III-3722 (d)

(d) For LSSC MOVs, the maximum inservice test interval shall be established in accordance with Table 2 of OMN-26 (see below)

OMN-26 Table 2
LSSC MOV – Margin Based Maximum Inservice Test Intervals

LSSC MOV Functional Margin[(D)]	Maximum Inservice Test Interval (Years)	If MOV is routinely[(A)] operated at Design Basis Pressure Conditions - Max Inservice Test Interval (Years) [(B)]
Low (< 5%)	4	9
Medium (≥ 5% and < 10%)	9	12
High (≥ 10% and < 20%)	12	12
Very High (≥ 20%)	12	16[(C)]

OMN-26 Table 2 Notes:

(A) Occurs at a periodicity no less frequent than once a refueling outage.
(B) To utilize these intervals, test strokes at or exceeding design basis system conditions must be in the applicable safety function direction(s) and have no applicable operating experience, degradation or diagnostic test anomaly with the potential for adverse impact on MOV functional margin or the capability of the MOV to perform its design basis function.
(C) Operating plants that have acquired the requisite test data to satisfy Appendix III, paragraphs III-3310(b) or III-3722(c) must complete one cycle of collecting diagnostic test data at an extended test interval, minimum 9 and maximum 12 years, before extending the test interval by engineering evaluation to the maximum 16-year test interval.
(D) For the purpose of this code case, the MOV functional margin limits apply to the As-Left MOV condition at the start of the inservice test interval and include applicable test uncertainties and allowance for service- related degradation.

Basis for Use:

The requested relief to adopt OMN-26 is in line with the current JOG MOV Periodic Verification Test Program that Exelon has implemented since the late 1990's in response to NRC Generic Letter 96-05. Both the JOG MOV PV Program and Code Case OMN-26 provide a Risk-Margin based methodology that establishes limitations for maximum inservice test intervals for MOVs. Code Case OMN-26 simply provides a reasonable extension of this Risk-Informed philosophy based on the lessons learned and accumulated MOV performance data gathered over more than 25 years of MOV Performance Verification Testing. Appendix III alone, in isolation from OMN-26, provides no such methodology other than a maximum limit for the inservice test interval regardless of Risk or Margin.

The requested allowed maximum inservice test intervals are modest extensions with many of the Low Risk MOVs extending from 10 to 12 years (20% increase). This test interval change can be readily adopted with no loss of MOV performance and/or safety system reliability provided that no adverse performance trends are indicated. Exelon's MOV Performance Trending Governance will ensure that only MOV's with good performance history, high stable margins and no adverse diagnostic trends would be candidates for the OMN-26 based inservice test interval extensions.

The requested High Margin Maximum interval changes afforded by OMN-26 align with Exelon's desire to adopt a divisional MOV outage testing strategy that reduces the implementation burden of MOV Inservice Testing and allows greater flexibility in optimizing safety system availability. The current six and ten-year JOG Program based High-Margin Maximum Intervals do not support this strategy.

The requested relief reduces the maximum test interval for High Safety Significant Component (HSSC) MOVs allowed by Appendix III from ten years to nine years commensurate with Risk Informed Methodology. Further under this relief request, Exelon will treat MOVs currently classified as Medium Risk by the 3-Tier JOG Risk Ranking as High Risk (HSSC) thereby providing more rigorous periodic verification requirements for the applicable valves especially those with less than high margin.

The requested relief takes credit for routine design basis differential pressure testing (DBDPT) of MOVs to justify extending the maximum Inservice test interval to 12 Years for Very High Margin HSSC MOVs and 16 years for Very High Margin Low Safety Significant Component (LSSC) MOVs.

With the exception of Low Risk MOVs routinely operated at design basis differential pressure (D-P) conditions, Code Case OMN-26 does not allow maximum MOV Inservice Test intervals to exceed ten years unless the associated MOVs are classified as High Margin. Most High Risk MOVs are limited to four years or less for Low/Medium Margins and most Low Risk MOVs are limited to nine years or less for Low/Medium Margins. Code Case OMN-26 provides more rigorous requirements targeted specifically to Low/Medium Margin MOVs than currently allowed under Appendix III. This Risk/Margin approach is in line with accepted Risk-Informed Strategies such as the JOG MOV Periodic Verification Program.

Use of the proposed alternative is expected to result in improved MOV Margins at each Exelon station in order to attain higher margin status to allow use of the extended maximum inservice test intervals permitted by the OMN-26 Code Case.

For the majority of applicable MOVs (i.e., those MOVs not subject to periodic stroking under design basis D-P conditions), the Code Case limited the scope to only High Margin Valves for extending test intervals incrementally beyond current limits:

- Test intervals for High Risk MOVs go from six to nine years (Note: Nine years is aligned to Pressurized Water Reactor nuclear power plants (PWRs) on 18-month refueling cycles)
- Test intervals for Low Risk MOVs go from ten to 12 years (Note: 12 years is aligned for all Boiling Water Reactor nuclear power plants (BWRs) and PWRs with either 18- or 24-month refueling cycles)

The Table below provides a detailed comparison of the Maximum MOV Test Intervals for the JOG MOV Program, Mandatory Appendix III and Code Case OMN-26 that Exelon seeks to adopt via this relief request. MOVs identified with **Bold** type have maximum MOV inservice test intervals exceeding the current Appendix III ten-year limit.

Exelon Maximum MOV Test Intervals Based on Code Case OMN-26

	Maximum Inservice Test Intervals (Years)							
	HSSC MOVs				LSSC MOVs			
MOV Margin[8]	JOG MOV PV Program	Appendix III	OMN-26	OMN-26 w/DBDPT (6)	JOG MOV PV Program	Appendix III	OMN-26	OMN-26 w/DBDPT (6)
Low (<5%)	2	10	2 (1,2)	4 **(5)**	6	10	4 (1,3,5)	9 **(5)**
Medium (≥5% and <10%)	4	10	4 (1,2,5)	9 **(5)**	10	10	9 (1,3,5)	**12 (4,5)**
High (≥10% and <20%)	6	10	9 **(5)**	9 **(5)**	10	10	**12 (4,5)**	**12 (4,5)**
Very High (≥ 20%)	N/A	10	9 **(5)**	**12 (4,5)**	N/A	10	**12 (4,5)**	**16 (4,5,7)**
Description ->	Existing Industry Standard	Existing ASME OM Code	Relief Request	Relief Request	Existing Standard	Existing ASME OM Code	Relief Request	Relief Request

Table Notes

1. Code Case Maximum Inservice Test Intervals for all Low/Medium Margin MOVs are less than or equal to current ten-year Appendix III limit. (i.e., Code Case is more conservative than Appendix III for Low/Medium Margin MOVs).

2. Code Case Maximum Inservice Test Intervals for Low/Medium Margin HSSC MOVs are equal to the current JOG MOV PV Program limits of two/four years respectively. (Code Case intervals are aligned with JOG MOV).

3. Code Case Maximum Inservice Test Intervals for Low/Medium Margin LSSC MOVs (four/nine years) are less than the current JOG MOV PV Program limits of six/ten years respectively.

4. The following four categories of MOVs have maximum inservice test intervals that exceed the current ten-year limit:
   a. High Margin, LSSC MOVs. (12 Years)
   b. Very High Margin, HSSC MOVs that are periodically stroked at design basis DP conditions (DBDPT) (12 Years)
   c. Medium Margin, LSSC MOVs that are periodically DBDPT (12 Years)
   d. Very High Margin, LSSC MOVs that are periodically DBDPT (16 Years).

5. Except for Low Margin HSSC MOVs, the Maximum MOV Inservice Test Intervals are optimized for Divisional Outage Scheduling (i.e., 4, 9, 12, 16 years). Nine years is optimal for PWRs restricted to 18 month refueling outages. 12 years is optimal for both PWRs and BWRs and supports both 18-month and 24-month refueling outages.

6. To utilize these intervals, **test** strokes at or exceeding design basis system conditions **must occur at a periodicity no less frequent than once a refueling ~~outage~~ cycle,**

must be in the applicable safety function direction(s)**, and the MOV must** ~~and~~ have no ~~known~~ applicable operating experience, degradation or diagnostic test anomaly **with the potential for adverse** ~~that potentially~~ impact~~s~~ **on** MOV functional margin or the capability of the MOV to perform its design basis function. **These routine strokes during the inservice test interval are not required to be diagnostically monitored.**

7. Operating plants that have acquired the requisite test data to satisfy **Appendix III, paragraphs** III-3310(b) or III-3722(c) must complete one cycle of collecting diagnostic test data at an extended test interval, minimum 9 and maximum 12 years, before extending the test interval by engineering evaluation to the maximum 16-year test interval.

8. **The MOV functional margin limits apply to the As-Left MOV condition at the start of the inservice test interval and includes applicable test uncertainties and allowance for service-related degradation. The inservice test interval is uniquely established for each MOV based on margin and risk classification of the MOV.**

6. Duration of Proposed Alternative:

The proposed alternative is for use of the Code Case for the remainder of each plant's ten-year Inservice Testing interval as specified in Section 2.

7. Precedent:

None

8. References:

1. ASME OM Code Case OMN-26, Alternative Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves, approved by ASME Board of Nuclear Codes and Standards (BNCS) December 2019.

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

September 1, 2020

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; CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2; CLINTON POWER STATION, UNIT 1; R. E. GINNA NUCLEAR POWER PLANT; LIMERICK GENERATING STATION, UNITS 1 AND 2; NINE MILE POINT, UNITS 1 AND 2; AND PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 – REQUEST TO USE ALTERNATIVE CODE CASE OMN-26 (EPID L-2020-LLR-0012)

Dear Mr. Hanson:

By letter dated January 31, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20034C819), as supplemented by letter dated July 6, 2020 (ADAMS Accession No. ML20188A264), Exelon Generation Company, LLC (Exelon) submitted a request in accordance with paragraph 50.55a(z)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR) to implement the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Case OMN-26, "Alternate Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves," at Braidwood Station, Units 1 and 2; Calvert Cliffs Nuclear Power Plant, Units 1 and 2; Clinton Power Station, Unit 1; R. E. Ginna Nuclear Power Plant; Limerick Generating Station, Units 1 and 2; Nine Mile Point, Units 1 and 2; and Peach Bottom Atomic Power Station, Units 2 and 3.

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 proposed alternative to implement ASME OM Code Case OMN-26, as described in Exelon's letters dated January 31, 2020, and July 6, 2020, provides an acceptable level of quality and safety. 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).

Therefore, the NRC staff authorizes the proposed alternative for the implementation of ASME OM Code Case OMN-26, for the specified 10-year inservice testing program intervals.

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

If you have any questions, please contact Joel Wiebe at 301-415-6606 or via e-mail at Joel.Wiebe@nrc.gov .

Sincerely,

Nancy L. Salgado, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456, STN 50-457, 50-317, 50-318, 50-461, 50-244, 50-352, 50-353, 50-220, 50-410, 50-277, and 50-278

Enclosure:
Safety Evaluation

cc: Listserv

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ALTERNATIVE REQUEST TO USE ASME OM CODE CASE OMN-26

RELATED TO THE INSERVICE TESTING PROGRAMS FOR

BRAIDWOOD, UNITS 1 AND 2, CALVERT CLIFFS, UNITS 1 AND 2, CLINTON, UNIT 1,

R.E. GINNA, LIMERICK, UNITS 1 AND 2, NINE MILE POINT, UNITS 1 AND 2, AND

PEACH BOTTOM, UNITS 2 AND 3

DOCKET NOS. STN 50-456, STN 50-457, 50-317, 50-318, 50-461, 50-244

50-352, 50-353, 50-220, 50-410, 50-277, AND 50-278

1.0 INTRODUCTION

By a letter dated January 31, 2020 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML20034C819), as supplemented by letter dated July 6, 2020 (ADAMS Accession No. ML20188A264), Exelon Generation Company, LLC (Exelon, the licensee), submitted to the U.S. Nuclear Regulatory Commission (NRC) an alternative test plan in lieu of certain inservice testing (IST) requirements of the American Society of Mechanical Engineers (ASME) *Operation and Maintenance of Nuclear Power Plants*, Division 1, OM Code: Section IST [inservice testing] (OM Code) for the IST programs at the following plants:

Table 1

Plant	Docket	ASME Test Interval	ASME OM Code Edition	Interval Start Date	Interval End Date
Braidwood Station Unit 1	50-456	4th	2012	7/29/2018	7/28/2028
Braidwood Station Unit 2	50-457	4th	2012	7/29/2018	7/28/2029
Calvert Cliffs Nuclear Power Plant Unit 1	50-317	5th	2012	7/1/2018	6/30/2028
Calvert Cliffs Nuclear Power Plant Unit 2	50-318	5th	2012	7/1/2018	6/30/2028

Enclosure

Table 1					
Plant	**Docket**	**ASME Test Interval**	**ASME OM Code Edition**	**Interval Start Date**	**Interval End Date**
Clinton Power Station Unit 1	50-461	3rd	2012	7/1/2020	6/30/2030
R.E. Ginna Nuclear Power Plant	50-244	6th	2012	1/1/2020	12/31/2029
Limerick Generating Station Unit 1	50-352	4th	2012	1/8/2020	1/7/2030
Limerick Generation Station Unit 2	50-353	4th	2012	1/8/2020	1/7/2030
Nine Mile Point Nuclear Station Unit 1	50-220	5th	2012	1/1/2019	12/31/2028
Nine Mile Point Nuclear Station Unit 2	50-410	4th	2012	1/1/2019	12/31/2028
Peach Bottom Atomic Power Station Unit 2	50-277	5th	2012	11/16/2018	8/14/2028
Peach Bottom Atomic Power Station Unit 3	50-278	5th	2012	11/16/2018	8/14/2028

Specifically, pursuant to Title 10, of the *Code of Federal Regulations* (CFR), Part 50, Section 55a, paragraph (z), subparagraph (1) (10 CFR 50.55a(z)(1)), the licensee requested to implement ASME OM Code Case OMN-26 related to the testing of certain active motor-operated valves (MOVs) on the basis that the alternative provides an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

The NRC regulations in 10 CFR 50.55a(f), "Inservice Testing Requirements," 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 pursuant to paragraph 10 CFR 50.55a(z)(1) or 10 CFR 50.55a(z)(2).

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 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)).

3.0.1 Applicable ASME OM Code

The following request is an alternative test plan in lieu of certain IST requirements of the 2012 Edition of the ASME OM Code for the IST programs at the plants listed in Table 1 of this safety evaluation (SE) for the duration of their current 10-year IST program interval.

3.1.1 Licensee's Alternative Request

ASME OM Code Requirements:

Mandatory Appendix III, "Preservice and Inservice Testing of Active Electric Motor Operated Valve Assemblies in Light-Water Reactor Power Plants," paragraph III-3310, "Inservice Test Interval," subparagraph (c) states, in part, that "The maximum inservice test interval shall not exceed 10 yr."

Mandatory Appendix III, paragraph III-3700, "Risk-Informed MOV Inservice Testing," states that "Risk-informed MOV inservice testing that incorporates risk insights in conjunction with performance margin to establish MOV grouping, acceptance criteria, exercising requirements and testing interval may be implemented."

Mandatory Appendix III, paragraph III-3721, "[High Safety Significant Component] HSSC MOVs," states that "HSSC MOVs shall be tested in accordance with para. III-3300 and exercised in accordance with para. III-3600. HSSC MOVs that can be operated during plant operation shall be exercised quarterly, unless the potential increase in core damage frequency (CDF) and large early release (LER) associated with a longer exercise interval is small."

Mandatory Appendix III, paragraph III-3722, "[Low Safety Significant Component] LSSC MOVs," subparagraph (d), states that "LSSC MOVs shall be inservice tested at least every 10 yr in accordance with para. III-3310."

Alternative testing is requested for safety-related MOVs that are currently required to meet these ASME OM Code requirements.

The licensee states, in part:

> Reason for Request
>
> Code Case OMN-26 better aligns OM Code Mandatory Appendix III to the Risk and Margin Based Licensee Motor Operated Valve (MOV) Programs developed in response to NRC Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," that have been in effect since 1998. The Appendix III ten-year maximum inservice test interval was originally established to align with the maximum test interval allowed under the Generic Letter 96-05 MOV Programs that, for most Licensees, was established by the Joint Owners Group (JOG) MOV Periodic Verification Program. There is no formal technical basis for the current Appendix III ten-year maximum interval that applies to all MOVs regardless of Risk and Margin. Over the past twenty years, Exelon MOV Programs have demonstrated many margin stable MOVs that can be readily justified to extend from their current MOV Program maximum inservice test intervals of six years (for High Risk) and ten years (for Low Risk).
>
> Proposed Alternative
>
> Exelon proposes to implement the ASME OM Code Case OMN-26 alternative risk and margin informed rules for inservice testing of MOVs in its entirety.
>
> HSSC MOVs shall be tested in accordance with para. III-3300 and exercised in accordance with para. III-3600 while applying the following HSSC MOV risk insights and limitations:

(a) HSSC MOVs that can be operated during plant operation shall be exercised quarterly, unless the potential increase in core damage frequency (CDF) and large early release (LER) associated with a longer exercise interval is small.
(b) For HSSC MOVs, the maximum inservice test interval shall be established in accordance with Table 1 of OMN-26

OMN-26 – Table 1
HSSC MOV – Margin Based Maximum Inservice Test Intervals

HSSC MOV Functional Margin(D)	Maximum Inservice Test Interval (Years)	If MOV is routinely(A) operated at Design Basis Pressure Conditions – Max Inservice Test Interval (Years)(B)
Low (< 5%)	2	4
Medium (≥ 5% and < 10%)	4	9
High (≥ 10% and < 20%)	9	9
Very High (≥ 20%)	9	12

OMN-26 Table 1 – Notes

(A) Occurs at a periodicity no less frequent than once a refueling outage.
(B) To utilize these intervals, test strokes at or exceeding design basis system conditions must be in the applicable safety function direction(s) and have no applicable operating experience, degradation or diagnostic test anomaly with the potential for adverse impact on MOV functional margin or the capability of the MOV to perform its design basis function.
(D) For the purpose of this code case, the MOV functional margin limits apply to the As-Left MOV conditions at the start of the inservice test interval and include applicable test uncertainties and allowance for service-related degradation.

For LSSC MOVs, the maximum inservice test interval shall be established in accordance with Table 2 of OMN-26

OMN-26 – Table 2
LSSC MOV – Margin Based Maximum Inservice Test Intervals

LSSC MOV Functional Margin(D)	Maximum Inservice Test Interval (Years)	If MOV is routinely(A) operated at Design Basis Pressure Conditions – Max Inservice Test Interval (Years)(B)
Low (< 5%)	4	9
Medium (≥ 5% and < 10%)	9	12
High (≥ 10% and < 20%)	12	12
Very High (≥ 20%)	12	16(C)

OMN-26 Table 2 – Notes

(A) Occurs at a periodicity no less frequent than once a refueling outage.
(B) To utilize these intervals, test strokes at or exceeding design basis system conditions

must be in the applicable safety function direction(s) and have no applicable operating experience, degradation or diagnostic test anomaly with the potential for adverse impact on MOV functional margin or the capability of the MOV to perform its design basis function.

(C) Operating plants that have acquired the requisite test data to satisfy Appendix III, paragraphs III-3310(b) or III-3722(c) must complete one cycle of collecting diagnostic test data at an extended test interval, minimum 9 and maximum 12 years, before extending the test interval by engineering evaluation to the maximum 16-year test interval.

(D) For the purpose of this code case, the MOV functional margin limits apply to the As-Left MOV conditions at the start of the inservice test interval and include applicable test uncertainties and allowance for service-related degradation.

Basis for Use

In its letters dated January 31 and July 6, 2020, the licensee describes the basis for its proposed alternative to implement ASME OM Code Case OMN-26 for the nuclear power plants listed in Table 1 of this SE. In summary, the licensee considers the requested alternative to adopt OMN-26 to be in line with the current JOG MOV periodic verification test program that Exelon has implemented since the late 1990's in response to Generic Letter(GL) 96-05. Both the JOG MOV periodic verification program and Code Case OMN-26 provide a risk-margin based methodology that establishes limitations for maximum IST intervals for MOVs. The licensee considers Code Case OMN-26 to provide a reasonable extension of this risk-Informed philosophy based on the lessons learned and accumulated MOV performance data gathered over more than 25 years of MOV performance verification testing. The licensee states that Appendix III alone, in isolation from Code Case OMN-26, provides no such methodology other than a maximum limit for the IST interval regardless of risk or margin.

In its letter dated July 6, 2020, the licensee clarifies the implementation of Code Case OMN-26 to be consistent with its plant operations. For example, the licensee states that to implement to extended intervals with MOV design-basis differential pressure testing, test strokes at or exceeding design basis system conditions must occur at a periodicity no less frequent than once a refueling cycle in the applicable safety function direction(s), and the MOV must have no applicable operating experience, degradation or diagnostic test anomaly with the potential for adverse impact on MOV functional margin or the capability of the MOV to perform its design basis function. The licensee notes that these routine strokes during the IST interval are not required to be diagnostically monitored. The licensee also states that the MOV functional margin limits apply to the As-Left MOV condition at the start of the IST interval and includes applicable test uncertainties and allowance for service-related degradation. The licensee notes that the IST interval is uniquely established for each MOV based on margin and risk classification of the MOV.

3.1.2 NRC Staff Evaluation

The NRC regulations in 10 CFR 50.55a(b)(3)(ii) require nuclear power plant licensees to comply with the provisions of the ASME OM Code incorporated by reference in 10 CFR 50.55a, and must establish a program to ensure that MOVs continue to be capable of performing their design-basis safety function. The NRC staff considers ASME OM Code testing specified in Mandatory Appendix III with the conditions in 10 CFR 50.55a(b)(3)(ii), and the MOV diagnostic test programs developed in response to NRC GL 89-10, “Safety-Related Motor-Operated Valve Testing and Surveillance” (ADAMS Accession No. ML031150300) and GL 96-05, “Periodic

Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves" ADAMS Accession No. ML031110010), together will satisfy the regulatory requirements of 10 CFR 50.55a(b)(3)(ii).

In GL 89-10, the NRC staff requested that each nuclear power plant licensee establish a program to demonstrate that safety-related MOVs are capable of performing their design basis functions. During the implementation of GL 89-10, the NRC staff provided four acceptable methods a licensee could use to demonstrate the design basis capability of safety-related MOVs. The four methods for demonstrating capability in descending order of acceptability are:

1) Dynamic testing at or near design basis conditions with diagnostics of each MOV where practicable. Valves dynamically tested at less than design basis conditions may be extrapolated with proper justification.

2) Electric Power Research Institute (EPRI) MOV Performance Prediction Methodology (PPM). This method was developed for those valves that could not be dynamically tested. The PPM required internal valve measurements to provide assurance that the valve performance was predictable. The NRC staff began accepting the use of the PPM even where dynamic testing for an MOV was practicable.

3) MOV valve grouping. Where valve-specific dynamic testing was not performed and the PPM was not used, the staff accepted grouping of MOVs that were dynamic tested at the plant to apply the plant-specific test information to an MOV in the group.

4) The use of valve test data from other plants or research programs. The NRC ranks this as the least-preferred approach (with the most margin required) because the licensee would have minimal information regarding the tested valve and its history.

In superseding GL 89-10, GL 96-05 requested that each licensee establish a program, or ensure the effectiveness of its current program, to verify on a periodic basis that safety-related MOVs continue to be capable of performing their safety functions within the current licensing basis of the facility. The program should ensure that changes in required performance resulting from degradation (such as those caused by age) can be properly identified and addressed.

In response to GL 96-05, the nuclear industry joined together to form the JOG MOV periodic verification program. The JOG program consisted of three elements: (1) an "interim" MOV periodic verification program for licensees to use in response to GL 96-05 during development of a long-term program; (2) a 5-year MOV dynamic diagnostic test program; and (3) a long-term MOV periodic diagnostic test program to be based on the information from the dynamic testing program. The JOG effort was intended to answer the valve degradation question as it pertained to valve configuration, design, and system application. The JOG test program was not intended to provide data to the industry for the purpose of justifying valve performance. The final JOG program plan consisted of periodic diagnostic test program that is based on risk and margin. The NRC staff approved the JOG final program plan, with conditions, in an SE dated September 25, 2006 (ADAMS Accession No. ML061280315).

The ASME OM Code establishes the requirements for preservice and inservice testing and examination of certain components to assess their operational readiness in light-water reactor nuclear power plants. 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

ASME OM Code also applies to pressure relief devices and dynamic restraints.

Prior to the development of Mandatory Appendix III, the ASME OM Code testing for MOVs consisted of:

1) Valve exercising to include quarterly stroke time testing
2) Valve obturator movement verification during the exercise test
3) Valve leakage testing (only if the valve has a leakage limit requirement)
4) Remote position indication verification

In the past, these required tests were considered to be adequate to assess MOV operational readiness. However over the course of several years of operating experience and testing, it was determined that quarterly stroke time testing of MOVs was not an adequate indicator of valve degradation. As an alternative to MOV stroke-time testing, ASME developed Code Case OMN-1 to allow periodic exercising and diagnostic testing in assessing operational readiness of active MOVs in lieu of quarterly stroke-time testing. ASME provided additional guidance by developing Code Case OMN-11, "Risk-Informed Testing for Motor-Operated Valves," for MOVs in the IST program that are determined to have a high safety significance. The NRC staff has reviewed and accepted these Code Cases with certain conditions as noted in Regulatory Guide (RG) 1.192, "Operation and Maintenance Code Case Acceptability ASME OM Code" (ADAMS Accession No. ML19128A261), which is incorporated by reference in 10 CFR 50.55a. ASME merged these two Code Cases into an updated version of Code Case OMN-1 published in the 2006 Addenda of the ASME OM Code. This updated OMN-1 Code Case was later adopted into the 2009 Edition of ASME OM Code as Mandatory Appendix III. The NRC conditions for use of Mandatory Appendix III are specified in 10 CFR 50.55a(b)(3)(ii).

Most licensees of operating nuclear power plants committed to follow the JOG MOV periodic verification program as part of their response to GL 96-05. The NRC staff reviewed each licensee's GL 96-05 program and risk methodology (including implementation of the JOG program) and prepared an SE describing its review of each of those programs with conditions. Many licensees committed to the Boiling Water Reactor Owners Group (BWROG) risk methodology NEDC-32264A (Revision 2) approved by NRC staff on February 27, 1996, Westinghouse Owners Group (WOG) risk method V-EC-1658-A (Revision 2) approved by NRC staff on August 13, 1998, or a plant-specific risk methodology. The nuclear power plants listed in Table 1 of this SE committed to the following risk ranking method:

1) Limerick – committed to follow the BWROG risk method – SE dated November 17, 2000 (ADAMS Accession No. ML003755447)
2) Braidwood – committed to follow the WOG risk method – Response to Request for Additional Information (RAI) dated April 12, 1999 (ADAMS Accession No. ML17191B310)
3) Calvert Cliffs – committed to follow the WOG risk method – SE dated December 15, 1999 (ADAMS Accession No. ML993550374)
4) Clinton – committed to follow a plant-specific risk method – SE dated February 8, 2000 (ADAMS Accession No. ML003681570)
5) Ginna – committed to follow the WOG risk method – SE dated December 27, 1999 (ADAMS Accession No. ML003672670)
6) Nine Mile – committed to follow a plant-specific risk method – SE dated July 18, 2000 (ADAMS Accession No. ML003729304)
7) Peach Bottom – committed to follow the BWROG risk method – SE dated November 16, 2000 (ADAMS Accession No. ML003752691)

Licensees of operating nuclear power plants must meet the requirements of 10 CFR 50.55a(b)(3)(ii) to follow the ASME OM Code requirements, and have an MOV program that periodically verifies that MOVs will continue to perform their safety functions. The NRC staff considers the JOG program plan and Mandatory Appendix III to meet 10 CFR 50.55a(b)(3)(ii) with conditions. Both programs are similar but have differences such as:

1) The JOG program incorporates risk into its MOV diagnostic testing schedule, but Mandatory Appendix III does not require the implementation of a risk-informed program. Applying risk in Mandatory Appendix III relaxes valve grouping requirements which allows for more flexible testing.
2) The JOG program has specific test intervals based on risk and margin. High risk MOVs have shorter test intervals dependent on margin with a maximum test interval of 6 years for high margin MOVs and 2 years for low margin MOVs. Mandatory Appendix III relies on the plant MOV engineer to set the correct test interval not to exceed 10 years based on specific MOV diagnostic test data. High risk valves can be justified to extend the test interval to 10 years.
3) The licensee's implementation of the JOG program is a commitment, whereas the implementation of Mandatory Appendix III is a regulatory requirement.
4) The JOG program applies to valve performance, and the licensee is responsible for justifying the periodic verification of the actuator performance.

ASME developed Code Case OMN-26 to reduce the amount of programmatic changes for licensees incorporating Mandatory Appendix III for the first time when the licensees update their IST program plans. Code Case OMN-26 aligns those portions of Mandatory Appendix III to follow the JOG approach of the test interval being based on both margin and risk that has been successfully implemented for the last 20 years. In some instances, Code Case OMN-26 is more restrictive in that certain valves (without periodic design-basis testing) are not allowed to have test intervals up to the 10-year interval allowed in Mandatory Appendix III. On the other hand, Code Case OMN-26 will allow certain valves to have test intervals based on their risk and margin that are beyond the 10-year interval in Appendix III. The NRC staff considers the extensions of the test intervals in Code Case OMN-26 to be reasonable based on many years of successful test data in implementing the JOG program by nuclear power plant licensees.

Another improvement in Code Case OMN-26 is that for high-risk valves with very high margins that are successfully stroked at least once per operating cycle under full design pressure and flow, the test interval may be extended to 12 years. Similarly, the diagnostic test interval for low-risk valves with very high margins and that are successfully stroked at least once per operating cycle under full design pressure and flow, the test interval may be extended to 16 years. Essentially, each successful stroke under full design pressure and flow is a reasonable demonstration of a very high margin MOV being operationally ready to perform its safety function without diagnostic test equipment.

In its letter dated July 6, 2020, the licensee states that the provisions of Code Case OMN-26 will be implemented in their entirety, including all tables and associated notes. The licensee specifies minor clarifications of the notes in the tables in Code Case OMN-26 to be consistent with its normal plant operations. The NRC staff has determined that the licensee's proposed alternative to implement Code Case OMN-26, as described in the licensee's letters dated January 31, 2020, and July 6, 2020, at the nuclear power plants listed in Table 1 of this SE, provides an acceptable level of quality and safety for their current 10-year IST program intervals.

4.0 CONCLUSION

As described above, the NRC staff concludes that the proposed alternative to implement ASME OM Code Case OMN-26, as described in the licensee's letters dated January 31, 2020, and July 6, 2020, provides an acceptable level of quality and safety for the nuclear power plants listed in Table 1 of this SE. 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).

Therefore, the NRC staff authorizes the proposed alternative for the implementation of ASME OM Code Case OMN-26, for the specified 10-year IST program intervals for the nuclear power plants listed in Table 1 of this SE.

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

Principal Contributor: Michael Farnan, NRR

Date of issuance: September 1, 2020

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2; CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2; CLINTON POWER STATION, UNIT NO. 1; R. E. GINNA NUCLEAR POWER PLANT; LIMERICK GENERATING STATION, UNITS 1 AND 2; NINE MILE POINT, UNITS 1 AND 2; AND PEACH BOTTOM ATOMIC POWER STATION, UNITS 2 AND 3 – REQUEST TO USE ALTERNATIVE CODE CASE OMN-26 (EPID L-2020-LLR-0012) DATED SEPTEMBER 1, 2020

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

September 3, 2021

Mr. David P. Rhoades
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; CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2; CLINTON POWER STATION, UNIT NO. 1; 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-28 (EPID L-2021-LLR-0056)

Dear Mr. Rhoades:

By application dated August 5, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21217A117), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request in accordance with paragraph 50.55a(z)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR) for a proposed alternative to certain requirements of 10 CFR 50.55a, "Codes and standards," for Braidwood Station (Braidwood), Units 1 and 2; Calvert Cliffs Nuclear Power Plant (Calvert Cliffs), Units 1 and 2; Clinton Power Station (Clinton), Unit No. 1; Limerick Generating Station (Limerick), Units 1 and 2; Nine Mile Point Nuclear Station (NMP), Units 1 and 2; Peach Bottom Atomic Power Station (Peach Bottom), Units 2 and 3; and R. E. Ginna Nuclear Power Plant (Ginna) (collectively, the facilities).

The American Society of Mechanical Engineers (ASME), *Operation and Maintenance of Nuclear Power Plants*, Division 1, Section IST (OM Code), as incorporated by reference in 10 CFR 50.55a, specifies requirements for the inservice testing (IST) of nuclear power plant components. Exelon requests to use the ASME OM Code Case OMN-28, "Alternative Valve Position Verification Approach to Satisfy ISTC-3700 for Valves Not Susceptible to Stem-Disk Separation," as an alternative to the IST requirements in the 2012 Edition of the ASME OM Code, as supplemented by 10 CFR 50.55a, for certain specified valves at its facilities.

The regulations in 10 CFR 50.55a(z) state, in part, that alternatives to the requirements in paragraphs (b) through (h) of 10 CFR 50.55a may be authorized by the U.S. Nuclear Regulatory Commission (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.

The NRC staff has reviewed Exelon's application and concludes, as set forth in the enclosed safety evaluation, that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the licensee to use the proposed alternative to implement the ASME OM Code Case OMN-28 in its entirety, as specified in its August 5, 2021, application, for the verification of valve position indication for valves identified as having position indication requirements (referred to as PI requirements) in the updated IST Program Plans referenced below that are not susceptible to stem-disk separation, in lieu of the requirements in the ASME OM Code (2012 Edition), Subsection ISTC, paragraph ISTC-3700, as incorporated by reference in 10 CFR 50.55a and supplemented by 10 CFR 50.55a(b)(3)(xi). This authorization is for the remainder of the current 10-year IST intervals at Braidwood, Units 1 and 2; Calvert Cliffs, Units 1 and 2; Clinton, Unit No. 1; Limerick, Units 1 and 2; NMP, Units 1 and 2; Peach Bottom, Units 2 and 3; and Ginna.

The updated IST Program Plans applicable to the current 10-year IST intervals for each facility are the following:

1. Braidwood, Units 1 and 2, "Inservice Testing Program, Fourth Ten Year Interval," Revision 4, submitted by letter dated April 28, 2021 (ADAMS Package Accession No. ML21118A009);
2. Calvert Cliffs, Units 1 and 2, "Inservice Testing (IST) Program Plan, Fifth Ten-Year Interval," Revision 00, submitted by letter dated July 6, 2018 (ADAMS Accession No. ML18192B990);
3. Clinton, Unit No. 1, "Inservice Testing (IST) Program Plan, 4th Ten-Year Interval," Revision 1, submitted by letter dated May 23, 2021 (ADAMS Accession No. ML21225A189);
4. Limerick, Units 1 and 2, "Inservice Testing (IST) Program Plan, Fourth Ten-Year Interval," Revision 28, submitted by letter dated March 3, 2021 (ADAMS Accession No. ML21062A050);
5. NMP, Units 1 and 2 "Inservice Testing (IST) Program Plan, Unit 1 Fifth 10-Year Interval, Unit 2 Fourth 10-Year Interval," Revision 09, submitted by letter dated March 13, 2019 (ADAMS Accession No. ML19072A182);
6. Peach Bottom, Units 2 and 3, "Inservice Testing (IST) Program Plan, 5th Ten-Year Interval," Revision 006, submitted by letter dated November 29, 2018 (ADAMS Accession No. ML18337A196); and
7. Ginna, "Inservice Testing (IST) Program Plan, Sixth 10-Year Interval," Revision 0, submitted by letter dated February 5, 2020 (ADAMS Accession No. ML20036C593).

All other ASME OM Code requirements, as incorporated by reference in 10 CFR 50.55a, for which relief or an alternative was not specifically requested, and granted or authorized (as appropriate), in the subject request 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,

Nancy L. Salgado, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. STN 50-456, STN 50-457, 50-317, 50-318, 50-461, 50-352, 50-353, 50-220, 50-410, 50-277, 50-278, and 50-244

Enclosure:
Safety Evaluation

cc: Listserv

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-28

BRAIDWOOD STATION, UNITS 1 AND 2

CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2

CLINTON POWER STATION, UNIT NO. 1

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

R.E. GINNA NUCLEAR POWER PLANT

EXELON GENERATION COMPANY, LLC

DOCKET NOS. STN 50-456, STN 50-457, 50-317, 50-318, 50-461

50-352, 50-353, 50-220, 50-410, 50-277, 50-278, AND 50-244

1.0 INTRODUCTION

By application dated August 5, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21217A117), Exelon Generation Company, LLC (Exelon, the licensee) submitted a request in accordance with paragraph 50.55a(z)(1) of Title 10 of the *Code of Federal Regulations* (10 CFR) for a proposed alternative to certain requirements of 10 CFR 50.55a, “Codes and standards,” for Braidwood Station (Braidwood), Units 1 and 2; Calvert Cliffs Nuclear Power Plant (Calvert Cliffs), Units 1 and 2; Clinton Power Station (Clinton), Unit No. 1; Limerick Generating Station (Limerick), Units 1 and 2; Nine Mile Point Nuclear Station (NMP), Units 1 and 2; Peach Bottom Atomic Power Station (Peach Bottom), Units 2 and 3; and R. E. Ginna Nuclear Power Plant (Ginna) (collectively, the facilities).

The American Society of Mechanical Engineers (ASME), *Operation and Maintenance of Nuclear Power Plants*, Division 1, Section IST (OM Code), as incorporated by reference in 10 CFR 50.55a, specifies requirements for the inservice testing (IST) of nuclear power plant components. Exelon requests to use the ASME OM Code Case OMN-28, “Alternative Valve Position Verification Approach to Satisfy ISTC-3700 for Valves Not Susceptible to Stem-Disk Separation,” as an alternative to the IST requirements in the 2012 Edition of the ASME OM Code, as supplemented by 10 CFR 50.55a, for certain specified valves at its facilities.

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(f)(4) state, in part, that throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the IST requirements (except design and access provisions) set forth in the ASME OM Code and addenda that become effective subsequent to editions and addenda specified in 10 CFR 50.55a(f)(2) and (3) and that are incorporated by reference in 10 CFR 50.55a(a)(1)(iv), to the extent practical within the limitations of design, geometry, and materials of construction of the components. The 2012 edition of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a with conditions, is applicable to the current 10-year IST intervals at the facilities.

The NRC regulations in 10 CFR 50.55a(b)(3)(xi), "OM condition: Valve Position Indication," state the following:

> When implementing paragraph ISTC-3700, "Position Verification Testing," in the ASME OM Code, 2012 Edition through the latest edition and addenda of the ASME OM Code incorporated by reference in paragraph (a)(1)(iv) of this section [10 CFR 50.55a], licensees shall verify that valve operation is accurately indicated by supplementing valve position indicating lights with other indications, such as flow meters or other suitable instrumentation to provide assurance of proper obturator position for valves with remote position indication within the scope of Subsection ISTC including its mandatory appendices and their verification methods and frequencies.

The regulations in 10 CFR 50.55a(z) state, in part, that alternatives to the requirements in paragraphs (b) through (h) of 10 CFR 50.55a 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 Request

3.1.1 ASME Code Components Affected

In its application, the licensee states that the valves covered by ASME OM Code Case OMN-28 are those stem-disk separation non-susceptible valves with remote position indication within the scope of Subsection ISTC of the ASME OM Code (2012 Edition) including its mandatory appendices and their verification methods and frequencies, in accordance with regulatory requirements. The licensee notes that a listing of the valves requiring position indication and testing in accordance with ASME OM Code, Subsection ISTC, paragraph ISTC-3700, was submitted with the IST Program update performed as part of the interval update and latest revisions for each facility. The latest revision of the updated IST Program Plans submitted to the NRC for the current 10-year IST intervals at each facility are referenced in Table 1 below.

3.1.2 Applicable Code Edition and Addenda

The 2012 edition of the ASME OM Code, as incorporated by reference in 10 CFR 50.55a with conditions, is applicable to the current 10-year IST intervals at the facilities. The current IST interval, including the start and end dates, and latest revision of the updated IST Program Plan for each plant is provided in Table 1 below.

Table 1: Current IST Interval and Program Plan Information.

Plant	IST Interval	Start	End	IST Program Plan Submittal Date and ADAMS Accession No.
Braidwood, Units 1 and 2	4th	7/29/2018	7/28/2028	4/28/2021 ML21118A009 (Package)
Calvert Cliffs, Units 1 and 2	5th	7/1/2018	6/30/2028	7/6/2018 ML18192B990
Clinton, Unit No. 1	4th	7/1/2020	6/30/2030	5/23/2021 ML21225A189
Limerick, Units 1 and 2	4th	1/8/2020	1/7/2030	3/3/2021 ML21062A050
NMP, Unit 1	5th	1/1/2019	12/31/2028	3/13/2019 ML19072A182
NMP, Unit 2	4th	1/1/2019	12/31/2028	3/13/2019 ML19072A182
Peach Bottom, Units 2 and 3	5th	11/16/2018	8/14/2028	11/29/2018 ML18337A196
Ginna	6th	1/1/2020	12/31/2029	2/5/2020 ML20036C593

3.1.3 Applicable Code Requirements

Paragraph ISTC-3700, "Position Verification Testing," of the ASME OM Code (2012 Edition) states:

> Valves with remote position indicators shall be observed locally at least once every 2 yr [years] to verify that valve operation is accurately indicated. Where practicable, this local observation should be supplemented by other indications such as use of flow meters or other suitable instrumentation to verify obturator position. These observations need not be concurrent. Where local observation is not possible, other indications shall be used for verification of valve operation.
>
> Position verification for active MOVs [motor-operated valves] shall be tested in accordance with Mandatory Appendix III of this Division.

As noted in Section 2.0 of this safety evaluation (SE), when implementing this paragraph, "licensees shall verify that valve operation is accurately indicated by supplementing valve position indicating lights with other indications, such as flow meters or other suitable instrumentation to provide assurance of proper obturator position for valves with remote position indication within the scope of Subsection ISTC [of the ASME OM Code] including its mandatory appendices and their verification methods and frequencies."

3.1.4 Licensee's Proposed Alternative, Reason for Request, and Basis for Use

The licensee's proposed alternative is to use ASME OM Code Case OMN-28 (approved for use by ASME on March 4, 2021) in lieu of the requirements in paragraph ISTC-3700 of the ASME OM Code for the specific valves described in Section 3.1.1 of this SE. The licensee did not propose any deviations from the code case. The licensee stated that implementation of Code Case OMN-28 would provide an acceptable level of quality and safety in accordance with 10 CFR 50.55a(z)(1).

The licensee stated: "The position verification with Supplemental Position Indication (SPI) requires the valves to be exercised in the open and closed direction and the valve's position verified by other indications such as use of flow meters or other suitable instrumentation to verify obturator position." The licensee also stated that Code Case OMN-28 "has been determined to satisfy the valve position verification requirements in ASME OM Code, Subsection ISTC, paragraph ISTC-3700, for valves that are not susceptible to stem-disk separation."

Valves with remote position indication within the scope of ASME OM Code, Subsection ISTA, paragraph ISTA-1100, "Scope," not satisfying the scope and provisions of Code Case OMN-28 shall meet the valve position verification requirements in ASME OM Code, Subsection ISTC, paragraph ISTC-3700, in accordance with the regulatory requirements.

3.2 NRC Staff's Evaluation

The NRC staff reviewed the provisions in the ASME OM Code Case OMN-28 used to demonstrate that the remote position indicators for valves that are not susceptible to stem-disk separation accurately represent valve operation (open and closed). The code case requires remote position verification for valves that are not susceptible to stem-disk separation to include: (a) observation of evidence, such as changes in system pressure, flow rate, level, or temperature, that represent valve operation; (b) local observation of valve operation where practicable; and (c) stem-disk separation evaluation shall be documented and available for regulatory review demonstrating that the stem-disk connection is not susceptible to separation. For active valves not susceptible to stem-disk separation, the code case states that these observations shall be performed at least once every 12 years. For passive valves not susceptible to stem-disk separation, the code case states that these observations shall be performed whenever the valve is stroked from its passive position or every 12 years, whichever is greater.

The licensee proposes to implement the ASME OM Code Case OMN-28 in its entirety, without any deviations, for the specific valves described Section 3.1.1 of this SE. Based on the review of the provisions in the code case, the NRC staff has reasonable assurance that the remote position indicators for these specific valves will be properly verified to accurately represent valve operation (open and closed). Therefore, the NRC staff finds that, for these specific valves, the implementation of the proposed alternative at each facility provides an acceptable level of quality and safety in accordance with 10 CFR 50.55a(z)(1).

4.0 CONCLUSION

As set forth above, the NRC staff determined that the licensee's proposed alternative to implement the ASME OM Code Case OMN-28 in its entirety, without any deviations, for the specified valves provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the licensee to use the proposed alternative to implement the ASME OM Code Case OMN-28 in its entirety, as specified in its August 5, 2021, application, for the verification of valve position indication for valves identified as having position indication requirements (referred to as PI requirements) in the IST Program Plans listed in Table 1 that are not susceptible to stem-disk separation, in lieu of the requirements in the ASME OM Code (2012 Edition), Subsection ISTC, paragraph ISTC-3700, as incorporated by reference in 10 CFR 50.55a and supplemented by 10 CFR 50.55a(b)(3)(xi). This authorization is for the remainder of the current 10-year IST intervals at Braidwood, Units 1 and 2; Calvert Cliffs, Units 1 and 2; Clinton, Unit No. 1; Limerick, Units 1 and 2; NMP, Units 1 and 2; Peach Bottom, Units 2 and 3; and Ginna.

All other ASME OM Code requirements, as incorporated by reference in 10 CFR 50.55a, for which relief or an alternative was not specifically requested, and granted or authorized (as appropriate), in the subject request remain applicable.

Principal Contributors: Thomas G. Scarbrough, NRR

Date of issuance: September 3, 2021

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2; CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2; CLINTON POWER STATION, UNIT NO. 1; 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-28 (EPID L-2021-LLR-0056) DATED SEPTEMBER 3, 2021

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ADAMS Accession No. ML21230A206

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NAME	BPurnell	SRohrer	ITseng
DATE	08/30/2021	08/19/2021	08/30/2021
OFFICE	NRR/DORL/LPL3/BC		
NAME	NSalgado (SWall for)		
DATE	09/03/2021		

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

January 27, 2020

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 1 – PROPOSED ALTERNATIVE TO THE REQUIREMENTS OF THE ASME CODE FOR WATER LEG PUMP TESTING (EPID L-2019-LLR-0052)

Dear Mr. Hanson:

By letter dated May 23, 2019, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19143A305), Exelon Generation Company, LLC (EGC, the licensee), submitted a request for the use of an alternative to the requirements of certain American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants (OM Code), requirements at Clinton Power Station (CPS), Unit 1.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use an alternative for testing certain waterleg pumps on the basis that the alternative testing provides an acceptable 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 EGC has adequately addressed the regulatory requirements of 10 CFR 50.55a(z)(1). The NRC staff finds that the proposed alternative relief request (RR)-3201 provides an acceptable level of quality and safety. Therefore, the NRC staff authorizes RR-3201 for the fourth 10-year inservice testing interval at CPS, Unit 1, which is currently scheduled to start on July 1, 2020, and end on June 30, 2030.

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

If you have any questions, please contact the Senior Project Manager, Joel S. Wiebe, at (301) 415-6606 or Joel.Wiebe@nrc.gov.

Sincerely,

/RA/

Nancy L. Salgado, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensin
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosure: Safety Evaluation

cc: Listserv

SUBJECT: CLINTON POWER STATION, UNIT 1 – PROPOSED ALTERNATIVE TO THE REQUIREMENTS OF THE ASME CODE FOR WATER LEG PUMP TESTING (EPID L-2019-LLR-0052) DATED JANUARY 27, 2020

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NAME	JWiebe	SRohrer	SBailey*	NSalgado
DATE	01/16/2020	01/14/2020	01/06/2020	01/27/2020

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST TO USE PROPOSED ALTERNATIVE RR-3201

REGARDING THE TESTING OF CERTAIN WATERLEG PUMPS

EXELON GENERATION COMPANY, LLC

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated May 23, 2019 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML19143A305), Exelon Generation Company, LLC, (EGC, the licensee), submitted an alternative to the requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code), associated with pump inservice testing (IST) at Clinton Power Station (CPS), Unit 1.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use the proposed alternative in relief request (RR)-3201 on the basis that the alternative provides an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

Regulation 10 CFR 50.55a(f), states, in part, that IST of certain ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with the specified ASME OM Code and applicable addenda incorporated by reference in the regulations.

Regulation 10 CFR 50.55a(z) states that alternatives to the requirements of paragraph (f) of 10 CFR 50.55a may be used, when authorized by the U.S. Nuclear Regulatory Commission (NRC), if the licensee demonstrates: (1) the proposed alternatives would provide 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 RR-3201

The licensee requested an alternative to the pump testing requirements of the ASME OM Code.

Table ISTB-3000-1, "Inservice Test Parameters," specifies the parameters to be measured during inservice tests.

ISTB-3300, "Reference Values," (e)(2) states, "Reference values shall be established at the comprehensive pump test flow rate for the Group A and Group B tests, 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, "Group A Test Procedure," states, in part, "Group A tests shall be conducted with the pump operating as close as practical to a specified reference point and within the variances from the reference point as described in this paragraph . . . ."

ISTB-5121(b) states, "The resistance of the system shall be varied until the flow rate is as close as practical to the reference point with the variance not to exceed +2% or −1% of 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 is as close as practical to the reference point with the variance not to exceed +1% or −2% of the reference point and the flow rate determined and compared with the reference flow rate."

The licensee has requested to use the proposed alternative described below for the pumps listed in Table 1. The pumps are ASME Code, Section III, Class 2, and are classified as Group A pumps.

Table 1

Component	Description	Rated Flow (gallons per minute)	Rated Differential Pressure (Feet)
1E21-C002	Low Pressure Core Spray (LPCS) and Residual Heat Removal (RHR) A Waterleg Pump	43	199
1E12-C003	RHR Loop B/C Waterleg Pump	43	199
1E51-C003	Reactor Core Isolation Cooling (RCIC) Waterleg Pump	50	130

The CPS, Unit 1, fourth 10-year IST program interval begins on July 1, 2020, and is scheduled to end on June 30, 2030. The applicable ASME OM Code edition for the fourth 10-year IST program interval is the 2012 Edition.

Reason for RR

The waterleg pumps operate continuously to keep their supported system's pump discharge header filled with water. Their hydraulic performance is not critical. In order to perform a quarterly ASME OM Code Group A test on these pumps, they must be isolated from their supported system, which means the main system must be declared inoperable or an abnormal alignment is required to keep the main header pressurized and full of water.

Proposed Alternative

Quarterly monitoring of the pumps' discharge pressure (i.e., main system header pressure) and bearing vibration will be performed during normal operating conditions in lieu of the ASME OM Code quarterly Group A test. Changes in the supported system's main header pressure and vibration levels identified during testing will be evaluated and trended to assess the waterleg pump's performance. A biennial comprehensive pump test will continue to be performed on the waterleg pumps in accordance with the requirements specified in ISTB-5123, "Comprehensive Test Procedure."

In addition to this proposed quarterly testing, each waterleg pump's supported system pump discharge header has instrumentation that continuously monitors the main header pressure and provides an alarm in the main control room when its low pressure setpoint is reached. This will provide indication that the associated waterleg pump is no longer performing its safety function.

The waterleg pumps are also currently being monitored under the CPS, Unit 1, Vibration Monitoring Program.

Each of these waterleg pump's supported system pump discharge header is verified to be sufficiently filled with water in accordance with technical specification (TS) surveillance requirements (SRs) 3.5.1.1 and 3.5.3.1. Any indication that the supported system's pump discharge header piping is not sufficiently filled with water would provide timely indication that the associated waterleg pump's performance has degraded.

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 main pump(s) 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 can maintain their associated discharge header piping full of water.

In lieu of the ASME OM Code-required Group A test, 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 main headers that would 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, Unit 1, TS SRs 3.5.1.1 and 3.5.3.1 require periodic verification 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 periodic 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 ASME OM Code requirements and will provide the required test results reflecting the mechanical condition of the pumps. Also, the pumps are monitored in the CPS, Unit 1, Vibration Monitoring Program, which exceeds the vibration monitoring requirements in the ASME OM Code. The proposed alternative will therefore provide an acceptable level of quality and safety for waterleg pumps 1E12-C003, 1E21-C002, and 1E51C003.

4.0 CONCLUSION

As set forth above, the NRC staff determined that alternative RR-3201 for CPS, Unit 1, provides an acceptable level of quality and safety for the pumps listed in Table 1. Accordingly, the NRC staff concludes that the licensee has adequately addressed all the regulatory requirements set forth in 10 CFR 50.55a(z)(1). Therefore, the NRC staff authorizes the use of the alternative RR- 3201 for CPS, Unit 1, for the fourth 10-year IST program interval which begins on July 1, 2020, and is scheduled to end on June 20, 2030.

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

Principal Contributor: R. Wolfgang

<u>ATTACHMENT 7</u>

<u>CODE CASE INDEX</u>

CODE CASE NUMBER	**TITLE**
OMN-16 Rev 2 (2017 Edition)	Use of a Pump Curve for Testing
OMN-20 (2017 Edition)	Inservice Test Frequency
OMN-26	Alternate Risk-Informed and Margin Based Rules for Inservice Testing of Motor Operated Valves
OMN-28	Alternative Valve Position Verification Approach to Satisfy ISTC-3700 for Valves Not Susceptible to Stem-Disk Separation

ATTACHMENT 8

COLD SHUTDOWN JUSTIFICATION INDEX

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

Cold Shutdown Justification

CSJ-101

Valve Number	System	Safety Class	Category
1B21-F022A 1B21-	MS	1	A
F022B	MS	1	A
1B21-F022C	MS	1	A
1B21-F022D	MS	1	A
1B21-F028A 1B21-	MS	1	A
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 3 "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. 3, 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 ≥ -0.25 psid and ≤ 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 3 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/3, 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/3 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/3, 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 shutdown to affect repairs.

Based on the above discussions, stroking of these valves on a quarterly basis can result in NUREG 1482 Rev 3 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

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/3, 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/3, 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/3, 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/3, 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

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. 3, 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/3, 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 3, 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 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 3, 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

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-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

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-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.

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.

<u>Refuel Justification</u>

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 3, 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/3, 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 2
4/07/2022

CORPORATE TECHNICAL POSITION INDEX

Designator	Description	Issue Date
CTP-IST-001, Rev.2	Preconditioning of IST Components	10/09/2018
CTP-IST-002, Rev.1	Quarterly Pump Testing Under Full Flow Conditions	02/01/2012
CTP-IST-003, Rev.0	Quarterly Testing of Group B Pumps	09/10/2009
CTP-IST-004, Rev.1	Classification of Pumps: Centrifugal vs. Vertical Line Shaft	02/01/2012
CTP-IST-005, Rev.1	Preservice Testing of Pumps	02/01/2012
CTP-IST-006, Rev.1	Testing of Power Operated Valves with both Active and Passive Safety Functions (Not implemented at CPS)	02/01/2012
CTP-IST-007, Rev.2	Skid-Mounted Components	10/09/2018
CTP-IST-008, Rev.2	Position Verification Testing	10/09/2018
CTP-IST-009, Rev. 0	ASME Class 2 & 3 Relief Valve Testing Requirements	02/01/2012
CTP-IST-010, Rev. 0	ERV and PORV Testing Requirements	02/01/2012
CTP-IST-011, Rev. 1	Extension of Exercise Testing Frequencies to Cold Shutdown or Refueling Outage	10/09/2018
CTP-IST-012, Rev. 0	Use of ASME OM Code Cases for Inservice Testing	02/01/2012
CTP-IST-013, Rev. 0	Exercise Testing Requirements for Valves with Fail-Safe Actuators	02/01/2012
CTP-IST-014, Rev.0	Bi-directional Testing of Check Valves to Their Safety and Non-Safety Related Positions	02/01/2012
CTP-IST-015, Rev.0:	Appendix III – Mix of MOV Static and Dynamic Testing	10/09/2018
CTP-IST-016, Rev.0:	Appendix III – Inservice Test Interval	10/09/2018
CTP-IST-017, Rev. 0:	Supplemental Position Indication	08/04/2020
CTP-IST-018, Rev. 0:	Missed Test / Inspection Opportunity versus Missed Surveillance	08/04/2020

ATTACHMENT 13

CORPORATE TECHNICAL POSITIONS

Number: **CTP-IST-001, Rev. 2**

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 2 (October, 2013), 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"

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 2012 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. 2**

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.2, 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. 2**

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. 2, 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 permitted for relief valve testing in accordance with ASME OM Code Case OMN-20.

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. 1**

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." Code Case OMN-20 identifies 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; however, reference 2 provides guidance regarding the regulatory opinion of what constitutes impracticality.
NUREG 1482, Rev. 2 section 2.4.5 Deferring Valve Testing to Cold Shutdown or Refueling Outages states:

- Exercising valves on a cold shutdown or refueling outage frequency does not constitute a deviation from the Code. Subsection ISTC-3520 provides guidance for testing valves during cold shutdown or refueling outages if it is impractical to test during operation.
- Impractical conditions justifying test deferrals may include the following situations that could result in an unnecessary plant shutdown, cause 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:

o inaccessibility
o testing that would require major plant or hardware modifications
o testing that has a high potential to cause a reactor trip
o testing that could cause system or component damage
o testing that could create excessive plant personnel hazards
o existing technology that will not give meaningful results

NUREG 1482, Rev. 2 section 3.1.1 Deferring Valve Testing to Cold Shutdown or Refueling Outages states:

- The OM Code allows licensees to test valves during cold shutdowns if it is impractical to test the valves quarterly during plant operation. Subsection ISTC-3500 provides guidance and alternatives. Therefore, exercising valves during cold shutdown outages does not constitute a deviation from the OM Code and does not require a relief request if the licensee determines that quarterly testing is impractical. Similarly, the OM Code allows licensees to test valves during each refueling outage if it is impractical to test the valves during cold shutdowns. In such instances, the licensee should identify the valves for which testing is deferred and the inservice testing (IST) program document should specify the basis for determining that quarterly and/or cold shutdown testing is impractical.
- In the past, the NRC staff has provided examples of valves that be excluded from exercising (cycling) tests during plant operations. The excluded valves include the following examples:

o All valves that would cause a loss of system function if they were to fail in a nonconservative position during the cycling test. Valves in this category would typically include all non-redundant valves in lines such as a single discharge line from the refueling water storage tank (RWST) or accumulator discharge lines in PWRs and the HPCI turbine steam supply and HPCI pump discharge in BWRs. Other valves may fall into this category under certain system configurations or plant operating modes. For example, when one train of a redundant system [such as an emergency core cooling system (ECCS)] is inoperable, non-redundant valves in the remaining train should not be cycled because their failure would cause a loss of total system function.

Position: "Exercise" as described in the ASME code encompasses full-stroke and part-stroke. As described in ISTA-2000 – Definitions, exercising is a demonstration based on direct visual or indirect positive indications that the moving parts of a component function. Thus, 'exercise' is not defined as full-stroke or part-stroke it's simply exercising the valve to verify the moving parts of the component function properly.

Sections 2.4.5 and 3.1.1 of NUREG 1482, Rev. 2 provides only a small number of examples of impracticality and is not all encompassing or limiting. NUREG 1482 Rev. 2 also states, "Legally binding regulatory requirements are stated only in laws; NRC regulations; licenses, including technical specifications; or orders, not in NUREG-series publications." Therefore, it is not the intent of NUREG 1482 to legally bound utilities with examples provided in NUREG 1482. Additionally, the ASME OM Code does not define impracticability or what constitutes impracticality. 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".

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.
    a. Failures associated with the cycling of inaccessible valves during reactor power operation have caused the loss of safety functions of SSCs and has led to the following adverse impact and consequences: increased unidentified containment leakage, inoperable penetrations, increased radiation exposure, operations and chemistry workarounds causing increased personnel dose, forced plant shutdowns and potential damaging valve back-seating.

    Consequentially the above adverse consequences were a result of inaccessible valve cycling and caused a loss of safety function of either the cycled valve, the safety related system, primary containment or a combination of all three.

    Therefore, the consequences of an inaccessible valve failure that results in a loss of safety function (as stated above) are: increased unidentified containment leakage, inoperable penetrations, increased radiation exposure, operations and chemistry workarounds causing increased personnel dose, forced plant shutdowns and potential damaging valve back-seating and forced plant shutdowns. In most of the above consequences sites were forced to make systems inoperable and/or either a perform controlled plant shutdown, a rapid plant shutdown or a scram while generating power.

    Based on the above information, exercising of inaccessible valves within the Drywell of a BWR or inside specific containment locations of a PWR that causes a loss of safety function of either the cycled valve, the safety related system, primary containment will place stations in a configuration that could force either a controlled plant shutdown, a rapid plant shutdown or a scram while generating power SHALL be deemed impractical.

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 2, 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

Number: **CTP-IST-015, Rev. 0**

Title: **ASME Class 1 Main Steam Safety Valve (MSSV) 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 BWR pressure relief devices. The requirements for Class 1 BWR pressure relief devices are identified separately from those for Classes 2 and 3 BWR pressure relief devices. The requirements for Class 2 and 3 BWR pressure relief devices are identified together.

This Technical Position applies only to ASME Class 1 BWR safety and relief valves and ASME Class 2 PWR Main Steam Safety Valves (reference I-1350(a)). For the purposes of this Technical Position, the term "MSSV" will be used to apply to both types (i.e. safety and relief valves) and ASME Class 2 PWR Main Steam Safety Valves.

Position: This Technical Position applies to the testing, sample size and expanded scope of ASME Class 1 MSSVs and applicable ASME Class 2 PWR MSSVs.

A summary of Section I-1320 of Appendix is provided below:

- o 5-Year Test Interval Requirement
  - MSSVs shall be tested at least once every 5 years
  - No maximum limit is specified for the number of valves to be tested within each interval
  - A minimum of 20% of the valves from each valve group shall be tested within any 24-month interval
  - 20% Shall consist of valves that have not been tested during the current 5-year interval
  - The test interval for any individual valve shall not exceed 5 years
- o Replacement With Pretested Valves Requirement
  - For replacement of a full complement of valves, the valves removed from service shall be tested within 12 months of removal from the system
  - For replacement of a partial complement of valves, the valves removed from service shall be tested prior to resumption of electric power generation
    - o For each valve tested for which the as-found set-pressure (first test actuation) exceeds the greater of either the ±tolerance limit of the Owner-established set-pressure acceptance criteria of I-1310(e) or ±3% of valve nameplate set-pressure, two additional valves shall be tested from the same valve group.
    - o If the as-found set-pressure of any of the additional valves tested in accordance with I-1320 (c)(1) exceeds the criteria

noted therein, then all remaining valves of that same valve group shall be tested.

Based on the above information, a site MUST declare which MSSVs are being credited for IST testing to ensure the '5-Year Test Interval' requirements are met (declaration shall be made prior to testing). If the station decides to CREDIT ONLY the 20% minimum for IST testing in refueling outage 1, the station must ensure the remaining 80% is CREDITED and tested during the next refueling outage (i.e. refueling outage 2). If the station decides to CREDIT ONLY the 50% minimum for IST testing in refueling outage 1, the station must ensure the remaining 50% is CREDITED and tested during the next refueling outage (i.e. refueling outage 2).

Two examples of a partial complement replacement of MSSVs are provided below for guidance:

Example 1:

- MSSV population 13
    - 20% = 3 MSSV's
    - 3 MSSV's tested refueling outage 1
    - 10 MSSV's shall be tested during refueling outage 2
    - Total MSSV's tested within the '5 Year Test Interval' = 13 MSSV's
        - Note: For each IST CREDITED valve tested in which the as-found set-pressure exceeds acceptance criteria, two additional valves shall be tested (i.e. two additional valves shall be of the same type and manufacture that were NOT scheduled to be IST TESTED AND/OR CREDITED). If the as-found set-pressure of any of the additional valves exceed acceptance all remaining valves of that same valve group shall be tested

Example 2:

- MSSV population 13
    - 50% = 7 MSSV's
    - 7 MSSV's tested refueling outage 1
    - 6 MSSV's shall be tested during refueling outage 2
    - Total MSSV's tested within the '5 Year Test Interval' = 13 MSSV's
        - Note: For each IST CREDITED valve tested in which the as-found set-pressure exceeds acceptance criteria, two additional valves shall be tested (i.e. two additional valves shall be of the same type and manufacture that were NOT scheduled to be IST TESTED AND/OR CREDITED). If the as-found set-pressure of any of the additional valves exceed acceptance all remaining valves of that same valve group shall be tested.

          If applicable, MSSVs removed for ASME OM requirements shall also be credited for Technical Specification

Surveillance requirements. If IST partial complement is utilized, MSSVs CREDITED for IST shall be CREDITED for Technical Specifications.

MSSVs removed due to maintenance issues must be designated as “Maintenance” MSSVs. “Maintenance” MSSVs are NOT IST CREDITED and fall outside the scope of ASME OM requirements as it relates to the scheduling of testing and expanded scope.

Example 3:

- MSSV population 13
  - 20% = 3 MSSV's
  - 1 Maintenance MSSV
  - 3 MSSV's tested refueling outage 1 (maintenance valve is NOT included)
  - 10 MSSV's shall be tested during refueling outage 2
  - Total MSSV's tested within the '5 Year Test Interval' = 13 MSSV's
    - Note: For each IST CREDITED valve tested in which the as-found set-pressure exceeds acceptance criteria, two additional valves shall be tested (i.e. two additional valves shall be of the same type and manufacture that were NOT scheduled to be IST TESTED AND/OR CREDITED). If the as-found set-pressure of any of the additional valves exceed acceptance all remaining valves of that same valve group shall be tested.

Example 4:

- MSSV population 13
  - 50% = 7 MSSV's
  - 7 MSSV's tested refueling outage 1 (all MSSVs removed are Technical Specifications)
  - 6 MSSV's shall be tested during refueling outage 2
  - Total MSSV's tested within the '5 Year Test Interval' = 13 MSSV's
    - Note: For each IST CREDITED valve tested in which the as-found set-pressure exceeds acceptance criteria, two additional valves shall be tested (i.e. two additional valves shall be of the same type and manufacture that were NOT scheduled to be IST TESTED AND/OR CREDITED). If the as-found set-pressure of any of the additional valves exceed acceptance all remaining valves of that same valve group shall be tested.

References:

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

Number: **CTP-IST-016, Rev. 0**

Title: **Elimination of On-line Exercising (Full Stroke and Partial Stroke) of Main Steam Isolation Valves (MSIVs)**

Applicability: All Exelon IST Programs

Background: MSIVs are partially stroked online via quarterly Technical Specification requirements and quarterly ASME OM Code requirements.

Several MSIV failures have occurred as a result of on-line partial exercising/stroking. These failures have occurred within the Exelon fleet and the nuclear industry and have resulted in unnecessary plant shutdowns and caused unnecessary plant challenges to safety systems.

Position: Continuing to partially stroke MSIVs while units are online will increase the risk of a valve closure when the unit is generating power; and will continue to place each site at risk of unnecessary plant shutdown and cause unnecessary challenges to safety systems.

Exelon has determined that online partial stroke of MSIVs while units are generating power are impractical. Additionally, the risk of part-stroke testing the MSIVs during power operations outweighs the potential safety benefit of performing the testing. Therefore, all sites within the Exelon fleet shall eliminate online partial or full exercising/stroking of MSIVs.

Elimination of online partial exercising/stroking of MSIVs will be accomplished through Cold Shutdown Justifications (CSJs), Refueling Outage Justifications (ROJs) and/or Technical Specification Surveillance Frequency Program (TSFP).

Below is an excerpt from ASME OM CODE section ISTC-3521 & NUREG 1482, Rev. 2 section 2.4.5. Sites will utilize both excerpts as a means of eliminating online partial stroking of MSIVs. Each Exelon station shall develop a CSJ or ROJ in accordance with steps ISTC-3521 (c), (d) or (e).

<u>ASME OM Code Requirement is listed below:</u>

ISTC-3521 Category A and Category B Valves. Category A and Category 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), and exercising or examining check valves during plant operation in a manner that verifies obturator travel to the closed, full-open, or partially open position 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) <u>if exercising is not practicable</u> during operation at power, it may be limited to full-stroke exercising during cold shutdowns;

(d) <u>if exercising is not practicable</u> 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) <u>if exercising is not practicable</u> during operation at power or cold shutdowns, it may be limited to full-stroke during refueling outages

<u>NUREG 1482 Rev. 2 guidance is listed below:</u>

2.4.5 Deferring Valve Testing to Cold Shutdown or Refueling Outages states:

- Exercising valves on a cold shutdown or refueling outage frequency does not constitute a deviation from the Code. Subsection ISTC-3520 provides guidance for testing valves during cold shutdown or refueling outages if it is impractical to test during operation.
- Impractical conditions justifying test deferrals may include the following situations that could result in <u>an unnecessary plant shutdown</u>, <u>cause unnecessary challenges to safety systems</u>, place undue stress on components, <u>cause unnecessary cycling of equipment</u>, or unnecessarily reduce the life expectancy of the plant systems and components:
    - <u>inaccessibility</u>
    - testing that would require major plant or hardware modifications
    - <u>testing that has a high potential to cause a reactor trip</u>
    - testing that could cause system or component damage
    - testing that could create excessive plant personnel hazards
    - existing technology that will not give meaningful results

Note: “Exercise” as described in the ASME code encompasses full-stroke and part-stroke. As described in ASME OM Code section ISTA-2000, exercising is the demonstration based on direct visual or indirect positive indications that the moving parts of a component function. Thus, “exercise” is not defined as full-stroke or part-stroke it's simply exercising the valve to verify the moving parts of the component.

As noted above, several failures within the fleet while partially exercising/stroking MSIV's have resulted in unnecessary plant shutdowns & cause unnecessary challenges to safety systems thus, it is considered impractical to exercise MSIVs during power operations.

<u>Method of eliminating partial exercise/stroking</u>

1. Station shall submit CSJ or ROJ to eliminate online partial stroke for ASME OM Code IST purposes.

2. Station shall submit applicable paperwork via Technical Surveillance Frequency Program to eliminate online partial stroking for Technical Specification purposes.

    a. If elimination of online stroking is not immediate, station shall use a phased approach to accomplish online stroke elimination.

    b. Online stroking for Technical Specification will continue until phase approached is complete and partial stroking of MSIVs online is eliminated.

Partially stroking MSIVs due to Technical Specifications purposes and not ASME OM Code purposes does not invalidate the CSJ or ROJ.

It is Exelon's position that MSIVs that are continued to be stroked online will continue to place stations in a configuration that could unnecessarily force a unit shutdown. The vulnerabilities during online partial stoking will remain until online stroking of MSIVs are eliminated. Therefore, impracticality of partially stroking MSIVs online remains even if MSIVs are partially stroked via Technical Specification requirements.

References:

1. ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 1995 Edition and later, Subsection ISTC.
2. NUREG-1482, Revision 2, Guidelines for Inservice Testing at Nuclear Power Plants, Sections 2.4.5

Number: CTP-IST-017, Rev. 0

Title: Supplemental Position Indication

Applicability: Sites committed to the ASME OM 2012 Edition

Background: 10 CFR 50.55a(b)(3)(xi) placed a condition on ISTC-3700 Position Verification Testing. The condition states: When implementing ASME OM Code, 2012 Edition, Subsection ISTC-3700, "Position Verification Testing", licensees shall verify that valve operation is accurately indicated by supplementing valve position indicating lights with other indications, such as flow meters or other suitable instrumentation, to provide assurance of proper obturator position.

Position: The 10 CFR 50.55a condition requiring Supplemental Position Indication (SPI) is silent on the frequency. Therefore, the frequency reverts to as prescribed in ISTC-3700 which is at least once every 2 years. The condition does not alter or apply to the Code Guidance that states Position Verification for Active MOVs shall be tested in accordance with Mandatory Appendix III. Hence, SPI for Active MOVs in the Appendix III program will be performed at the prescribed MOV inservice testing frequency.

The basis for 10 CFR 50.55a condition as described in NRC correspondence and presentations is to verify stem-to-disc integrity.

Exelon's position for performing SPI is to supplement Position Verification in the Open and Closed position unless otherwise justified. SPI also does not need to be performed sequentially nor concurrent with Position Verification. Open and Close SPI can be performed at any time within the SPI frequency time period with grace allowance per OMN-20.

Valve diagnostics can be utilized as SPI for any style valve and/or actuator combination provided that positive indication of seating and unseating are observed. If diagnostics cannot identify valve seating or unseating, then an alternate SPI method is required. When an alternate SPI method is required, the frequency of the alternate SPI method remains the same as the Appendix III MOV inservice testing frequency.

SPI Justifications

SPI can be performed in one position only (typically Open) if an evaluation is performed that documents justification for how the single tests ensures stem-to-disc integrity. The justification is not an Engineering Technical Evaluation but a document that provides adequate detail for the basis of single direction testing only. The basis should provide valve design, actuator design and/or operating details why stem-to-disc integrity is ensured with the single test only. The justification should be reviewed and have concurrence from a Fleet IST SME before implementation. The justification or reference to the justification (e.g. IR Assignment number or ECR) shall be documented in the IST Program Basis Document.

Generic and Sample Justifications

Flow-over globe valves

Regardless of the actuator type, flow over globe valves will not pass required flow in the open position if stem-to-disc integrity is not intact. Note that some flow-over globe valves have pilot valves that may require additional review and justification. Therefore, flow-over globe valves can have SPI test in the open position only by verification that the valve is passing expected flow. (Reference: Braidwood Main Steam Valve Bypass, 1MS101A)

<u>MOVs and Manual valves that utilize the valve disc as the anti-rotation device</u>

This justification applies to Passive Motor Operated Valves (MOVs) and manual rising stem valves that utilize the valve disc as the anti-rotation device (Active MOV SPI is satisfied by diagnostic testing). Valves that utilize an anti-rotation device of any kind external to the valve are excluded from utilizing this justification. Examples of external anti-rotation devices may include a stem key and keyway or anti-rotation arm and yoke slot. These devices are most frequently used on globe valves but may be a part of any rising stem valve design.

The justification below is written for Motor Operated Valves which are more prevalent than manual valves, but the same principles of valve operation, failure mechanism and detection can be applied to manual valves.

Motor operated valves operate by rotating a stem nut which converts the rotation into translation of the threaded stem. This translation only occurs if the stem is restricted from rotating along with the stem nut. For gate valves, the actuator torque applied to the stem is resisted by the disc being restrained by the valve body guides providing the necessary anti-rotation to cause stem and disk travel.

Based on the MOV gate valve principle of operation, translation of the stem is only successful if stem-to-disc integrity is satisfactory. If the stem were to become separated from the valve disk, the ability to counteract the actuator torque would be limited to the stem packing friction which would not be sufficient to completely prevent rotation of the stem. Therefore, with the loss of stem-to-disc integrity, the stem would rotate along with the stem nut with no or minimal translation.

Based on MOV logic, if stem-to-disc integrity was lost and the valve was stroked open, the motor would de-energize and open indication would be observed remotely when the applicable actuator limit switches actuated. However, for torque-controlled valves, when the valve was stroked closed, remote indication would initially appear correct, but the motor would continue to run as the stem would again rotate along with the stem nut with no or minimal translation. If translation were sufficient to cause the stem to contact the disk, there would still not be sufficient resistance from the resultant stem to disk contact to open the torque switch. As a result, the control room indication would periodically cycle from closed to mid position to open and back again for as long as the motor continues to run. Limit seated valves would de-energize and indicate closed with no or little translation of the stem.

By direct observation of the stem during remote operation (local observation for a manual valve). The lack of stem rotation along with observed translation of the stem in either the open and/or closed directions confirms the stem-to-disc integrity. It is recommended that the Position Verification Test be modified to have the local observer verify stem translation matches the remote indication AND that stem rotation is not more than minimal (a few degrees to account for clearances between the stem to disc connection and body guides). (Reference: Peach Bottom RHR Shutdown Cooling Suction Valve, MO-2-10-015A)

A second justification can be made for monitoring flow through the valve before and after the valve stroke. Valve specific designs need to be verified and documented, but typical gate valve designs utilize a tee-slot configuration for the stem-to-disc connection. The ‘ears’ on the disc that capture the stem tee are the usual weak link point and are stressed while pulling the disc out of the seat. Operating experience has identifying failures of this connection while trying to open gate valves from the fully closed and wedged position. Therefore, if an open valve that has been known to pass flow is closed* and then opened with a second confirmation of flow, the stem-to-disc integrity is confirmed. Confirmation of flow before and after the valve stroke does not need to be continuous. For example, a pump suction valve that was open for the previous successful pump test is stroked closed and then open prior to another successful pump test. Adequate flow through the valve proves stem-to-disc integrity.

*Note that valve closure must be verified to wedge the valve into the seat either manually or electrically. The SPI can be satisfied

<u>Air Operated Valves with Longer Actuator Stroke than Valve Stroke</u>

Air operated valves often stroke open until the valve disc or poppet contact the backseat or bonnet to stop linear motion. AOV valve and actuator combinations have been identified where the actuator stroke is much larger than the valve stroke. For example, Braidwood has a 3/4" Copes Vulcan flow under globe valve which strokes 7/8th inch and is coupled to an actuator that has a stroke length of 2 inches.

The valve design consists of the plug threading onto the stem which is then torqued, drilled and pinned. The plug is guided by the cage and contacts the valve bonnet directly, rather than having a separate component press fit to the stem or a beveled area of the stem for this purpose.

If a stem-to-disc separation were to occur, the stem would be allowed to travel the full 2-inch actuator stroke in the open direction. This situation assumes that that the pin either completely disengages or shears nearly flush with the stem surface to allow the plug to disengage from the stem. While there is no credible way for the stem and disc to separate without a clean shear or loss of the pin, a failure with the pin protruding from the stem was also considered. If the stem-to-disc failure where such that the pin did protrude from the stem, it may contact the bonnet/backseat and give the appearance of a correct open stroke time and distance. However, during the close stroke the protruding pin would also prohibit the stem from properly reengaging with the plug and limit the valve stroke in the close direction.

Therefore, based on the design of the valve and actuator along with the failure mode of the valve, a stem-to-disc separation would be detected during local observation of the valve during Position Indication Verification or by significant changes in valve stroke times and can be credited for SPI. (Reference: Braidwood SI Fill/Test Isolation Valve, 1SI8871)

One-Piece Stem and Disc

Several valve suppliers have valve models with designs that utilize a one-piece stem and disc (Copes Vulcan and Flowserve). Since there is no mechanical connection of the stem and disc, there is no credible failure mode for stem-to-disc separation. Therefore, direction observation of the stem is adequate to verify obturator position for these valves. SPI of the valve in the open and/or closed position is additional beneficial verification but is not required. (Reference: Braidwood PRT Gas Analyzer Valve, 1RY8025 and Peach Bottom Scram Discharge Volume Vent Valve, AO-2-03-032A)

Butterfly Valves with Inflatable T-rings

The T-Ring valve design is a butterfly valve that has a seat seal that inflates around the disc when seated to provide a leak tight barrier. These valves are containment isolation valves at a BWR plant. T-Ring valves require the disk to be precisely aligned with the seal in order for T-Ring inflation to result in a leak tight seal.

Site OE has demonstrated that very slight misalignment of the disc within the seal results in increased LLRT seat leakage. Disc position adjustment to better align the disc in the seat reduced the measured LLRT leakage.

For this valve design, the stem and disk are assembled in a tight tolerance fit with 2 taper pins used to retain the disk to the stem. Any rotation of the stem, with failed taper pins would result in loose stem-disk connection and some rotation of the disk when the actuator is stroked. The rotation would occur because the first step of stroking the valve is deflation of the boot seal. Deflation of the seal removes any valve body loading on the disk that would impede rotation. As the stem passes fully though the disk, the friction between the stem and disk due to the tight assembly clearance as well as the friction from any debris/galling between the failed taper pins and the disk would ensure the disk position is disturbed by cycling of the actuator. Without the structural integrity of the pins retaining the stem and disk orientation, every stroke of the valve would result in a random orientation of the disk relative to the inflatable seat resulting in high and random LLRT performance numbers.

Given the reliable, repeatable LLRT performance, the disk must be in perfect alignment with the seat and therefore must be appropriately affixed to the stem.

The ASME OM Code (IST Program) requirements for the subject AOV's include: Exercise, Stroke Time, and Remote Position Indication testing which are performed at a minimum on a 2-year frequency.

Based on the above, successful completion of a valve stroke and a LLRT for a T-Ring butterfly valve is an appropriate indication the valve stem and disk assembly are intact and validates both the SPI for OPEN and CLOSE valve position. The CLOSE position is verified by the LLRT and the OPEN position is credited based on the above technical position. (Reference: Peach Bottom Torus Vent Valve to SBGT/ATMOS, AO-2-07B-2511)

References

1. 10 CFR 50.55a(b)(3)(xi) OM condition: Valve Position Indication.

2. ASME OM Code, Operation and Maintenance of Nuclear Power Plants, 2012 Edition

Number: CTP-IST-018, Rev. 0

Title: Missed Test / Inspection Opportunity versus Missed Surveillance

Applicability: All Exelon IST Programs

Background: A station identified a missed IST Check Valve Condition Monitoring Inspection during a refueling outage. The inspection opportunity was missed and ER-AA-321 was consulted for guidance on assessing missed IST tests. Based on procedural guidance an IR was generated to evaluate the occurrence of the missed inspection in accordance with the Corrective Action process.

The NRC Resident Inspector questioned if this was a missed inspection if OMN-20 allowable grace is applied. The CVCM inspection was required to be performed in an outage and did have an Exelon outage schedule frequency. However, the OM Code describes the CVCM frequencies in years. Therefore, the CVCM inspection surveillance would not be missed until 6 months after the outage and therefore treating this as a missed IST Test was not appropriate.

Position: A missed opportunity for testing and/or inspection does not immediately translate to a missed IST test. If a testing and/or inspection opportunity is missed, a determination needs to be made if grace is applicable to the frequency. If grace is applicable, then the surveillance has not been missed and three options are available:

1. Complete the test / inspection prior to the surveillance due date plus OMN-20 grace.
2. Declare the valve inoperable due to not being able to fulfill the IST surveillance.
3. Submit an NRC Relief Request for the required IST test / inspection.

If the testing and/or inspection has exceeded the frequency plus grace or grace is not applicable, then it is appropriate to follow the ER-AA-321 guidance for assessing missed IST tests.

References:

1. ER-AA-321, Administrative Requirements for Inservice Testing
2. IR# 04293489, CHK-3-14A-39011(36)B PM Extended to P3R23 Due to DIV Strategy
3. IR# 04312595, CHK-3-14A-39011(36)B PM Critical Date

ATTACHMENT 14

INSERVICE TESTING PUMP TABLE with P&ID

Revision 2
4/07/2022

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	1075, 1	A-7	VLS	MOTOR	1780	A	Comprehensive	Y2			
							A	Group A	M3			
		Pump Name	Residual Heat Removal (RHR) Pump A									
1E12-C002B	2	1075, 2	B-4	VLS	MOTOR	1780	A	Comprehensive	Y2			
							A	Group A	M3			
		Pump Name	Residual Heat Removal (RHR) Pump B									
1E12-C002C	2	1075, 3	B-3	VLS	MOTOR	1780	B	Comprehensive	Y2			
							B	Group B	M3			
		Pump Name	Residual Heat Removal (RHR) Pump C									
1E12-C003	2	1075, 3	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

Revision 2
4/07/2022

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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CCW SUPPLY CMNT OUTBOARD ISOLATION VALVE												
1CC050	6	GA	MO	1032, 3	C7	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CCW CNMT FEED LINE INBOARD ISOL VALVE												
1CC053	6	GA	MO	1032, 3	C3	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CCW RETURN LINE CNMT INBOARD ISOLATION VALVE												
1CC054	10	GA	MO	1032, 3	C1	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CCW CNMT RETURN LINE OUTBOARD ISOLATION VALVE												
1CC057	8	GA	MO	1032, 3	D-8	2	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	CCW DRYWELL ISOLATION VALVE												
1CC060	8	GA	MO	1032, 3	C-2	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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												

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.
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	2206		
											EX	Y2			
											LT	Y2			
											PI	MOV			
		Valve Name	FC HEAT EXCHANGER 1A CCW INLET VALVE												
1CC075B	14	BTF	MO	1032, 2	C3	3	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LT	Y2			
											PI	MOV			
		Valve Name	FC HEAT EXCHANGER 1B CCW INLET VALVE												
1CC076A	14	BTF	MO	1032, 2	D2	3	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LT	Y2			
											PI	MOV			
		Valve Name	FC HEAT EXCHANGER 1A CCW OUTLET VALVE												
1CC076B	14	BTF	MO	1032, 2	C2	3	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LT	Y2			
											PI	MOV			
		Valve Name	FC HEAT EXCHANGER 1B CCW OUTLET VALVE												
1CC127	8	GA	MO	1032, 3	D-8	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CCW CONTAINMENT INBOARD ISOL VALVE												
1CC128	8	GA	MO	1032, 3	C-2	2	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	CCW DRYWELL ISOLATION VALVE												

Component Cooling 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.
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		RFJ-015	
											CO	RR		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	Y12			
		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	Y12			
		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	Y12			
		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	Y12			
		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	Y12			
		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	Y12			
		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	Y12			
		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	Y12			
		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		RFJ-013	
											CC	RR		RFJ-013	
											PI	Y12			
		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		RFJ-013	
											CC	RR		RFJ-013	
											PI	Y12			
		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	Y12			
		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		RFJ-015	
											CO	RR		RFJ-015	
											PI	Y12			
		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		RFJ-015	
											CO	RR		RFJ-015	
											PI	Y12			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CYCLED COND OUTBOARD INLET ISOL VALVE												
1CY017	6.0	GA	MO	1012, 6	C6	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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	SD	M3			CTP-IST-007
											SE	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	SD	M3			CTP-IST-007
											SE	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	SD	M3			CTP-IST-007
											SE	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	SD	M3			CTP-IST-007
											SE	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	SD	M3			CTP-IST-007
											SE	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	SD	M3			CTP-IST-007
											SE	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	SD	M3			CTP-IST-007
											SE	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	SD	M3			CTP-IST-007
											SE	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	SD	M3			CTP-IST-007
											SE	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	SD	M3			CTP-IST-007
											SE	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	Y12			
			Valve Name	FC DEMINERALIZER BYPASS FLOW CONTROL VALVE											
1FC004B	8	GL	AO	1037, 3	A-5	3	O	O	B	A	FO	M3			
											PI	Y12			
			Valve Name	FC DEMINERALIZER BYPASS FLOW CONTROL VALVE											
1FC007	10	GA	MO	1037, 1	B-2	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			Valve Name	FC RETURN INSIDE CNMT ISOL VALVE											
1FC008	10	GA	MO	1037, 1	B-1	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			Valve Name	FC RETURN OUTSIDE CNMT ISOLATION VALVE											
1FC011A	14	BTF	MO	1037, 3	E-7	3	O	O/C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
			Valve Name	FPC & C PUMP 1A SUCTION ISOL VALVE											
1FC011B	14	BTF	MO	1037, 3	A-7	3	O	O/C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
			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											

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.
1FC013B	14	CK	SA	1037, 3	A-7	3	O	O/C	C	A	CC	M3			
											CO	M3			
		Valve Name	1FC02PB DISCHARGE CHECK VALVE												
1FC015A	14	BTF	MO	1037, 3	E-2	3	O	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FPC & C HX 1A INLET ISOLATION VALVE												
1FC015B	14	BTF	MO	1037, 3	A-2	3	O	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FPC & C HX 1B INLET ISOLATION VALVE												
1FC016A	8	BTF	MO	1037, 3	D-6	3	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FILTER DEMIN SUPPLY ISOLATION VALVE 1A												
1FC016B	8	BTF	MO	1037, 3	C-6	3	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FILTER DEMIN SUPPLY ISOLATION VALVE 1B												
1FC024A	8	BTF	MO	1037, 3	E-2	3	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FILTER DEMIN RETURN ISOLATION VALVE 1A												
1FC024B	8	BTF	MO	1037, 3	C-2	3	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FILTER DEMIN RETURN ISOLATION VALVE 1B												
1FC026A	14	BTF	MO	1037, 3	E-2	3	O	O/C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FPC & C HX 1A OUTLET ISOLATION VALVE												
1FC026B	14	BTF	MO	1037, 3	B-2	3	O	O/C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FPC & C HX 1B OUTLET ISOLATION VALVE												

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.
1FC036	8	GA	MO	1037, 1	E-1	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	FC SUPPLY CNMT OUTBOARD ISOLATION VALVE												
1FC037	8	GA	MO	1037, 1	E-2	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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												
1FC091	4x6	RV	SA	1037, 3	E-1	3	C	O/C	C	A	RT	Y10			
		Valve Name	FC TO RHR HX RELIEF VALVE												
1FC095A	0.75x1	RV	SA	1046, 1	F-2	3	C	O	C	A	RT	Y10			
		Valve Name	1FC01AA TUBE SIDE RELIEF VALVE												
1FC095B	0.75x1	RV	SA	1046, 1	F-3	3	C	O	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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CNMT FP SYS INBOARD ISOL VALVE												
1FP053	10	GA	MO	1039, 9	C4	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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	CMP			
											CC	CMP			
			Valve Name REACTOR FEEDWATER HEADER CHECK VALVE												
1B21-F010B	18	CK	SA	1004	A7	1	O	C	C	A	BDO	CMP			
											CC	CMP			
			Valve Name REACTOR FEEDWATER HEADER CHECK VALVE												
1B21-F032A	20	CK	SA/AO	1004	C6	1	O	C	A/C	A	BDO	RR		RFJ-003	
											CC	RR		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		RFJ-003	
											CC	RR		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
			Valve Name FEED WATER INLET SHUTOFF VALVE A												
1B21-F065B	20	GA	MO	1004	A5	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
			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		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		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CGCS CONTAINMENT ISOLATION VALVE												
1HG004	2	BTF	MO	1063	C3	2	C	O/C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CGCS CONTAINMENT ISOLATION VALVE												
1HG005	2	BTF	MO	1063	E3	2	C	O/C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CONTAINMENT ISOLATION VALVE												
1HG008	2	BTF	MO	1063	E3	2	C	O/C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	CONTAINMENT ISOLATION VALVE												
1HG009A	6	GA	MO	1063	E4	2	C	O/C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	COMPRESSOR SUCTION VALVE 1A												
1HG009B	6	GA	MO	1063	E6	2	C	O/C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		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												

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.
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												
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	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
		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	2206		
											EX	CS		CSJ-111	
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SO	CS		CSJ-111	
		Valve Name	HPCS PUMP DISCH VALVE												
1E22-F005	10	CK	AO	1074	E8	1	C	O/C	A/C	A	CC	RR		RFJ-005	
											CO	RR		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	Y12			
		Valve Name	STORAGE TANK TEST BYPASS VALVE												
1E22-F011	10	GL	MO	1074	D5	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LT	Y2			
											LTJ	AJ			
											PI	MOV			
		Valve Name	COND STORAGE TANK TEST 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-F012	4	GA	MO	1074	D3	2	C	O/C	A	A	DIA	MOV	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
											SO	M3			
			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											
1E22-F015	20	GA	MO	1074	B7	2	C	O/C	A	A	DIA	MOV	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
			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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			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	Y12			
			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		CSJ-106	
											LTJ	AJ			
											PI	Y12			
		Valve Name	CONTAINMENT IA ISOLATION CONTROL VALVE												
1IA006	3	GL	AO	1040, 5	D3	2	O	C	A	A	FC	CS		CSJ-106	
											LTJ	AJ			
											PI	Y12			
		Valve Name	CONTAINMENT IA ISOLATION CONTROL VALVE												
1IA007	3	GL	AO	1040, 5	D5	2	O	C	B	A	FC	CS		CSJ-106	
											PI	Y12			
		Valve Name	DRYWELL IA OUTBOARD ISOLATION CONTROL VALVE												
1IA008	3	GL	AO	1040, 5	D7	2	O	C	B	A	FC	CS		CSJ-106	
											PI	Y12			
		Valve Name	DRYWELL IA INBOARD ISOLATION CONTROL VALVE												
1IA012A	1	GL	MO	1040, 7	D2	2	C	O/C	A	A	DIA	MOV	2206		
											EX	CS		CSJ-113	
											LTJ	AJ			
											PI	MOV			
		Valve Name	ADS 1A CNMT OUTBOARD ISOLATION VALVE												
1IA012B	1	GL	MO	1040, 7	C3	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	ADS 1A CNMT INBOARD ISOLATION VALVE												
1IA013A	1	GL	MO	1040, 7	D7	2	C	O/C	A	A	DIA	MOV	2206		
											EX	CS		CSJ-113	
											LTJ	AJ			
											PI	MOV			
		Valve Name	ADS 1B CNMT OUTBOARD ISOLATION VALVE												
1IA013B	1	GL	MO	1040, 7	C6	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	ADS 1B CNMT INBOARD ISOLATION 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.
1IA042A	1	CK	SA	1040, 7	D6	2	SYS	O/C	A/C	A	CC	RR		RFJ-014	
											CO	RR		RFJ-014	
											LTJ	AJ			
			Valve Name	IA TO DIV 2 ADS VALVES CHECK VALVE											
1IA042B	1	CK	SA	1040, 7	D4	2	SYS	O/C	A/C	A	CC	RR		RFJ-014	
											CO	RR		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		CSJ-108	
											PI	Y12			
		Valve Name DRYWELL ISOLATION VALVE													
1E31-F015	1	GA	SO	1041, 4	E7	2	O	C	B	A	FC	CS		CSJ-108	
											PI	Y12			
		Valve Name DRYWELL ISOLATION VALVE													
1E31-F017	1	GA	SO	1041, 4	C7	2	O	C	B	A	FC	CS		CSJ-108	
											PI	Y12			
		Valve Name DRYWELL ISOLATION VALVE													
1E31-F018	1	GA	SO	1041, 4	C8	2	O	C	B	A	FC	CS		CSJ-108	
											PI	Y12			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
		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	2206		
											EX	CS		CSJ-111	
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SC	CS		CSJ-111	
											SO	CS		CSJ-111	
		Valve Name	LPCS INJECTION SHUTOFF VALVE												
1E21-F006	10	CK	SA	1073	E2	1	SYS	O/C	A/C	A	CC	RR		RFJ-005	
											CO	RR		RFJ-005	
											PIV	Y2			
		Valve Name	LPCS INJECTION TESTABLE CHECK VALVE												
1E21-F007	10	GA	M	1073	E2	1	LO	O	B	P	PI	Y12			
		Valve Name	LPCS MAN INJ ISOL VALVE												
1E21-F011	4	GA	MO	1073	D6	2	O	O/C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	LPCS MIN FLOW BYPASS TO SUP POOL VALVE												
1E21-F012	10	GL	MO	1073	D5	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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												

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-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													
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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			Valve Name	OUTBOARD DEMIN WATER CNMT ISOL VLVE											
0MC010	4	GA	MO	1042, 4	D5	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			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	2206		
											EX	CS		CSJ-117	
											LTJ	AJ			
											PI	MOV			
											SC	CS		CSJ-117	
			Valve Name	MAIN STEAM LINE INB. DRAIN ISOL. VALVE											
1B21-F019	3	GA	MO	1002, 2	B6	1	O	C	A	A	DIA	MOV	2206		
											EX	CS		CSJ-117	
											LTJ	AJ			
											PI	MOV			
											SC	CS		CSJ-117	
			Valve Name	MAIN STEAM LINE OUTB. DRAIN ISOL. VALVE											
1B21-F022A	24	GL	AO	1002, 1	C2	1	O	C	A	A	FC	CS		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		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		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		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		RFJ-006	
											CC	RR		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		RFJ-006	
											CC	RR		RFJ-006	
			Valve Name	1B21A001B 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-F024C	0.5	CK	SA	9002, 5	C7	3	SYS	C	C	A	BDO	RR		RFJ-006	
											CC	RR		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		RFJ-006	
											CC	RR		RFJ-006	
		Valve Name	1B21A001D INST AIR SUPPLY CK VLV TO ACCUMU												
1B21-F028A	24	GL	AO	1002, 2	C5	1	O	C	A	A	FC	CS		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		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		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		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		RFJ-006	
											CC	RR		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		RFJ-006	
											CC	RR		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		RFJ-006	
											CC	RR		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		RFJ-006	
											CC	RR		RFJ-006	
		Valve Name	1B21A002D 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-F036A	0.5	CK	SA	9002, 2	C3	3	SYS	C	C	A	BDO	RR		RFJ-007	
											CC	RR		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		RFJ-007	
											CC	RR		RFJ-007	
			Valve Name 1B21A004F INST AIR SUPPLY CK VALVE TO ACCUMU												
1B21-F036G	0.5	CK	SA	9002, 2	C3	3	SYS	C	C	A	BDO	RR		RFJ-007	
											CC	RR		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		RFJ-007	
											CC	RR		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		RFJ-007	
											CC	RR		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		RFJ-007	
											CC	RR		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		RFJ-007	
											CC	RR		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		RFJ-007	
											CO	RR		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		RFJ-007	
											CO	RR		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												

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-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												
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												

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-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												
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		RFJ-007	
											CO	RR		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		RFJ-007	
											CO	RR		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		RFJ-007	
											CO	RR		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		RFJ-007	
											CO	RR		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		RFJ-007	
											CO	RR		RFJ-007	
		Valve Name	1B21A003H 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-F039K	0.5	CK	SA	9002, 1	C4	3	C	O/C	C	A	CC	RR		RFJ-007	
											CO	RR		RFJ-007	
			Valve Name 1B21A003K INST AIR SUPPLY CK VALVE TO ACCUMU												
1B21-F039S	0.5	CK	SA	9002, 1	C4	3	C	O/C	C	A	CC	RR		RFJ-007	
											CO	RR		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/Y8	2202/5		
			Valve Name MAIN STEAM SAFETY/RELIEF VALVE												
1B21-F041B	8x10	RV	AO	1002, 1	F7	1	C	O/C	B/C	A	RT	Y6/Y8	2202/5		
											SO	RR		RFJ-004	
			Valve Name MAIN STEAM SAFETY/RELIEF VALVE												
1B21-F041C	8x10	RV	AO	1002, 1	B8	1	C	O/C	B/C	A	RT	Y6/Y8	2202/5		
											SO	RR		RFJ-004	
			Valve Name MAIN STEAM SAFETY/RELIEF VALVE												
1B21-F041D	8x10	RV	AO	1002, 1	D8	1	C	O/C	B/C	A	RT	Y6/Y8	2202/5		
											SO	RR		RFJ-004	
			Valve Name MAIN STEAM SAFETY/RELIEF VALVE												
1B21-F041F	8x10	RV	AO	1002, 1	F5	1	C	O/C	B/C	A	RT	Y6/Y8	2202/5		
											SO	RR		RFJ-004	
			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/Y8	2202/5		
			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/Y8	2202/5		
			Valve Name MAIN STEAM SAFETY/RELIEF VALVE												
1B21-F047A	8x10	RV	AO	1002, 1	C6	1	C	O/C	B/C	A	RT	Y6/Y8	2202/5		
											SO	RR		RFJ-004	
			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/Y8	2202/5		
			Valve Name MAIN STEAM SAFETY/RELIEF VALVE												
1B21-F047C	8x10	RV	AO	1002, 1	B5	1	C	O/C	B/C	A	RT	Y6/Y8	2202/5		
											SO	RR		RFJ-004	
			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-F047D	8x10	RV	AO	1002, 1	D7	1	C	O/C	C	A	PI	Y2			
											RT	Y6/Y8	2202/5		
		Valve Name MAIN STEAM SAFETY/RELIEF VALVE													
1B21-F047F	8x10	RV	AO	1002, 1	F4	1	C	O/C	C	A	PI	Y2			
											RT	Y6/Y8	2202/5		
		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/Y8	2202/5		
		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/Y8	2202/5		
		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/Y8	2202/5		
		Valve Name MAIN STEAM SAFETY/RELIEF VALVE													
1B21-F051G	8x10	RV	AO	1002, 1	B4	1	C	O/C	B/C	A	RT	Y6/Y8	2202/5		
											SO	RR		RFJ-004	
		Valve Name MAIN STEAM SAFETY/RELIEF VALVE													
1B21-F067A	1.5	GL	MO	1002, 2	C6	1	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name OUTBOARD MSIV ABOVE SEAT DRAIN VALVE													
1B21-F067B	1.5	GL	MO	1002, 2	E6	1	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name OUTBOARD MSIV ABOVE SEAT DRAIN VALVE													
1B21-F067C	1.5	GL	MO	1002, 2	A6	1	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name OUTBOARD MSIV ABOVE SEAT DRAIN 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-F067D	1.5	GL	MO	1002, 2	D6	1	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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												
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												

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-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												
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												

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-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															
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															

Main Steam (Page 11)

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-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	Y12			
		Valve Name RPV HEAD VENTILATION VALVE													
1B21-F002	2	GL	MO	1071, 2	E4	1	C	C	A	P	LT	Y2			
											PI	Y12			
		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		CSJ-116	
											LTJ	AJ			
											PI	Y12			
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	Y12			
Valve Name DRYWELL RF SUMP SAMPLE OUTBOARD ISOLATION VALVE															
1PS009	0.75	GA	SO	1045, 12	E5	2	C	C	A	A	FC	CS		CSJ-116	
											LTJ	AJ			
											PI	Y12			
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	Y12			
Valve Name DRYWELL RE SUMP SAMPLE OUTBOARD ISOLATION VALVE															
1PS016	0.75	GA	SO	1045, 12	E5	2	C	C	A	A	FC	CS		CSJ-116	
											LTJ	AJ			
											PI	Y12			
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	Y12			
Valve Name CNMT FLOOR DRAIN SUMP SAMPLE OUTBOARD ISOLATION															
1PS022	0.75	GA	SO	1045, 12	E4	2	C	C	A	A	FC	CS		CSJ-116	
											LTJ	AJ			
											PI	Y12			
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	Y12			
Valve Name CNMT EQUIPT DRAIN SUMP SAMPLE OUTBOARD ISOLATION															
1PS031	0.75	GA	SO	1045, 12	E2	2	C	C	A	A	FC	CS		CSJ-116	
											LTJ	AJ			
											PI	Y12			
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	Y12			
		Valve Name	DRYWELL ATMOSPHERE SAMPLE OUTBOARD ISOLATION VLV												
1PS034	0.75	GA	SO	1045, 12	E1	2	C	C	A	A	FC	CS		CSJ-116	
											LTJ	AJ			
											PI	Y12			
		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	Y12			
		Valve Name	CNMT ATMOSPHERE SAMPLE OUTBOARD ISOLATION VALVE												
1PS043A	0.75	GA	SO	1045, 12	F2	2	C	C	B	A	FC	M3			
											PI	Y12			
		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	Y12			
		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	Y12			
		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	Y12			
		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	Y12			
		Valve Name	GAS SAMPLE RETURN OUTBOARD ISOLATION VALVE												
1PS056	0.75	GA	SO	1045, 12	C3	2	C	C	A	A	FC	CS		CSJ-116	
											LTJ	AJ			
											PI	Y12			
		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	Y12			
		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		CSJ-116	
											LTJ	AJ			
											PI	Y12			

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	Y12			
			Valve Name	CONTAINMENT RA OUTBOARD ISOLATION VALVE											
0RA027	1	GA	AO	1065, 7	D7	2	C	C	A	P	LTJ	AJ			
											PI	Y12			
			Valve Name	CONTAINMENT RA INBOARD ISOLATION VALVE											
0RA028	1	GA	AO	1065, 7	E5	2	C	C	B	P	PI	Y12			
			Valve Name	DRYWELL RA OUTBOARD ISOLATION VALVE											
0RA029	1	GA	AO	1065, 7	E2	2	C	C	B	P	PI	Y12			
			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		RFJ-009	CTP-IST-007
											CO	RR		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		RFJ-009	CTP-IST-007
											CC	RR		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		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		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		RFJ-009	CTP-IST-007
											CC	RR		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	FC	RR		RFJ-009	CTP-IST-007
											SD	RR		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	Y12			
		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	Y12			
		Valve Name	SCRAM DRAIN LINE FLOW CONTROL VALVE												
1C11-F083	2	GL	MO	1078, 1	E-1	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
		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			
											LTJ	AJ			
		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	Y12			
			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	Y12			
			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		RFJ-010	
											CO	OP			
											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		RFJ-010	
											CO	OP			
											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		RFJ-010	
											CO	OP			
											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		RFJ-010	
											CO	OP			
											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		CSJ-102	
											PI	Y12			
		Valve Name DRYWELL RE INBOARD ISOLATION CONTROL VALVE													
1RE020	3.0	GL	AO	1046, 3	A4	2	O	C	B	A	FC	M3			
											PI	Y12			
		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	Y12			
		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	Y12			
		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		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	2206		
											EX	Y2			
											PI	MOV			
		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	2206		
											EX	Y2			
											PI	MOV			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
		Valve Name	RHR PUMP 1A SUCTION VALVE												
1E12-F004B	20	GA	MO	1075, 2	A-6	2	O	O/C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
		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	Y12			
		Valve Name	RHR SHUTDOWN COOLING SUCTION VALVE												
1E12-F006B	16	GA	MO	1075, 2	A-6	2	C	C	A	P	LTJ	AJ			
											PI	Y12			
		Valve Name	RHR SHUTDOWN COOLING SUCTION VALVE												
1E12-F008	18	GA	MO	1075, 1	B-4	1	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SC	Y2			
		Valve Name	SHUTDOWN COOLING OUTBOARD SUCT ISOL 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-F009	18	GA	MO	1075, 1	B-2	1	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SC	Y2			
		Valve Name	SHUTDOWN COOLING INBOARD SUCT ISOL VALVE												
1E12-F010	12	GA	M	1075,1	C-2	1	LO	O	B	P	PI	Y12			
		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												
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	2206		
											EX	M3			
											PI	MOV			
											SO	M3			
		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	2206		
											EX	M3			
											PI	MOV			
											SO	M3			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	RHR PUMP 1C TEST RETURN TO SUP POOL VALVE												

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-F023	4	GL	MO	1075, 2	C-5	1	C	O/C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SC	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	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
											SC	M3			
		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	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
											SC	M3			
		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												
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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
		Valve Name	RHR PUMP 1A LPCI INJ SHUTOFF VALVE												

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-F027B	12	GA	MO	1075, 2	D-5	2	O	O/C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SO	Y2			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SO	Y2			
		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												
1E12-F037A	10	GL	MO	1075, 1	F-2	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	RHR SYS 1A SHUTDOWN CLG UPPER POOL 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-F037B	10	GL	MO	1075, 2	F-7	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			Valve Name	RH SYSTEM 1B SHUTDOWN CLG UPPER POOL VALVE											
1E12-F039A	12	GA	M	1075, 1	D1	1	LO	O	B	P	PI	Y12			
			Valve Name	RHR MAN INJ ISOL VALVE											
1E12-F039B	12	GA	M	1075, 2	D-7	1	LO	O	B	P	PI	Y12			
			Valve Name	RHR MAN INJ ISOL VALVE											
1E12-F039C	12	GA	M	1075, 3	E-7	1	LO	O	B	P	PI	Y12			
			Valve Name	RHR MAN INJ ISOL VALVE											
1E12-F040	3	GL	MO	1075, 2	E-1	2	C	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
			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		RFJ-005	
											CO	RR		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		RFJ-005	
											CO	RR		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		RFJ-005	
											CO	RR		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	2206		
											EX	CS		CSJ-111	
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SO	CS		CSJ-111	
			Valve Name	RHR PUMP 1A LPCI INJECTION 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-F042B	12	GA	MO	1075, 2	D-6	1	C	O/C	A	A	DIA	MOV	2206		
											EX	CS		CSJ-111	
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SO	CS		CSJ-111	
		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	2206		
											EX	CS		CSJ-111	
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SO	CS		CSJ-111	
		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	2206		
											EX	Y2			
											PI	MOV			
		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	2206		
											EX	Y2			
											PI	MOV			
		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	2206		
											EX	M3			
											PI	MOV			
											SC	M3			
		Valve Name	RHR HX 1A SHELL SIDE BYPASS 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-F048B	14	GL	MO	1075, 2	C-1	2	O	O/C	B	A	DIA	MOV	2206		
											EX	M3			
											PI	MOV			
											SC	M3			
		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	2206		
											EX	Y2			
											LT	Y2			
											PI	MOV			
		Valve Name	RHR SYS 1B RADWASTE DRAIN INBD ISOL VALVE												
1E12-F050A	10	CK	SA	1075, 1	D-5	2	C	C	A/C	A	BDO	CS		CSJ-105	
											CC	CS		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		CSJ-105	
											CC	CS		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SC	Y2			
		Valve Name	RHR SHUTDOWN COOLING INJECTION VALVE												
1E12-F053B	10	GL	MO	1075, 2	E-4	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SC	Y2			
		Valve Name	RHR SHUTDOWN COOLING INJECTION VALVE												

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-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	Y12			
		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	Y12			
		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												
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	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
		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	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
		Valve Name	RHR PUMP 1C MINIMUM FLOW VALVE												
1E12-F068A	18	GA	MO	1052, 1	C-1	3	C	O	B	A	DIA	MOV	2206		
											EX	M3			
											PI	MOV			
											SO	M3			
		Valve Name	RHR HX 1A SSW OUTLET 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-F068B	18	GA	MO	1052, 2	C-1	3	C	O	B	A	DIA	MOV	2206		
											EX	M3			
											PI	MOV			
											SO	M3			
			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	Y12			
			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	Y12			
			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											
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											

Residual Heat Removal (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.
1E12-F094	4	GA	MO	1075, 4	E-7	3	C	O/C	A	A	DIA	MOV	2206		
											EX	M3			
											LT	Y2			
											PI	MOV			
		Valve Name	RHR SSW CROSS TIE VALVE												
1E12-F096	4	GA	MO	1075, 4	E-7	2	C	O/C	A	A	DIA	MOV	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
		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												
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												

Residual Heat Removal (Page 11)

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-F496	2	GL	MO	1075, 2	E-4	2	C	O/C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											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	Y12			
			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	Y12			
			Valve Name	RCIC TURBINE EXHAUST DRAIN CONTROL VALVE											
1E51-F010	6	GA	MO	1079, 2	A6	2	O	O/C	B	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
			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	2206		
											EX	CS		CSJ-111	
											LTJ	AJ			
											PI	MOV			
											PIV	Y2			
											SO	CS		CSJ-111	
			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	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
											SO	M3			
			Valve Name	RCIC RECIRC TO SUPP POOL 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-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	Y12			
		Valve Name	RCIC TEST RETURN TO RCIC STOR TANK VALVE												
1E51-F025	1	GL	AO	1079, 1	D5	2	SYS	C	B	A	FC	M3			
											PI	Y12			
		Valve Name	RCIC CONDENSATE RETURN ISOLATION CONTROL VALVE												
1E51-F026	1	GL	AO	1079, 1	D5	2	SYS	C	B	A	FC	M3			
											PI	Y12			
		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	2206		
											EX	M3			
											LTJ	AJ			
											PI	MOV			
											SC	M3			
		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	2206		
											EX	M3			
											PI	MOV			
											SO	M3			
		Valve Name	RCIC STEAM TO TURBINE VALVE												
1E51-F059	4	GA	MO	1079, 2	E5	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LT	Y2			
											LTJ	AJ			
											PI	MOV			
		Valve Name	RCIC TEST RETURN TO RCIC STOR TANK 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-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												
1E51-F063	8	GA	MO	1079, 1	E8	1	O	O/C	A	A	DIA	MOV	2206		
											EX	CS		CSJ-108	
											LTJ	AJ			
											PI	MOV			
											SC	CS		CSJ-108	
		Valve Name	RCIC STEAM LINE INBOARD ISOLATION VALVE												
1E51-F064	8	GA	MO	1079, 1	E5	1	O	O/C	A	A	DIA	MOV	2206		
											EX	CS		CSJ-108	
											LTJ	AJ			
											PI	MOV			
											SC	CS		CSJ-108	
		Valve Name	RCIC STEAM LINE OUTBOARD ISOLATION VALVE												
1E51-F065	4	CK	SA	1079, 2	E6	1	SYS	O	C	A	BDC	CS		CSJ-110	
											CO	CS		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		RFJ-002	
											CO	CS		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
		Valve Name	RCIC TURBINE EXHAUST TO SUPP POOL 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-F076	1	GL	MO	1079, 1	E8	1	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			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											
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	CS		CSJ-115	
											PI	Y12			
		Valve Name RR SAMPLE LINE DRYWELL INBOARD ISOL. VALVE													
1B33-F020	0.75	GL	AO	1072, 1	E8	2	O	C	B	A	FC	CS		CSJ-115	
											PI	Y12			
		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	2206		
											EX	CS		CSJ-112	
											LTJ	AJ			
											PI	MOV			
											SC	CS		CSJ-112	
		Valve Name	RWCU PUMP SUCTION INBOARD ISOL VALVE												
1G33-F004	6	GA	MO	1076, 4	B5	1	O	C	A	A	DIA	MOV	2206		
											EX	CS		CSJ-112	
											LTJ	AJ			
											PI	MOV			
											SC	CS		CSJ-112	
		Valve Name	RWCU PUMP SUCTION OUTBOARD ISOL VALVE												
1G33-F028	4	GA	MO	1076, 4	E8	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	RWCU TO CONDENSER INBOARD ISOL VALVE												
1G33-F034	4	GA	MO	1076, 4	E7	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	RWCU TO CONDENSER OUTBOARD ISOL VALVE												
1G33-F039	4	GA	MO	1076, 4	D7	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	RWCU RETURN LINE OUTBOARD ISOLATION VALVE												
1G33-F040	4	GA	MO	1076, 4	D8	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	RWCU RETURN LINE INBOARD ISOL VALVE												

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-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												
1G33-F053	4	GA	MO	1076, 4	C8	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	RWCU PUMP DISCH INBOARD ISOL VALVE												
1G33-F054	4	GA	MO	1076, 4	C7	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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	Y12			
		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	Y12			
		Valve Name	CNMT SA INBOARD ISOLATION VALVE												
1SA031	3.0	GL	AO	1048, 6	D4	2	C	C	B	A	FC	M3			
											PI	Y12			
		Valve Name	DRYWELL SA OUTBOARD ISOLATION CONTROL VALVE												
1SA032	3.0	GL	AO	1048, 6	D5	2	C	C	B	A	FC	CS		CSJ 103	
											PI	Y12			
		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	2206		
											EX	M3			
											PI	MOV			
		Valve Name	STANDBY LIQUID CONTROL TANK OULET VALVE A												
1C41-F001B	3	GL	MO	1077	E6	2	C	O	B	A	DIA	MOV	2206		
											EX	M3			
											PI	MOV			
		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		RFJ-001	
											CO	RR		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		RFJ-011	
											CO	M3			
		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		RFJ-011	
											CO	M3			
		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		RFJ-012	
											CO	RR		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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	SF RETURN LINE OUTBOARD ISOLATION												
1SF002	10	GA	MO	1060	E5	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	SF RETURN LINE INBOARD ISOLATION												
1SF004	12	GA	MO	1060	C5	2	C	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		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	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	SUP POOL MAKE-UP SYS DUMP SHUTOFF VALVE												
1SM001B	24	BTF	MO	1069	D4	2	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	SUP POOL MAKE-UP SYS DUMP SHUTOFF VALVE												
1SM002A	24	BTF	MO	1069	D5	2	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	SUP POOL MAKE-UP SYS DUMP SHUTOFF VALVE												
1SM002B	24	BTF	MO	1069	D4	2	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		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	Y12			
		Valve Name	SSW STRAINER 1A INLET VALVE												
1SX003B	30	BTF	MO	1052, 2	D6	3	O	O	B	P	PI	Y12			
		Valve Name	SSW STRAINER 1B INLET VALVE												
1SX003C	10	BTF	MO	1052, 3	D6	3	O	O	B	P	PI	Y12			
		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	Y12			
		Valve Name	SSW STRAINER 1B OUTLET VALVE												
1SX004C	10	BTF	MO	1052, 3	D5	3	O	O	B	P	PI	Y12			
		Valve Name	SSW STRAINER 1C OUTLET VALVE												
1SX006C	8	BTF	MO	1052, 3	D2	3	C	O	B	A	DIA	MOV	2206		
											EX	M3			
											PI	MOV			
		Valve Name	DG 1C HEAT EXCHANGER OUTLET VALVE												
1SX008A	20	BTF	MO	1052, 1	E6	3	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	SSW STRAINER 1A BYPASS VALVE												
1SX008B	20	BTF	MO	1052, 2	E6	3	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	SSW STRAINER 1B BYPASS 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.
1SX008C	8	BTF	MO	1052, 3	E6	3	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		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												
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	Y12			
		Valve Name	DIV I CROSS TIE VALVE												
1SX011B	16	BTF	MO	1052, 2	E3	3	C	C	A	P	LT	Y2			
											PI	Y12			
		Valve Name	DIV 2 CROSS TIE VALVE												
1SX012A	14	BTF	MO	1052, 1	C3	3	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FC HX 1A SSW INLET VALVE												
1SX012B	14	BTF	MO	1052, 2	C3	3	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	FC HX 1B SSW INLET VALVE												
1SX013D	3	PLG	MO	1052, 1	D5	3	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	SSW STRAINER 1A BACKWASH VALVE												
1SX013E	3	PLG	MO	1052, 2	D5	3	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	SSW STRAINER 1B BACKWASH VALVE												
1SX013F	2	PLG	MO	1052, 3	C5	3	C	O/C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	SSW STRAINER 1C BACKWASH 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.
1SX014A	20	BTF	MO	1052, 1	F3	3	O	C	A	A	DIA	MOV	2206		
											EX	M3			
											LT	Y2			
											PI	MOV			
		Valve Name	SSW SYSTEM 1A ISOLATION VALVE												
1SX014B	20	BTF	MO	1052, 2	F3	3	O	C	A	A	DIA	MOV	2206		
											EX	M3			
											LT	Y2			
											PI	MOV			
		Valve Name	SSW SYS 1B ISOLATION VALVE												
1SX014C	8	BTF	MO	1052, 3	E4	3	O	C	A	A	DIA	MOV	2206		
											EX	M3			
											LT	Y2			
											PI	MOV			
		Valve Name	SSW SYS 1C ISOLATION VALVE												
1SX016A	2.5	GA	MO	1052, 1	D3	3	C	O/C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
		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	2206		
											EX	Y2			
											PI	MOV			
		Valve Name	DIV 2 FUEL POOL MAKE-UP INLET VALVE												
1SX017A	8	BTF	MO	1052, 1	B8	3	O	O	B	P	PI	Y12			
		Valve Name	HVAC UNIT 1A HEAT EXCH INLET VALVE												
1SX017B	8	BTF	MO	1052, 2	B8	3	O	O	B	P	PI	Y12			
		Valve Name	HVAC UNIT 1B HEAT EXCH INLET VALVE												
1SX020A	12	BTF	MO	1052, 1	C4	3	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LT	Y2			
											PI	MOV			
		Valve Name	DIV I DRYWELL CHILLER ISOLATION 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.
1SX020B	12	BTF	MO	1052, 2	C4	3	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LT	Y2			
											PI	MOV			
			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											
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	2206		
											EX	Y2			
											PI	MOV			
			Valve Name	FC HX 1A SSW OUTLET VALVE											
1SX062B	14	BTF	MO	1052, 2	B4	3	C	O	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
			Valve Name	FC HX 1B SSW OUTLET VALVE											
1SX063A	8	BTF	MO	1052, 1	C2	3	C	O	B	A	DIA	MOV	2206		
											EX	M3			
											PI	MOV			
			Valve Name	DIESEL GEN 1A HEAT EXCH OUTLET 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.
1SX063B	8	BTF	MO	1052, 2	C2	3	C	O	B	A	DIA	MOV	2206		
											EX	M3			
											PI	MOV			
		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												
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	2206		
											EX	Y2			
											LT	Y2			
											PI	MOV			
		Valve Name	RHR HX 1A DEMIN WATER INLET VALVE												
1SX082B	3	GA	MO	1052, 2	D1	3	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LT	Y2			
											PI	MOV			
		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												

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.
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												
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												

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.
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												
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												

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.
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												
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												

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.
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		CSJ-118	
											CO	CS		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		CSJ-118	
											CO	CS		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												
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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	DRYWELL CHILLED WATER A SUPPLY OUTBOARD ISOLATION												
1VP004B	10	GA	MO	1109, 3	D3	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	DRYWELL CHILLED WATER B SUPPLY OUTBOARD ISOLATION												
1VP005A	10	GA	MO	1109, 2	D2	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	DRYWELL CLG 1A SPLY INBOARD ISOL VALVE												
1VP005B	10	GA	MO	1109, 3	D2	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	DRYWELL CHILLED WATER B SUPPLY INBOARD ISOLATION												
1VP014A	10	GA	MO	1109, 2	E3	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	DRYWELL CHILLED WATER A RETURN INBOARD ISOLATION												
1VP014B	10	GA	MO	1109, 3	E2	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
		Valve Name	DRYWELL CLG 1B RTRN INBOARD ISOL 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.
1VP015A	10	GA	MO	1109, 2	E3	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			Valve Name	DRYWELL CHILLED WATER A RETURN OUTBOARD ISOLATION											
1VP015B	10	GA	MO	1109, 3	E3	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			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											
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	Y12			
		Valve Name	DW PURGE TO CONTAINMENT EXHAUST FAN ISOLATION DMPR												
1VQ001B	24	BTF	AO	1110, 2	C7	2	C	C	B	P	PI	Y12			
		Valve Name	DW PURGE MOIST SEP B INLET DRN VALVE												
1VQ002	24	BTF	AO	1110, 2	C6	2	C	C	B	P	PI	Y12			
		Valve Name	DRYWELL PURGE SYS EXHAUST DRYWELL ISOLATION VALVE												
1VQ003	36	BTF	AO	1110, 2	C5	2	C	C	B	A	FC	CS		CSJ-104	
											PI	Y12			
		Valve Name	EXHAUST OUTBOARD DRYWELL ISOLATION VALVE												
1VQ004A	36	BTF	AO	1110, 2	D4	2	C	C	A	A	FC	CS		CSJ-107	
											LTJ	AJ			
											PI	Y12			
		Valve Name	DW PURGE CONTAINMENT OUTBOARD ISOLATION DAMPER												
1VQ004B	36	BTF	AO	1110, 2	D5	2	C	C	A	A	FC	CS		CSJ-107	
											LTJ	AJ			
											PI	Y12			
		Valve Name	CONTAINMENT BUILDING EXH PURGE INBOARD ISOL VALVE												
1VQ005	10	BTF	AO	1110, 2	D6	2	C	C	B	P	PI	Y12			
		Valve Name	EXHAUST INBOARD SYSTEM DRYWELL ISOL VALVE												
1VQ006A	4	GL	MO	1110, 2	C4	2	C	C	A	P	LTJ	AJ			
											PI	Y12			
		Valve Name	CNMT EXHAUST OUTBOARD ISOLATION BYPASS VALVE												
1VQ006B	4	GL	MO	1110, 2	C4	2	C	C	A	P	LTJ	AJ			
											PI	Y12			
		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 LTJ PI	CS AJ Y12		CSJ-107	
		Valve Name	CONTAINMENT VENT OUTBOARD ISOLATION VALVE												
1VR001B	36	BTF	AO	1111, 1	E1	2	C	C	A	A	FC LTJ PI	CS AJ Y12		CSJ-107	
		Valve Name	CONTAINMENT VENT INBOARD ISOLATION VALVE												
1VR002A	4	GL	MO	1111, 1	E2	2	C	C	A	P	LTJ PI	AJ Y12			
		Valve Name	FUEL BLDG VR SUPPLY OUTBOARD ISOL. BYPASS VALVE												
1VR002B	4	GL	MO	1111, 1	E1	2	C	C	A	P	LTJ PI	AJ Y12			
		Valve Name	CNMT VR SUPPLY INBOARD ISOLATION BYPASS VALVE												
1VR006A	12	BTF	AO	1111, 5	E3	2	O	C	A	A	FC LTJ PI	CS AJ Y12		CSJ-104	
		Valve Name	CONTINUOUS CNMT HVAC SUPPLY OUTBOARD ISOLATION												
1VR006B	12	BTF	AO	1111, 5	E2	2	O	C	A	A	FC LTJ PI	CS AJ Y12		CSJ-104	
		Valve Name	CONTINUOUS CNMT HVAC SUPPLY INBOARD ISOLATION												
1VR007A	12	BTF	AO	1111, 5	B7	2	O	C	A	A	FC LTJ PI	CS AJ Y12		CSJ-104	
		Valve Name	CCP OUTBOARD EXHAUST ISOLATION VALVE												
1VR007B	12	BTF	AO	1111, 5	B7	2	O	C	A	A	FC LTJ PI	CS AJ Y12		CSJ-104	
		Valve Name	CCP INBOARD EXHAUST ISOLATION VALVE												
1VR035	0.75	PLG	SO	S 1111,3	B22	2	O	C	A	A	FC LTJ PI	CS AJ Y12		CSJ-104	
		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		CSJ-104	
											LTJ	AJ			
											PI	Y12			
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		CSJ-104	
											LTJ	AJ			
											PI	Y12			
Valve Name CCP AIR LINE ISOLATION VALVE															
1VR041	0.75	PLG	SO	S 1111,3	B22	2	O	C	A	A	FC	CS		CSJ-104	
											LTJ	AJ			
											PI	Y12			
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	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			Valve Name	PLANT CHILLED WATER OUTBOARD ISOLATION VALVE											
1WO001B	6	GA	MO	1117, 19	E6	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			Valve Name	PLANT CHILLED WATER INBOARD ISOLATION VALVE											
1WO002A	6	GA	MO	1117, 19	F5	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			Valve Name	PLANT CHILLED WATER OUTBOARD ISOLATION VALVE											
1WO002B	6	GA	MO	1117, 19	F6	2	O	C	A	A	DIA	MOV	2206		
											EX	Y2			
											LTJ	AJ			
											PI	MOV			
											SC	Y2			
			Valve Name	PLANT CHILLED WATER INBOARD ISOLATION VALVE											
1WO551A	4	GA	MO	1117, 26	E7	2	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
											SC	Y2			
			Valve Name	DRYWELL OUTBOARD ISOL VALVE											
1WO551B	4	GA	MO	1117, 26	E7	2	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
											SC	Y2			
			Valve Name	DRYWELL INBOARD ISOL VALVE											

Plant Chilled 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.
1WO552A	4	GA	MO	1117, 26	D7	2	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
											SC	Y2			
		Valve Name	PLANT CHILL WATER OUTBOARD ISOLATION VALVE												
1WO552B	4	GA	MO	1117, 26	D7	2	O	C	B	A	DIA	MOV	2206		
											EX	Y2			
											PI	MOV			
											SC	Y2			
		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	Y12			
		Valve Name	INBOARD CNMT ISOLATION VALVE												
1WX020	2	PLG	AO	1089, 2	F5	2	O	C	A	A	FC	M3			
											LTJ	AJ			
											PI	Y12			
		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 2
4/07/2022

CVCM PLAN NUMBER	REV #	TITLE
CMP-01	2	Control Rod Drive Containment Isolation Check Valve
CMP-02	2	Instrument Air Containment Isolation Check Valve
CMP-03	1	4" Service Water System Vacuum Breakers
CMP-04	1	3/4" Service Water System Vacuum Breakers
CMP-05	1	Shutdown Service Water Pump Discharge Check Valves
CMP-06	1	RCIC Turbine Exhaust Vacuum Breakers
CMP-07	1	RHR to Feedwater Keep Fill Check Valves
CMP-08	1	RWCU Check Valves to RHR
CMP-09	1	Safety Relief Valve Vacuum Breakers
CMP-10	1	Safety Relief Valve Vent Line Vacuum Breakers
CMP-11	1	Shutdown Service Water Pump Discharge Check Valve
CMP-12	1	HPCS Suction Check Valve from RCIC Storage Tank
CMP-13	2	RCIC Water Leg Pump Discharge Check Valve
CMP-14	2	RCIC Water Leg Pump Discharge Stop Check Valve
CMP-15	1	New 3/4" Service Water System Vacuum Breakers
CMP-16	1	A and B DO Fuel Transfer Pump Discharge Check Valve
CMP-17	0	Reactor Feedwater Header Check Valve A/B