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10CFR50.55a

NMP1L3270

March 13, 2019

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

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

Subject: Submittal of the Inservice Testing (IST) Program Plan for the Unit 1 Fifth and Unit 2 Fourth 10-Year Intervals and the Snubber IST Program Plan for the Unit 2 Fourth 10-Year Interval

In accordance with the ASME OM Code-2012 Edition, attached for your information is a copy of the Inservice Testing (IST) Program Plan for the Nine Mile Point Nuclear Station (NMPNS), Units 1 and 2, associated with the fifth and fourth ten-year Inservice Testing (IST) intervals, respectively. The new IST Program Plan interval began on January 1, 2019, and will conclude on December 31, 2028. Also attached for your information is a copy of the Snubber IST Program Plan for NMPNS Unit 2 associated with the fourth ten-year IST interval. The new interval for Snubber IST Program Plan for NMPNS Unit 2 began on March 1, 2019, and will conclude on December 31, 2028. The Snubber IST Program Plan for NMPNS Unit 1 associated with the fifth ten-year IST interval will be submitted under a separate letter.

There are no regulatory commitments contained within this submittal.

If you have any questions or require additional information, please contact David Neff (267) 533-1132.

Sincerely,

D. P. Helker

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

Attachments:

1. Nine Mile Point Nuclear Station, Unit 1 and 2, Inservice Testing (IST) Program Plan for the Unit 1 Fifth 10-Year Interval and Unit 2 Fourth 10-Year Interval
2. Nine Mile Point Nuclear Station Unit 2 Snubber Inservice Testing Program Plan for the Fourth 10-Year Interval

cc: Regional Administrator, Region I, USNRC
NRC Senior Resident Inspector - NMP
NRC Project Manager, NRR - NMP
A.L. Peterson, NYSERDA

ATTACHMENT 1

Nine Mile Point Nuclear Station, Unit 1 and 2,
Inservice Testing (IST) Program Plan for the
Unit 1 Fifth 10-Year Interval and Unit 2 Fourth 10-Year Interval

Exelon Nuclear Generation, LLC

300 Exelon Way
Kennett Square, PA 19348

Nine Mile Point Nuclear Station

Unit 1 and 2

Unit 1 NRC Docket Number: 50-220
Unit 2 NRC Docket Number: 50-410

348 Lake Road
Oswego, NY 13126

Unit 1 Commercial Service Date: December 26, 1969
Unit 2 Commercial Service Date: April 5, 1988

Inservice Testing (IST) Program
Program Plan

UNIT 1 FIFTH 10-YEAR INTERVAL

UNIT 2 FOURTH 10-YEAR INTERVAL

1/1/2019 – 12/31/2028

NMPNS-IST-001

Revision 09

01/01/2019

REVISION RECORD

Revision	Effective Date	Revision Description	Sign & Date		
			Prepared; Site IST Program Engineer	Reviewed Corporate IST Engineer	Approved; Engr. Programs Manager
09	1/1/2019	Unit 1 Fifth / Unit 2 Fourth Ten Year Interval Update	12-26-18	12-26-18	M. Fairus 12-26-18

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14. Inservice Testing Pump Table
15. Inservice Testing Valve Table
16. Check Valve Condition Monitoring Plan Index

1.0 Introduction

This document outlines the Nine Mile Point Nuclear Station (NMPNS) Unit 1 (NMP1) and Unit 2 (NMP2) IST Programs for the next 10-year interval (fifth for NMP1, fourth for NMP2) based on the requirements of the American Society of Mechanical Engineers (ASME) Operations and Maintenance (OM) 2012 Code Edition. This revision of the NMPNS ASME Inservice Testing (IST) Program will be in effect through the end of the 120-month (10-year) interval unless changed and re-issued for reasons other than the routine update required at the start of the next interval per 10 CFR 50.55a(f). The inspection interval begins on January 1, 2019, and ends on December 31, 2028.

1.1 Purpose

The purpose of this IST Program is to verify operational readiness of those pumps and valves whose function is required for safety. It is not intended to place NMPNS in a degraded safety condition for the purpose of conducting system or component tests. Therefore, as normally viewed for Code compliance, testing of a safety train will not be performed when any redundant train is out of service. Instead, equipment will be positioned to provide for safe plant operation. Pumps and valves included in this program are those in systems or portions of systems which are required to perform a specific function in shutting down the reactor to a safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident, as identified within NMPNS licensing basis.

NMP1 is licensed for a safe shutdown condition of hot shutdown. As such, OM Code required testing does not apply to those components whose only safety function relied on is for achieving and maintaining a cold shutdown condition. NMP2 is licensed for a safe shutdown condition of cold shutdown. Therefore, OM Code required testing does apply to those components whose only safety function relied on is for achieving and maintaining a cold shutdown condition.

1.2 Scope

ASME OM-2012 Code (hereafter referred to as 'the OM Code') requires that the owner of each nuclear power plant prepare and submit a "plan" for testing and inspection of systems and components (pumps, valves, & dynamic restraints) under the jurisdiction of the OM Code and in compliance with Title 10, Part 50 of the Code of Federal Regulations (Para. 50.55a).

Inservice Testing of ASME Class 1, 2, and 3, and other safety-related pumps and valves is performed in accordance with the OM Code, except as allowed by 10CFR50 or where specific written relief has been granted by the NRC pursuant to 10CFR50.55a(f)(6)(i) for examinations and tests determined to be impracticable. Provided guidance of NUREG 1482, Revision 2, is followed, the proposed alternative examinations or tests may be implemented prior to receiving written NRC approval if so stated in the guidance document.

In accordance with the OM Code and 10CFR50.55a, the following are required to be included in the testing Program:

ASME Class 1, 2, or 3 and other safety-related centrifugal and positive displacement pumps that are provided with an emergency power source and are required to perform a specific function in:

a. Shutting down the reactor to the safe shutdown condition;
b. Maintaining the safe shutdown condition; or
c. Mitigating the consequences of an accident.

1.2 Scope (Cont.)

ASME Class 1, 2 and 3 and other safety-related active or passive valves (and their actuating and position indicating systems) which are required to perform a specific function in:

a. Shutting down the reactor to the safe shutdown condition;
b. Maintaining the safe shutdown condition; or
c. Mitigating the consequences of an accident.

ASME Class 1, 2 and 3 and other safety-related pressure relief devices that protect systems or portions of systems which perform a required function in:

a. Shutting down the reactor to the safe shutdown condition;
b. Maintaining the safe shutdown condition; or
c. Mitigating the consequences of an accident.

Dynamic restraints (snubbers) used in systems that perform one or more of the required functions:

a. Shutting down the reactor to the safe shutdown condition;
b. Maintaining the safe shutdown condition; or
c. Mitigating the consequences of an accident.

NOTE: Dynamic restraints (snubbers) are addressed in a separate test program.

In addition to the general OM Code requirements outlined above, there are other interpretations and positions that have come about as a result of past regulatory and licensee actions including NUREG-1482.

The term "accident" refers not only to the design basis accidents analyzed in Chapter 15 of the UFSAR, but to a broad range of possible adverse events which could affect plant safety. Additional accidents and operational transients, and the equipment required to mitigate the possible consequences thereof, are identified in the UFSAR.

The NMP1 safety analysis specifically requires the plant to reach a safe-shutdown condition defined as hot shutdown and not the cold shutdown condition. Per NUREG-1482, Revision 2, pumps and valves in such plants needed only to reach cold shutdown need not be included in the IST Program. However, in some instances, NMP1 has decided to include cold shutdown-related components in the Program for completeness even though compliance with OM Code requirements may not be required.

In light of the foregoing, a set of rules was established by which the scope of the NMP1 ASME OM Code IST Program is determined including components that are to be included and the extent and type of testing required for each component. Based on these rules, the philosophy and assumptions used in determining the test requirements for selected pumps and valves were documented.

In addition to those pumps and valves required to be tested by the OM Code, other “augmented” components are administratively included in the program from a good engineering and management practice standpoint. The inclusion of components designated as “augmented” within the IST program has been discussed in NUREG-1482, Rev. 2, Section 2.2, Generic Letter 89-04, NRC Staff Position II, “Scope of IST Programs”, and Summary of Public Workshops Held in NRC Regions on Inspection Procedure 73756, Section 1, General Questions. These components are identified as “augmented” in the test tables and need not be tested to specific OM Code criteria.

1.3 Discussion

1.3.1 Commercial Operation Date and IST Intervals

Effective November 7, 2001 Niagara Mohawk Power Corporation (NMPC) transferred ownership of the Nine Mile Point Nuclear Station, LLC to Constellation Nuclear. Effective 3/24/2014 Constellation Nuclear transferred ownership of NMPNS to Exelon Nuclear Generation, LLC, the owner of record.

Niagara Mohawk Power Corporation was issued the Construction Permit for Nine Mile Point Unit 1 (NMP1) on April 12, 1965. The first ten-year Inservice Inspection (ISI) interval began on December 26, 1974, and was scheduled to end on December 25, 1984. The interval was extended due to a maintenance outage, and actually ended on June 26, 1986. The first ten-year IST interval, which began in December 1979, was scheduled to conclude in December 1989. NMPC voluntarily changed the IST interval schedule to make the IST interval coincide with the ISI interval. The second IST ten-year interval began on June 27, 1986, and was scheduled to end on June 26, 1996. The second ten-year interval was extended until December 25, 1998, due to a 30-month maintenance outage. In accordance with ISTA-3120, paragraph (d), the second ten-year interval was extended an additional period, not to exceed 12 months, to conclude on December 25, 1999. Therefore, the third ten-year interval began on December 26, 1999, and was scheduled to conclude on December 25, 2009. However, NMPNS, in accordance with ISTA-3120, paragraph (d), changed the IST interval to establish a concurrent interval with Unit 2. The third ten-year interval ended on December 31, 2008. The fourth ten-year interval ended on December 31, 2018. The fifth ten-year interval began on January 1, 2019, and is scheduled to end on December 31, 2028.

Nine Mile Point Unit 2 began commercial operation on April 5, 1988, and the first ten-year IST Interval began on that date. The legal commercial operation date was established by the New York State Public Service Commission (PSC). Opinion No. 89-37(C) of the New York PSC established April 5, 1988 as the legal date of commercial operation for Nine Mile Point Unit 2. All Nine Mile Point Unit 2 initial ISI and IST Code periods and 10-year intervals began on April 5, 1988. Therefore, the second IST ten-year Interval began on April 5, 1998, and was scheduled to conclude on April 4, 2008. However, NMPNS, in accordance with ISTA-3120, paragraph (d), changed the IST interval to establish a concurrent interval with Unit 1. The second ten-year interval ended on December 31, 2008. The third ten-year interval ended on December 31, 2018. The fourth ten-year interval began on January 1, 2019, and is scheduled to end on December 31, 2028.

1.3.2 ASME OM Code for Operation and Maintenance of Nuclear Power Plants, 2012 Edition

For NMPNS, the current 120-month interval began on January 1, 2019. Therefore, the Code Edition of interest was the one endorsed by the NRC in 10CFR50.55a as of January 1, 2018. The Code Edition in effect on January 1, 2018 was the 2012 Edition of ASME OM Code, no addenda.

Subsections and Appendices of the ASME OM Code for Operation and Maintenance of Nuclear Power Plants, 2012 Edition are as follows:

a. ASME OM Code, Subsection ISTA, "*General Requirements*"

   ISTA contains the requirements directly applicable to inservice testing including the Owner's Responsibility and Records Requirements.

1.3 Discussion (Cont.)

1.3.2 ASME OM Code for Operation and Maintenance of Nuclear Power Plants, 2012 Edition (Cont.)

b. ASME OM Code, Subsection ISTB, *"Inservice Testing of Pumps in Light-Water Reactor Nuclear Power Plants – Pre-2000 Plants"*

ISTB establishes the requirements for inservice testing of pumps in light-water reactor nuclear power plants. The pumps covered are those provided with an emergency power source, that are required in the shutting down the reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigation of the consequences of an accident.

c. ASME OM Code, Subsection ISTC, *"Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants"*

ISTC establishes the requirements for inservice testing of valves in light-water reactor nuclear power plants. The valves covered include those that are required to perform a specific function, either active or passive, in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident. Valves that provide overpressure protection to systems or portions of system that are required to perform any of these functions are also included.

d. ASME OM Code, Subsection ISTD, *"Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Nuclear Power Plants"*

ISTD establishes the requirements for preservice and inservice testing of dynamic restraints (snubbers) in light-water reactor nuclear power plants. The snubbers covered include those in systems that perform a specific function in shutting down the reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigation of the consequences of an accident.

e. ASME OM Code, Division 1, Mandatory Appendix I, *"Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants"*

Appendix I provides the requirements for performance testing and monitoring of nuclear plant pressure relief devices. Methods, intervals, and record requirements for monitoring and testing are established, as well as requirements for the evaluation of results.

f. ASME OM Code, Division 1, Mandatory Appendix II, *"Check Valve Condition Monitoring Program"*

Appendix II provides an alternative to the check valve testing or examination requirements of ISTC-3510, ISTC-3520, ISTC-3530, ISTC-3550, and ISTC-5221. The purpose of this program is both to improve valve performance and to optimize testing, examination, and preventive maintenance activities in order to maintain the continued acceptable performance of a select group of check valves.

1.3 Discussion (Cont.)

1.3.2 ASME OM Code for Operation and Maintenance of Nuclear Power Plants, 2012 Edition (Cont.)

g. ASME OM Code, Division 1, Mandatory Appendix III, *"Preservice and Inservice Testing of Active Electric Motor Operated Valve Assemblies in Light-Water Reactor Power Plants"*

   Appendix III establishes the requirements for inservice testing to assess the operational readiness of active motor-operated valves (MOVs) in light-water reactor (LWR) power plants.

h. ASME OM Code, Division 1, Mandatory Appendix V, *"Pump Periodic Verification Test Program"*

   Appendix V establishes the requirements for implementing a pump periodic verification test. As discussed in ISTB-1400, the Owner shall establish a pump periodic verification test program for certain applicable pumps that are tested in accordance with para. ISTA-1100.

1.3.3 ASME OM Code Cases

Additionally, ASME OM Code Cases (CC) that have been approved for use by the NRC per Regulatory Guide 1.192 and are adopted for use at NMPNS (subject to additional NRC approval where required) are identified below. These Code Cases shall be used during the 10-Year Interval IST Program implementation with all conditions, as applicable: On August 17, 2017, a revision to the Code of Federal Regulations became effective with a new OM condition 10CFR50.55a(b)(3)(x), "ASME OM Code Case OMN-20," to allow licensees to implement OM Code Case OMN-20, "Inservice Test Frequency," in the OM Code, 2012 Edition.

CC OMN-20, *"Inservice Test Frequency,"* Revision 0.

ASME OM CC OMN-20 allows the use of "Test Frequency Grace." The NMPNS Unit 1 and 2 new 10-year interval IST Programs will voluntarily and fully implement CC OMN-20 as written in the 2012 Edition of ASME OM Code for all applicable pumps and valves included in the IST program as follows:

> Components whose test frequencies are based on elapsed time periods shall be tested at the frequencies specified in Section IST with a specified time period between tests as shown in Table 1. The specified time period between tests may be reduced or extended as follows:
>
> (1) For periods specified as fewer than 2 years, the period may be extended by up to 25% for any given test.
>
> (2) For periods specified as greater than or equal to 2 years, the period may be extended by up to 6 months for any given test.
>
> (3) All periods specified may be reduced at the discretion of the owner (i.e., there is no minimum period requirement).

1.3 Discussion (Cont.)

1.3.3 ASME OM Code Cases (Cont.)

Period extension is to facilitate test scheduling and considers plant operating conditions that may not be suitable for performance of the required testing (e.g., performance of the test would cause an unacceptable increase in the plant risk profile due to transient conditions or other ongoing surveillance, test, or maintenance activities). Period extensions are not intended to be used repeatedly merely as an operational convenience to extend test intervals beyond those specified.

Period extensions may also be applied to accelerated test frequencies (e.g., pumps in alert range) and other fewer than 2-yr test frequencies not specified in Table 1.

Period extensions may not be applied to the test frequency requirements specified in Subsection ISTD, Preservice and Inservice Examination and Testing of Dynamic Restraints (Snubbers) in Light-Water Reactor Nuclear Power Plants, as Subsection ISTD contains its own rules for period extensions.

Components whose test frequencies are based on the occurrence of plant conditions or events may not have their period between tests extended except as allowed by ASME OM, Division 1, Section IST, 2009 Edition through OMa-2011 Addenda and all earlier editions and addenda.

Table 1 Specified Test Frequencies

Frequency	Specified Time Period Between Tests
Quarterly (or every 3 mo)	92 days
Semiannually (or every 6 mo)	184 days
Annually (or every year)	366 days
x years	*x* calendar years where *x* is a whole number of years greater than or equal to 2 years

1.3.4 Regulatory Issue Summaries

In Regulatory Issue Summary (RIS) 2012-10, "NRC Staff Position on Applying Surveillance Requirement 3.0.2 and 3.0.3 to Administrative Controls Program Tests," and Enforcement Guidance Memorandum (EGM) 2012-001, "Dispositioning Noncompliance with Administrative Controls Technical Specifications Programmatic Requirements that Extend Test Frequencies and Allow Performance of Missed Tests," the NRC stated that items b, c, and d of the TS IST Program were inappropriately added to the TS and may not be applied (although the EGM allows licensees to continue to apply those paragraphs pending a generic resolution of the issue).

1.3 Discussion (Cont.)

1.3.4 Regulatory Issue Summaries (Cont.)

In RIS 2012-10 and EGM 2012-001, the NRC stated that the current TS allowance to apply SR 3.0.2 and SR 3.0.3, or equivalent, to the Inservice Testing Program would no longer be permitted. In response, CC OMN-20, which provides allowances similar to SR 3.0.2, or equivalent, was approved and proposed to be used as an alternative to the test periods specified in the OM Code. The proposed alternative substitutes an approved code case for the existing TS requirements that the NRC has determined are not legally acceptable as a TS allowance. This proposed alternative provides an equivalent level of safety as the existing TS allowance, while maintaining consistency with 10 CFR 50.55a and the ASME OM Code.
For pumps and valves with test periods of two years or less, the test frequency allowed by CC OMN-20 and the current TS Inservice Testing Program (as modified by SR 3.0.2, or equivalent, and EGM 2012-001) are the same. For pumps and valves with test frequencies greater than two years, CC OMN-20 allows the test frequency to be extended by six months. The current TS Inservice Testing Program does not allow extension of test frequencies that are greater than two years.

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

1.3.5 Generic Letter 89-04 and NUREG-1482

Generic Letter 89-04 provided mandatory guidance for several areas of IST Program Plan scoping and content that the NRC staff had determined to be an industry generic weakness. Subsequent to the Generic Letter, NUREG-1482 was issued and the Generic Letter was included as an appendix in the NUREG. The NUREG expands on the guidance provided by the Generic Letter. To keep the guidance in the NUREG current, the NRC issued Revision 2 in October 2013. Revision 2 incorporates regulatory changes up to and including the 2004 Edition including 2005 and 2006 addendas of Title 10, Part 50, of the Code of Federal Regulations. The “code of record” for this revision of the NUREG is the ASME OM Code, 2004 Edition through the 2006 Addenda.

NUREG-1482, while voluntary, incorporates the "non-voluntary" guidance in Generic Letter 89 04. In addition, NUREG-1482 provides discussion of some issues that are relevant to IST programs and their implementation.

This IST Program Plan is based on the recommendations of NUREG 1482, Revision 2. This Program Plan describes the testing requirements and NMPNS Unit 1 and 2 commitments for testing those ASME Code Class 1, 2, and 3 and other safety-related active or passive components that meet the criteria for inclusion in the IST Program.

1.4 IST Program Plan

This document is the Pump and Valve Inservice Testing Program Plan for NMPNS Unit 1 (NMP1) and Unit 2 (NMP2) in compliance with the requirements of 10CFR50.55a(f) and each units Technical Specifications. This Program Plan was prepared in accordance with the rules of the ASME OM-2012 Code. Appendix I is used for safety and relief valves; Section ISTB and Appendix V for pump testing; and ISTC for most valve testing along with Appendix II for check valves and Appendix III for active motor operated valve testing.

NMP1 components were generally designed and built to ANSI B31.1-1955 with portions of some systems to ASME I-1962 and/or ASME III-1965. In accordance with ASME OM Code, ISTA-1320, some systems are ASME classified as an optional upgrade. The upgrade directs that the repair, replacement, and maintenance activities will be performed to ASME rules. It does not require the owner to conduct periodic inservice, functional, or hydrostatic testing. For optionally upgraded systems, ISTA-1320 states that the application of the rules (ASME Code) is at the option of the owner and not a requirement.

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 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 two sets of Attachments (one for NMP1 and one for NMP2) which provide information referenced in the Pump and Valve Tables.

- Attachment 1 includes a listing of *[P&ID/Flow Diagrams]* on which a depiction of the pump or valve may be located.
- 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, if applicable.
- 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.

1.4 IST Program Plan (Cont.)

- 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 OM 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.
- Attachment 16 provides a listing of Check Valve Condition Monitoring (CVCM) Program Plans.

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.

1.5 References

This Program Plan was developed per the requirements and guidance provided by the following documents:

General References:

a. Title 10, Code of Federal Regulations, Part 50.55a(f), Inservice Testing Requirements.
b. Regulatory Guide 1.192, "Operations and Maintenance Code Case Acceptability, ASME OM Code".
c. NUREG/CR-6396, Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements
d. NUREG-0800, Standard Review Plan Section 3.9.6, "Inservice Testing of Pumps and Valves".
e. ASME OM Code-2012, "Code for Operation and Maintenance of Nuclear Power Plants".
f. NUREG 1482, Rev. 2, "Guidelines for Inservice Testing at Nuclear Power Plants".
g. Summary of Public Workshops Held in NRC Regions on Inspection Procedure 73756, "Inservice Testing of Pumps and Valves and Answers to Panel Questions on Inservice Testing Issues," dated 7/18/97.
h. NRC Regulatory Guide 1.26, "Quality Group Classification and Standards for Water-, Steam, and Radioactive-Waste-Containing Components of Nuclear Power Plants", dated March 23, 1972
i. ER-AA-330, Conduct of Inservice Inspection Activities
j. ER-AA-200, Preventive Maintenance Program
k. MA-CE-716-010-1008, Pre/Post Maintenance Testing
l. DER 2-98-0298, Failure to Evaluate Relief Requests
m. ER-AA-330-009, ASME Section XI Repair - Replacement Program.

Unit 1 Specific References:

a. NMPNS Unit 1 Updated Final Safety Analysis Report (U1-UFSAR)
b. NMPNS Unit 1 Technical Specifications (DPR63)
c. FCMS
d. NMPNS Unit 1 ASME Section XI Boundary Diagrams
e. NMPNS Unit 1 Piping and Instrumentation Diagrams, Q List
f. NMP1-APPJ-001, 10CFR50 Appendix J Testing Program Plan

1.5 References (Cont.)

Unit 1 Specific References (Cont.):

g. Internal Correspondence:
   - File Code 54299, K.B. Thomas to P.F. Francisco, dated February 7, 1990: Subject: Instrument Air and Containment Atmosphere Dilution (CAD) Systems
   - File Code (no code), D.J. Wolniak to K.B. Thomas, dated February 21, 1990: Subject: ASME Classification of Instrument Air and Nitrogen Systems
   - File Code (SM-ISI92-0061), M.S. Leonard to D.J. Wolniak, dated March 2, 1992: Subject: ASME Classification of Gas Systems - Unit 1
   - C.V. Mangan to D.B. Vassallo, NRC; first interval extension due to recirculation system piping and safe-end work, September 13, 1983
   - File Code (NMP1-M98-030), W.S. McLeod/T.G. Mogren to Larry Lukens, dated October 20, 1998: Subject: Manual Valves, IST Program Third Ten-Year Interval. Supplemented by DDC's 1M00665 and 1M00902. Also see revised Safety Class Determination 89-083 for additional detail regarding normally open manual boundary valves.

h. ECP-10-000662 - NMP1 ECS Closed Loop Designation

Unit 2 Specific References:

a. NMPNS Unit 2 Updated Safety Analysis Report (USAR)
b. NMPNS Unit 2 Technical Specifications (NPF69)
c. NMPNS Unit 2 Safety Evaluation Report, NUREG-1047, including Supplements SSER1 through SSER6
d. FCMS
e. Nine Mile Point Unit 2 Main Steam Line SRVs are tested in accordance with Maintenance Procedure N2-MMP-SRV-100, "Dikkers Safety Relief Valve Testing," or under vendor test procedures.
f. Safety Classification (Appendix B) Determinations, identified by number in the IST Bases sections that rely upon the Safety Class Determinations for the determination of a component safety-related function.
g. NMPC Internal Correspondence: Jeff Neyhard to Performance Group File, March 20, 1996, File Code NMP90831; Subject: "NMP2 Position Paper for Target Rock Solenoid Valve Position Indication Testing"
h. NMPC Internal Correspondence: Jeff Neyhard to Ali Egap, March 16, 1995; Subject: "OM-10 interpretation regarding NOT testing non-ADS SRVs after being installed in the plant"

1.5 References (Cont.)

Unit 2 Specific References (Cont.):

i. Documents pertaining to the establishment of the Unit Two commercial operation date:

  - New York Public Service Commission Opinion No. 89-37(C) effective March 14, 1991, establishing April 5, 1988 as the commercial operation date.
  - Internal memo date May 20, 1991, from G D Wilson to M A Egap transmitting the PSC Opinion and confirming the April 5, 1988 date.
  - Internal memo dated May 22, 1991, from A G Vierling to NMP2 ISI/IST File confirming the April 5, 1988 date.
  - Internal memo dated July 16, 1997, from Gail M. Ahern to Gary D. Wilson confirming the April 5, 1988 date.

j. NMP2-APPJ-001, Unit 2 Appendix J Program Plan:

2.0 INSERVICE TESTING PROGRAM FOR PUMPS

2.1 Code Compliance

The IST Program for pumps meets the requirements of Subsections ISTA, ISTB, and Mandatory Appendix V of the OM Code and any applicable interpretations or clarifications of existing requirements. Paragraph and table references in this section refer to specific paragraphs and tables in the OM Code. Where these requirements have been determined to be impractical, an alternative test provides an acceptable level of quality and safety, or conformance would cause unreasonable hardship without any compensating increase in safety, relief from Code requirements is/was requested pursuant to the requirements of 10CFR 50.55a(f)(5)(iii), 10CFR50.55a(z)(1) or 10CFR50.55a(z)(2).

2.2 Allowable Ranges of Test Quantities

The allowable ranges for test parameters as specified in the OM Code, Tables ISTB-5121-1, ISTB-5221-1 and ISTB-5321-1 will be used for all measurements of pressure, flow, and vibration except as provided for in specific relief requests.

2.3 Testing Intervals

The test frequency for pumps included in the Program will be as set forth in OM Code, paragraph ISTB-3400 and related relief requests. An allowable extension, not to exceed +25 percent of the surveillance interval may be applied to a test schedule as allowed by the NMP2 Technical Specifications or OM Code Case (CC) OMN-20 to provide for operational flexibility.

The frequencies used for scheduling pump tests are defined as:

a. Quarterly (Q) - 92 days
b. Biennial (2Y) – 730 days
c. Refueling - 730 days
d. Cold Shutdown - Per the applicable Relief Request consistent with the cold shutdown testing requirements for valves in the OM Code. When all cold shutdown testing will not be completed, priorities for testing will be established per NMPNS Engineering Programs.

2.4 Instrument Accuracy

Instruments will meet the requirements specified in the OM Code, paragraph ISTB-3500, and amplified in NUREG 1482, Revision 2, Section 5, except where specific relief is granted.

2.5 Vertical Line Shaft Pumps

Paragraph ISTB-2000 of the OM Code defines a Vertical Line Shaft pump as "a vertically suspended pump where the pump driver and the pump element are connected by a line shaft within an enclosed column." In a vertical line shaft pump configuration, the pump bearings would be submerged in the pumped fluid and inaccessible.

2.6 Pump Design Flow

Comprehensive pump testing is required to be performed with the pump operating at the comprehensive pump test flow rate. The OM Code does not define the term "design" flow. The industry has considered four different definitions: 1) the pump manufacturer's design flow for the pump, 2) the pump's best efficiency point (BEP), 3) the system design flow, and 4) the maximum required accident flow rate. The NRC has stated their position as "design" flow rate must be at least the maximum credited accident flow rate. NMPNS has determined that for the comprehensive pump testing the selected reference flow rate will be at least the maximum credited accident flow rate as stipulated by the NRC.

2.7 Specific Pump Testing Requirements

a. Surveillance Test Procedures shall be written for testing those pumps in the IST Program. These procedures shall provide for measurement of the required parameters at the stated frequency.

b. Reference values

Reference values shall be obtained as follows:

- Established only when the pump is known to be operating acceptably.
- Established at a point(s) of operation (reference point) readily duplicated during subsequent tests.
- Established in a region(s) of relatively stable pump flow.

Reference values shall be established at the comprehensive pump test flow rate for the comprehensive test.

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.

c. Allowable Variance from Fixed Reference Points

The OM Code allows for variance from a fixed reference value, stating that "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. Where it is not practical to vary system resistance, flow rate and pressure shall be determined and compared to their respective reference values.

d. Pump Monitoring, Analysis, and Evaluation

1. Applicable pump test parameters, except for fixed values, shall be trended [ISTB-6100].

2.7 Specific Pump Testing Requirements (Cont.)

2. If measured test parameter values fall within the OM Code alert range, the frequency of testing specified in paragraph ISTB-3400 shall be doubled until the cause of the deviation is determined and the condition is corrected, or an analysis of the pump is performed.
3. If the measured test parameter values fall within the required action range, the pump shall be declared inoperable until either the cause of the deviation has been determined and the condition is corrected, or an analysis of the pump is performed.
4. In cases where the pump's test parameters are within either the alert or required action ranges, an analysis may be performed that supports the pump's continued use at the changed values. This analysis shall include verification of the pump's operational readiness. The analysis shall include both a pump level and a system level evaluation of operational readiness, the cause of the change in pump performance, and an evaluation of all trends indicated by available data. The analysis shall also consider whether new reference values should be established and shall justify the adequacy of the new reference values, if applicable. The results of this analysis shall be documented in the record of tests.

2.8 Mandatory Appendix V "Pump Periodic Verification Test Program".

This Mandatory Appendix contains requirements to augment the rules of Subsection ISTB, Inservice Testing of Pumps in Light Water Reactor Nuclear Power Plants. The Owner is not required to perform a pump periodic verification test (PPVT), if the design basis accident flow rate in the Owner's safety analysis is bounded by the Comprehensive Pump Test or Group A Test.

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

2.8.1 Mandatory Appendix V General Requirements

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 PPVT at least once every 2 years.

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

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

e. Maintain the necessary records for the PPVTs, 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.

2.9 IST Plan Pump Table Description

Pump ID or 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

Pump Type An abbreviation used to designate the type of pump:

C	Centrifugal
PDN	Positive Displacement - Non-Reciprocating
PDR	Positive Displacement - Reciprocating
VLS	Vertical Line Shaft

P&ID The Piping and Instrumentation Diagram or Flow Drawing on which the pump is shown

Sheet The Sheet Number of the P&ID identified in the previous column

(Coord) Coordinates of the P&ID where the pump is located

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

Group A or B, as defined in Reference 1.4.2.

Test Parameters Lists each of the test parameters which are required to be measured for the specific pump. These include:

N	Speed (for variable speed pumps, only)
DP	Differential Pressure
DIS-P	Discharge Pressure (positive displacement pumps)
Q	Flow Rate
V_d	Vibration (displacement)
V_v	Vibration (velocity)
SKID	Skid mounted

Procedure Test Procedure which implements the testing identified in the previous column.

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

Q	Quarterly
Y2	Once every 2 years

NOTE: All tests are performed at the frequencies specified by Code unless specifically documented by a Relief Request.

Code Deviation Identifies the number of the Relief Request or Technical Position identification number applicable to the pump or specified test.

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

3.0 INSERVICE TESTING PROGRAM FOR VALVES

3.1 Code Compliance

This IST Program for valves meets the requirements of Subsections ISTA, ISTC, and Appendices I, II, and III of the OM Code and any applicable interpretations or clarifications of existing requirements provided by NUREG 1482, Revision 2. Paragraph and table references in this section refer to specific paragraphs and tables in the OM Code. Where these requirements have been determined to be impractical, an alternative test provides an acceptable level of quality and safety, or conformance would cause unreasonable hardship without any compensating increase in safety, relief from Code requirements is/was requested pursuant to the requirements of 10CFR 50.55a(f)(5)(iii), 10CFR50.55a(z)(1) or 10CFR50.55a(z)(2).

3.1.1 Exemptions

The following components are excluded from the testing requirements of this section, provided that the components are not required to perform a specific function as previously described in section 1.0:

a. valves used only for operating convenience such as vent, drain, instrument, and test valves.
b. valves used only for system control, such as pressure-regulating valves.
c. valves used only for system or component maintenance

Skid-mounted valves are excluded from Subsection ISTC, provided they are tested as part of the major component and are justified by the Owner to be adequately tested.

External control and protection systems responsible for sensing plant conditions and providing signals for valve operation are excluded from the requirements of Subsection ISTC.

Category A and Category B safety and relief valves are excluded from the requirements of paragraph ISTC-3700, Valve Position Verification and paragraph ISTC-3500, Valve Testing Requirements.

3.2 Power Operated Valves (POV) Test Requirements

3.2.1 Category A and B POVs, except motor-operated valves (MOV)

a. The exercise test shall consist of exercising the valve full open and/or full close and measuring stroke time(s) in the safety direction(s) as required.
b. When measuring valve stroke time, stroke time will commence upon movement of the valve control switch and end when the desired position indication is the only light that is illuminated (control switch to light) indicating full open/full close.
c. When a valve has no indicating lights in its designed electrical circuit, alternate acceptable means may be used to measure time from initiation of actuating signal to end of activating cycle (e.g., local timing by acoustic or visual observation).
d. For fail-safe valves, whereby placing the control switch in the OPEN position for fail-open valves, and the CLOSED position for fail-closed valves, results in a loss of actuator power; the fail-safe testing requirements are satisfied by the exercise test.

3.2.2 POV Failures and Corrective Action

Power Operated Valves (POV's) which fail to operate or exceed the limiting (maximum) stroke time acceptance criteria contained in the Surveillance Test Procedure, shall be declared inoperable. The Technical Specifications shall be reviewed for any applicable LCO Conditions. Valves declared inoperable may be repaired, replaced, or the data may be analyzed to determine the cause of the deviation and the valve shown to be operating acceptably. Valve operability based upon analysis shall have the results of the analysis recorded in the record of tests.

3.2.3 POV Reference Values

More than one test condition and more than one reference value may be required to verify proper valve operation at both hot and cold conditions. Design Engineering provides design "Limiting Values" of full stroke-time. For valves where no specific design limiting value exists, Administrative Procedure ER-AA-321, "Administrative requirements for Inservice Testing" shall be used.

3.2.4 Stroke-Time Testing of Multiple Valves Operated From A Single Switch

Some power-operated valves are grouped together on a common control switch. Valves tested as a group will be identified in the valve test tables. When individual valve position indication is available for multiple valves stroked from a single switch, and the ability exists to measure stroke time, the time shall be recorded. Such valves shall be stroke timed using sufficient stopwatches and resources to ensure that all valves are timed on the same switch movement. This satisfies the Code requirement for stroke-timing each valve individually and prevents inadvertent pre-conditioning that could be caused by multiple switch manipulations and multiple valve strokes. This clarification is a commitment in DER 2 2000-2925

3.2.5 Reactor Coolant System Pressure Isolation Valves

Reactor Coolant System Pressure Isolation Valves (PIVs) are Category A valves. ISTC-3630(f), requires that a valve with leakage rates exceeding the value specified by the Owner per ISTC-3630(e) shall be declared inoperable and either repaired or replaced. An ASME Code Interpretation (Interpretation 95-5) states, "It is up to the Owner to define what activities constitute maintenance, replacement, or a repair." These definitions are drawn from existing definitions in ASME Section XI and from NMPNS procedures. Activities undertaken to correct or prevent unsatisfactory or abnormal conditions shall fulfill the requirement for Corrective Action in ISTC-3630(f).

Unit 1 - There are 14 PIVs listed in the Unit 1 Technical Specifications. These valves are sealed with a qualified water seal system and are not subject to Appendix J Type C testing.

3.2.5 Reactor Coolant System Pressure Isolation Valves (Cont.)

Unit 1
Primary Coolant System Pressure Isolation Valves

Valve Number	Valve Type	Qualifies For Reduced Pressure Testing?
CKV-40-03	Check Valve	Yes
CKV-40-13	Check Valve	Yes
CKV-40-20	Check Valve	Yes
CKV-40-21	Check Valve	Yes
CKV-40-22	Check Valve	Yes
CKV-40-23	Check Valve	Yes
CKV-38-165	Check Valve	Yes
CKV-38-166	Check Valve	Yes
CKV-38-167	Check Valve	Yes
CKV-38-168	Check Valve	Yes
CKV-38-169	Check Valve	Yes
CKV-38-170	Check Valve	Yes
CKV-38-171	Check Valve	Yes
CKV-38-172	Check Valve	Yes

Unit 2 - There are 21 PIVs listed in the Unit 2 Technical Requirements Manual. These 21 PIVs are also containment isolation valves (CIVs). Several of these PIVs are eligible for reduced pressure testing in accordance with ISTC-3630.

Containment Pathway Type C Test Exclusion; “Water Filled”
Under Engineering Change Package ECP-16-000272 the primary containment penetrations and associated containment isolation valves listed below have been determined to remain “water filled” during and following a Design Basis LOCA.

Penetration ID	Inboard IV	Outboard IV
Z-10A	2RHS*V39A	2RHS*MOV40A
Z-10B	2RHS*V39B	2RHS*MOV40B
Z-11	2RHS*MOV112	2RHS*MOV113 / 2RHS*RV152
Z-14	2CSH*V108	2CSH*MOV107
Z-16	2CSL*V101	2CSL*MOV104

Following a design basis accident by virtue of the piping design, configuration, location, supports, and pipe whip restraints, an initial vertical column of water is available in the piping assuring that the penetrations remains “water filled”. For the purpose of ensuring the “water filled” condition exists for up to 30 days post LOCA, the ECP acceptance criteria for the <u>outboard</u> penetration isolation valves PIV water leakage tests is 0.0 gpm performed at a test pressure =/> Pa. Where outage PIV water leakage tests meet the Zero leakage criteria, Appendix J air leak rate tests are not required for any penetration containment isolation valves. Note that, all evaluated penetration systems (listed in the table above) are also classified as closed loops. As such, regardless of PIV water leakage test results, only a single penetration containment isolation valve is required to be Appendix J leak rate tested.

3.2.5 Reactor Coolant System Pressure Isolation Valves (Cont.)

Unit 2
Reactor Coolant System Pressure Isolation Valves

Valve Number	Valve Type	Qualifies For Reduced Pressure Testing?	"Zero" leakage requirement based on ECP-16-000272
2CSH*V108	Check	Yes	No
2CSH*MOV107	Flex-Wedge Gate	No	Yes
2CSL*V101	Check	Yes	No
2CSL*MOV104	Flex-Wedge Gate	No	Yes
2ICS*V156	Check	Yes	No
2ICS*V157	Check	Yes	No
2RHS*V16A	Check	Yes	No
2RHS*V16B	Check	Yes	No
2RHS*V16C	Check	Yes	No
2RHS*V39A	Check	Yes	No
2RHS*V39B	Check	Yes	No
2RHS*MOV104	Globe	Yes	No
2RHS*MOV112	Flex-Wedge Gate	No	No
2RHS*MOV113	Flex-Wedge Gate	No	Yes
2RHS*MOV24A	Flex-Wedge Gate	No	No
2RHS*MOV24B	Flex-Wedge Gate	No	No
2RHS*MOV24C	Flex-Wedge Gate	No	No
2RHS*MOV40A	Globe	Yes	Yes
2RHS*MOV40B	Globe	Yes	Yes
2RHS*MOV67A	Globe	Yes	No
2RHS*MOV67B	Globe	Yes	No

3.3 Check Valve Testing

3.3.1 Test Methods

Check valves are full-stroke exercised in the open direction using the following methods:

a. Using system flow equal to, or greater than, the required accident flow rate (plus allowance for analytical and instrument uncertainties).
b. Non-intrusive monitoring, or other positive means, that verifies the valve disk reaches the fully-open position (recording flow rate is not necessary).
c. Mechanical exercising.
d. Other methods that satisfy the requirements of GL 89-04, Position 1 or as specified in an approved relief request.

3.3.1 Test Methods (Cont.)

Check valves are full-stroke exercised in the closed direction using the following methods:

a. Verifying system flow equal to, or greater than, the required accident flow rate (plus allowance for analytical and instrument uncertainties) is achievable in a parallel flow path when the check valve being tested forms a boundary for that flow path.
b. Measuring check valve gross leakage or performing a gross pressure drop test to verify the valve disk is in the closed position.
c. Non-intrusive monitoring, or other positive means, that verifies the valve disk opens and then returns to the fully-closed position (recording leakage is not necessary unless required for Category A valves).
d. Mechanical exercising.
e. Other methods that satisfy the requirements of GL 89-04, Position 1 or as specified in an approved relief request.

3.3.2 Non-Intrusive Check Valve Testing

As discussed in NUREG-1482, Revision 2, Section 4.1.2, the NRC determined that the use of non-intrusive techniques is acceptable to verify the full stroke of a check valve. The licensee may use non-intrusive techniques to verify the capability to open, close, and fully stroke in accord with quality assurance program requirements. These techniques are considered "other positive means" in accordance with paragraph ISTC-5221(a), and relief is not required except as would be necessary for the testing frequency if the test interval extends beyond each refueling outage as allowed by the OM Code.

During the initial test of each valve, non-intrusive techniques will be used to verify that the system pressures and flow conditions specified in the test procedures cause the valves to fully stroke. Initial testing of check valves using non-intrusive techniques shall only be performed when the valve is known to be operating acceptably. During subsequent testing, if the system conditions are repeatable, each valve would typically be stroked and monitored using non-intrusive techniques.

Another alternative that may be employed is radiography. The position of the disk and the general condition of the internals may be determined using the radiographic method. This methodology is normally used for verification of valve closure only.

3.3.3 Check Valves Verified Closed by Leak Testing

The OM Code requires that check valves performing a safety function in the closed position be exercised to that position. Certain of these valves cannot be verified in the closed position quarterly because they do not have remote position indication and are generally located inside reactor containment or at other inaccessible locations. These valves may lack design provisions for system testing to verify closure capability at any plant condition. The only practical means of verifying valve closure may be by performing a seat leakage test. Many of these valves are Category AC valves that are Type C leak-rate tested during each refueling outage as specified in Appendix J to 10 CFR Part 50.

3.3.3 Check Valves Verified Closed by Leak Testing (Cont.)

If no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak-rate testing, such as local leak rate testing in accordance with Appendix J to 10 CFR Part 50, at each reactor refueling outage. Recognizing that the setup and performance limitations may render leak testing impractical during power operation and cold shutdown outages, the NRC has determined that implementation of an extension of the test frequency for such valves is acceptable in accordance with 10 CFR 50.55a(f).

In accordance with paragraph ISTC-5222, and as discussed in NUREG-1482, Revision 2, Section 4.4.7, as an alternative to check valve closure verification by Type C seat leakage testing at refueling, the Appendix II Check Valve Condition Monitoring Program could justify extending the exercise test interval to the leak test frequencies specified in Option B of Appendix J based on the valve's performance and operating condition.

3.3.4 Check Valve Disassembly and Inspection

When using check valve disassembly in a sampling plan, the IST Program may implement testing such that similar valves in the same service are grouped for testing purposes, not to exceed four valves in a single group (for valve groups of greater than four, the grouping and test schedule must be justified in the description of the testing plan). The sample examination program shall group check valves of similar design, application, and service condition and require a periodic examination of one valve from each group. Grouping of check valves shall be technically justified and shall consider, as a minimum, valve manufacturer, design, service, size, materials of construction, and orientation. Maintenance and modification history should be considered in the grouping process. The details and bases of the sampling program shall be documented and recorded. (paragraph ISTC-5221(c))

During the disassembly process, the full-stroke motion of the obturator shall be verified. Full-motion of the obturator shall be re-verified immediately prior to completing reassembly. Check valves that have their obturator disturbed before full-stroke motion is verified shall be examined to determine if a condition exists that could prevent full opening or closure of the obturator.

At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every 8 years. If problems are found with the sample valve, that are determined to affect the operational readiness of the valve, all valves in the group must be tested during the same outage.

Before return to service, valves that were disassembled for examination or that received maintenance that could affect their performance; shall be exercised, full or part stroke if practicable, with flow in accordance with paragraph ISTC-3520. Those valves shall also be tested for other applicable requirements (e.g., closure verification or leak rate testing) before returning them to service.

As an alternative to the aforementioned disassembly and inspection frequency, the Appendix II Check Valve Condition Monitoring Program could justify extending the disassembly and inspection interval to reduce the burden of unnecessary IST based on previous disassembly and inspection results.

3.3.5 Check Valve Condition Monitoring

As an alternative to the testing or examination requirements of paragraphs ISTC-3510, ISTC-3520, ISTC-3530, ISTC-3550, and ISTC-5221, NMPNS will establish a check valve condition monitoring program per paragraph ISTC-5222 and implement the program in accordance with Appendix II "Check Valve Condition Monitoring Program."

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.

Examples of candidates for (a) improved valve performance are check valves that: (1) have an unusually high failure rate during inservice testing or operations; (2) cannot be exercised under normal operating conditions or during shutdown; (3) exhibit unusual, abnormal, or unexpected behavior during exercising or operation, or (4) NMPNS elects to monitor for improved valve performance.

Examples of candidates for (b) optimization of testing, examination, and preventive maintenance activities are check valves with documented acceptable performance that: (1) have had their performance improved under the Condition Monitoring Program; (2) cannot be exercised or are not readily exercised during normal operating conditions or during shutdowns; (3) can only be disassembled and examined, or (4) NMPNS elects to optimize all the associated activities of the valve or valve group in a consolidated program.

If the Appendix II Condition Monitoring Program for a valve or valve group is discontinued then the requirements of paragraphs ISTC-3510, ISTC-3520, ISTC-3530, ISTC-3550, and ISTC-5221 must be implemented.

Valves included in the Check Valve Condition Monitoring Program (CVCMP) will be annotated with "CMP" in the "Frequency" column of the Valve Tables. The OM 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

3.3.6 Check Valves Serving as Vacuum Relief Valves (Appendix I)

If a check valve is capacity-certified, then it shall be classified as a vacuum relief device and tested in accordance with Appendix I. If a check valve is not capacity-certified, it shall be classified as a check valve and tested in accordance with ISTC. (Reference: Summary of Public Workshops, dated July 18, 1997 - Questions 2.3.15 and 2.4.11)

3.4 Manual Valves

Manual valves within the scope of IST that perform an active safety function shall be exercised at least once every 2 years, except where adverse conditions may require the valve to be exercised more frequently to ensure operational readiness (ISTC-3540).

3.5 Testing Intervals

The test frequency for valves included in the Program will be as set forth in the OM Code, paragraph ISTC-3510 and related relief requests. An allowable extension, not to exceed +25 percent of the surveillance interval, may be applied to the test schedule as allowed by the NMPNS Technical Specifications or OM Code Case (CC) OMN-20 to provide for operational flexibility.

The frequencies used for scheduling valve tests are defined as:

a. Quarterly - 92 days
b. Refueling - 730 days
c. 2 Year - 730 days
d. Per App. J - Leak Rate Testing frequency determined by Appendix J requirements.
e. Sampling - For safety/relief valves, set-point testing per the applicable population sampling requirements specified in OM Code, Appendix I.
f. Sampling - For check valves, disassembly and inspection per the applicable population sampling requirements specified in Subsection ISTC-5221(c).
g. Cold Shutdown - Consistent with the cold shutdown testing requirements for valves of the OM Code, paragraphs ISTC-3521(f), (g), & (h) and ISTC-3522(d), (e), & (f), and NUREG 1482, Revision 2, Sections 3.1.1, 3.1.1.1 and 3.1.1.2. When all cold shutdown testing will not be completed, priorities for testing will be established per approved NMPNS procedures.
h. CMP - Valves included in the Check Valve Condition Monitoring Program (CVCMP) will be annotated with "CMP" in the "Frequency" column of the Valve Tables. The OM Code testing specified in the Tables is replaced by the activities/tests identified in the specific CMP Plan.

Per the OM Code, paragraphs ISTC-3550 and ISTC-3610, valves in regular use and valves which demonstrate functionally adequate seat tightness during normal operation are not required to be additionally tested as long as the required observations and analyses are performed and documented at the otherwise required test frequency. The frequency indicated in the valve table for such valves is the applicable required test frequency.

3.6 Deferred Valve Testing

Where quarterly testing of valves is impractical or otherwise undesirable, testing will be deferred and performed during cold shutdown or refueling periods as permitted by the OM Code and NUREG 1482, Revision 2. The valve program tables identify those valves to which deferred testing applies and the respective technical justification for each is provided in an associated cold shutdown or refueling outage justification. The criteria for determining appropriate justification is based on NUREG 1482, Revision 2, Paragraphs 2.4.5, 3.1.1, and 4.1.6 as well as OM Code, paragraphs ISTC-3521(b), (c), (d) & (e) and ISTC-3522(b), & (c). The schedule and extent of testing valves during cold shutdown periods will be based on the requirements of OM Code, paragraphs ISTC-3521(f), (g), & (h) and ISTC-3522(d), (e), & (f), and NUREG 1482, Revision 2, Sections 3.1.1.1 & 3.1.1.2. When all cold shutdown testing will not be completed, priorities for testing will be established per NMPNS Engineering Programs.

OM Code, paragraphs ISTC-3521(h) and ISTC-3522(f) require that for valves tested during refueling outages, all testing must be completed prior to returning the plant to operation. For those cases where valves can be tested during power ascension and where the Technical Specification requirements for the valves or system determine when the valves are required to be operable, tests may be performed during power ascension. This position conforms to that stated in NUREG 1482, Revision 2, Section 3.1.1.2.

The majority of NMPNS' Test Deferral Justifications have been written for cold shutdown periods, vice only refueling outages. Many of these cold shutdown tests require very specific and unique plant conditions that may not be common during an "average" cold shutdown period. This limits NMPNS' ability to perform these tests. However, they are classified as cold shutdown tests, vice refueling tests, because if the appropriate plant conditions exist during a cold shutdown period and the opportunity presents itself, the appropriate tests can be performed.

3.7 Specific Valve Definitions

3.7.1 Active Valves

Per the OM Code, valves and pressure relief devices that perform a mechanical motion during the course of accomplishing a safety function are active components. If a valve is capable of being moved out of its safety position during either normal operation, and/or accident response and it must be capable of returning to that safety position, then the valve is considered to be active for that safety function.

NUREG 1482, Revision 2, Section 2.4.2, states that valves need not be considered active if they are only temporarily removed from their safety position for a short period of time and would be considered active only if the valve is routinely repositioned during power operation.

3.7 Specific Valve Definitions (Cont.)

3.7.2 Passive Valves

Per the OM Code, a valve is considered passive for a given safety function if, to perform that safety function, it is not required to move or be capable of moving (i.e. not even part-stroke or fail-safe) at any time. This means the valve must remain in that position any time the safety function might be required. This includes normal operation, as well as post-accident response until the safety function would no longer be required. If a valve does not meet this general criterion, then it should be considered to be active for that safety function. Passive valves include those valves required to perform a nuclear safety function by maintaining their position.

3.7.3 Normal Position

Some valves may be moved to an alternate position during plant operations that is different from their normal position, such as to support surveillance testing. If the valve is still relied on while in its alternate position to accomplish its safety function in its normal position, then the ability to return to its normal position from its alternate position must be considered to be an active valve function that is subject to IST requirements, even if the valve is only in the alternate position for a short period of time. In this case, the alternate position is also listed in the "Normal Position" column in the Valve Tables to ensure this test requirement is captured. (The only other alternative is to consider the valve inoperable while it is out of its normal position.)

3.7.4 Valve Categories

a. Category A - Valves for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of their required function(s). Category A applies to valves for which a specific maximum valve leakage limit exists.

b. Category B - Valves for which seat leakage in the closed position is inconsequential for fulfillment of the required function(s). Inconsequential implies a leakage limit does not exist relative to the valve's ability to perform its safety function. However, leakage past a closed valve above some level indicates the valve may be degrading and its ability to close at all (e.g., gross closure capability) may become threatened at some point.

c. Category C - Valves which are self-actuated in response to some system characteristic, such as pressure (relief valves) or flow direction (check valves) for fulfillment of the required function(s). If seat leakage in the closed position is consequential for a Category C valve, then it is categorized as "AC". If seat leakage in the closed position is not consequential for a Category C valve, then it may be categorized "BC". However, such valves are merely categorized as "C" and the "B" is considered to be implied. "Gross" leakage past a closed category C valve may still be used as the desired test parameter to detect when the valve may be degrading and its ability to close at all (e.g., “gross” closure capability) may become threatened, without implying the valve should be categorized AC.

d. Category D - Valves that are actuated by an energy source capable of only one operation, such as rupture disks or explosively actuated valves.

3.8 Division 1, Mandatory Appendix III

3.8.1 Exercise Requirements

ASME OM Code Mandatory Appendix III, "Preservice and Inservice Testing of Active Electric Motor Operated Valve Assemblies in Light-Water Reactor Power Plants," establishes the requirements for preservice and inservice testing to assess the operational readiness of active motor-operated valves (MOVs) in light-water reactor (LWR) power plants.

Appendix III, paragraph III-3610 “Normal Exercising Requirements” requires that all MOVs, within the scope of this Mandatory Appendix, shall be full cycle exercised at least once per refueling cycle with the maximum time between exercises to be not greater than 24 months. Full cycle operation of an MOV, as a result of normal plant operations or Code requirements, may be considered an exercise of the MOV, if documented. If full stroke exercising of an MOV is not practical during plant operation or cold shutdown, full stroke exercising shall be performed during the plant’s refueling outage.

Appendix III, paragraph III-3620 “Additional Exercising Requirements” requires that the Owner shall consider more frequent exercising requirements for MOVs in any of the following categories:

(a) MOVs with high risk significance
(b) MOVs with adverse or harsh environmental conditions
or
(c) MOVs with any abnormal characteristics

Appendix III, paragraph III-3721 “HSSC MOVs” requires that high safety significant component (HSSC) MOVs shall be tested in accordance with para. III-3300 and exercised in accordance with paragraph 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.

Based on the aforementioned Appendix III MOV exercising requirements, NMPNS will implement as follows:

1. IF the HSSC MOV can be exercised on-line, the valve must be exercised quarterly unless:

   (a) The site proposes an extended exercise test interval

AND

   The deferral justification (CSJ / ROJ) for the exercise test has a supporting documented PRA evaluation of the deferral risk showing the risk impact of the deferral is acceptably small (See 10CFR50.55 and RG 1.192 OMN-1 conditions – “potential increase in CDF and risk associated with the extension is small and consistent with the intent of the Commission’s Safety Goal Policy Statement.”)

2. IF the HSSC MOV cannot be exercised on-line, the valve may be exercised at cold shutdown (CSJ) or refueling outages (ROJ)

3.8.1 Division 1, Mandatory Appendix III Exercise Requirements (Cont.)

(a) A CSJ or ROJ is required; however, a supporting PRA evaluation is NOT required

Refer below for examples of when a PRA evaluation would or would not be required:

1. A HSSC MOV has a current CSJ or ROJ deferral and review of the deferral justification concludes the deferral is based on plant physical operating restrictions that prohibit exercising the valve on-line. The valve exercising is deferred to Cold Shutdown or refueling outages and a PRA evaluation is **NOT** required.

2. A HSSC MOV has a current CSJ or ROJ deferral and review of the deferral justification concludes the deferral is based on plant /personnel safety concerns that precludes exercising the valve on-line. The valve exercising is deferred to Cold Shutdown or refueling outages and a PRA evaluation is **NOT** required.

3. A HSSC MOV has a current CSJ or ROJ deferral and review of the deferral justification concludes the deferral is **NOT based on plant physical operating restrictions or plant/personnel safety concerns** that precludes exercising the valve on-line (i.e.; it's a deferral based on convenience - man-power reduction, scheduling benefit, etc.). **The valve exercising must be done quarterly.**

   (a) This testing may be deferred to a longer interval (on-line, Cold Shutdown, or refueling outages) **provided a supporting PRA evaluation is performed and documented that concludes the risk impact of the deferral** (the extended exercising frequency) **is acceptably small** as defined in 10CFR50.55 and Reg. Guide 1.174.

3.8.2 MOV Stroke Time

On August 17, 2017, a revision to the Code of Federal Regulations became effective with a new OM condition 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. It also effectively adds back the stroke time requirement that was not specifically required for certain MOVs tested under ASME OM Code Case OMN-1.

3.9 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.

On August 17, 2017, a revision to the Code of Federal Regulations became effective with a new OM condition 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.

3.10 Category A Containment Isolation Valve (CIV)and RCS Pressure Isolation Valve Leak Testing

a. All valves included in the Containment Leak Rate Test (CLRT) Program complying to 10 CFR 50, Appendix J, shall be included in the IST Program as Category A valves.

b. All valves designated as RCS Pressure Isolation Valves (PIVs) are considered to perform a pressure isolation function between the Reactor Coolant System (RCS) and systems of a lower design pressure and are included in the IST Program as Category A valves. The listing of designated PIVs also include isolation valves, optionally classified as PIVs, which prevent the communication of a high pressure source with the low pressure suction piping of a pump contained in a high pressure system.

3.11 IST Plan Valve Table Description

The valves included in the NMPNS Inservice Testing Program are listed in Attachment 15. The information contained in that table identifies those valves required to be tested to the requirements of the ASME OM Code, the testing methods and frequency of testing, associated Relief Requests, comments, and other applicable information. The column headings for the Valve Table are delineated below with an explanation of the content of each column.

3.11 Valve Table Information Description (Cont.)

Valve ID or Valve EIN	The unique identification number for the valve, as designated on the System P&ID or Flow Diagram.
Description	The descriptive name for the valve.
Class	The ASME Safety Class (i.e., 1, 2 or 3) of the valve. Non-ASME Safety Class valves are designated by "NC". Non- Safety-Related valves are designated "NS". Augmented valves are designated as "0".
Cat	The ASME Code category or categories of the valve as defined in Reference 1.4.2.
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.
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 ANG Angle BAL Ball BTF Butterfly CK Check DIA Diaphragm GA Gate GL Globe NDL Needle PLG Plug PCV Pressure Control Valve RPD Rupture Disk RV Relief SCK Stop-Check SHR Shear (SQUIB) SV Safety VB Vacuum Breaker XFC Excess Flow Check
Actuator 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 SO Solenoid Operator

3.11 Valve Table Information Description (Cont.)

Drawing (P&ID) & Sheet	The Piping and Instrumentation Diagram or Flow Drawing and sheet number on which the valve is shown.
Coord	Coordinates of the P&ID where the valve is shown.
Positions Norm/Safe/Fail	Abbreviations used to identify the normal, fail, and safety-related positions for the valve. Abbreviations used are:

AI	As Is
C	Closed
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
T	Throttled

Testing Requirements

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

BDC	Bidirectional Check Valve test (non-safety related closure test)
BDO	Bidirectional Check Valve test (non-safety related open test)
CC[2]	Check Valve Exercise Test - Closed
CO[2]	Check Valve Exercise Test - Open
CP[2]	Check Valve Partial Exercise Test
DIAG	MOV “Inservice” Diagnostic Test per Appendix III
DT	Category D Test
EC	Exercise Test – Closed (manual valve)
EO	Exercise Test – Open (manual valve)
FC	Fail-Safe Exercise Test - Closed
FO	Fail-Safe Exercise Test - Open
LT[1]	Leak Rate Test
PI	Position Indication Verification Test
RT	Relief Valve Test
SC	Exercise Closed (without stroke-timing)
SO	Exercise Open (without stroke-timing)
SPC	Partial Exercise Close (Cat. A or B)
SPO	Partial Exercise Open (Cat. A or B)
STC	Exercise/Stroke-Time Closed
STO	Exercise/Stroke-Time Open
TRV	Thermal Relief Valve

3.11 Valve Table Information Description (Cont.)

[1] A third letter, following the "LT" designation for leakage rate test, may be used to differentiate between the tests. For example, Appendix J leak tests will be designated as "LTJ", low pressure (non-Appendix J) leak tests as "LTL", and high pressure leak tests as "LTH".
[2] Three letter designations should be used for check valve tests to differentiate between the various methods of exercising check valves. The letter following "CC", "CO" or "CP" should be "A" for acoustics, "D" for disassembly and inspection, "F" for flow indication, "M" for magnetics, "R" for radiography, "U" for ultrasonics, or "X" for manual exercise.

Testing Requirements (Continued)

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

AJ	Per Appendix J
CM	Per Check Valve Condition Monitoring Program
CS	Cold Shutdown
M[n]	Once Every n Months
MOV	Per Appendix III Program
Q	Quarterly
RR	Refuel Outage
R[n]	Once Every n Refuel Outages
SA	Sample Disassemble & Inspect
TS	Per Technical Specification Requirements
Y[n]	Once Every n Years

RR/CSJ/ROJ — A cross-reference to the number of the Relief Request applicable to the specified test, the applicable Cold Shutdown Justification or Refuel Outage Justification which describes the reason why reduced-frequency exercise testing is necessary for the applicable valve.

Procedure — Test Procedure which implements the testing identified in the previous column left

Comments — Any appropriate reference or explanatory information (e.g., CVCMP, Technical Positions, etc.).

3.12 IST Plan Valve Table Notes

3.12.1 Common Notes

CKV Program This valve is also tested in the Check Valve Program.
AOV Program This valve is also tested in the AOV Program.

3.12.2 Unit 1 Notes

Note 1 The MEL1 designator(*) is unique for each hydraulic control unit (HCU); only the typical of 129 HCUs is listed.

Note 2 Scram accumulator pressure decay testing performed each refueling outage verifies closure. (Ref. GL 89-04 Position 7)

Note 3 Control rod scram insertion time testing per TS 3.1.1 verifies valve proper operation and operability. (Ref. GL 89-04 position 7)

Note 4 Normal control rod motion verifies the valve moves to the closed position. Each partially or fully withdrawn control rod shall be exercised at least once each week per TS 3.1.1. For control rods that are in the safe position, the valve is not required to be exercised. (Ref. GL 89-04 Position 7)

Note 5 The valve is a primary reactor coolant system pressure isolation valve and is leak tested in accordance with the UFSAR section V-D. Leakage testing is performed in accordance with GVRR-03.

Note 6 This valve is a containment isolation valve and is part of a qualified water seal system. Performance-based test intervals are permitted under the Appendix J Program through NEI-94-01, Section 6.0, General Requirements.

Note 7 These valves are grouped (IV-201.2-109/110/111/112, IV-201.7-02/03) and (IV-201.7-08/09/10/11) and each group is controlled by one switch.

Note 8 This valve is normally closed and remains closed to ensure the integrity of the qualified water seal system. NMPC water seal safety evaluations 89-013 and 94-063 take credit for the combination of the check valve and the associated FCV to ensure cross-tie leakage is minimal during an accident. The safety evaluations credit quarterly reverse flow exercise testing and exposure to the type A containment test as confirmation that cross-tie leakage remains minimal. The FCV remains category B passive and is also exposed to the containment type A test with the check valve. No local leak rate testing is performed or required for these valves.

Note 9 The monthly start and operability test per Technical Specification 4.6.3.b satisfies the testing requirements of this valve.

Note 10 Refer to DER 1991-1024 for initial identification of testing requirements. As stated in the Unit TS 3.6.3 bases “Two fuel oil storage tanks are provided with piping inter-ties to permit supplying either diesel generator. A two-day supply will provide adequate time to arrange for fuel makeup if needed. The full capacity of both tanks will hold a four-day supply.”

Note 11 EFV testing - Verification of proper valve closure is by an audible indication. When the excess flow check valve closes, a noticeable noise is generated by the hydraulic surge within the piping, followed by an obvious decrease in the flow noise through the line. Visual observation of any flow from the drain piping is not possible since the drain line is hard piped directly to the equipment drain tank.

Note 12 Fail-safe testing of valves IV-01-03/04 is by removing electric power from the solenoids.

Note 13 Preservice and as-found water leakage tests shall be performed in accordance with specified engineering methods and acceptance criteria. A satisfactory leakage test satisfies full-stroke exercising. The leakage test may be performed on the bench or in-situ.

3.12.2 Unit 1 Notes (Cont.)

Note 14 The valve is a containment isolation valve that is provided with a qualified seal water system in accordance with 10CFR50 Appendix J for all post-accident conditions. Therefore, this valve does not require an Appendix J Type C air/nitrogen test. The valve is required to be leak tested with water at a pressure of at least 1.1*Pa in the direction of the applied seal water. Water leakage limits are assigned to ensure that the qualified water seal pressure of 1.1*Pa is maintained.

Note 15 Emergency Condenser (EC) System

The EC system may be designated as a Closed Loop System Outside Containment (CLOC). Operation in a CLOC configuration only requires Appendix J Type C Local Leak Rate Testing of one CIV in system Primary Containment Penetrations. For EC Penetrations X-5A, and X-5B, outboard valves IV-39-05 and IV-39-06 will be the leak rate tested valves when in the CLOC configuration, check valves CKV-39-03 and CKV-39-04 will not be tested. Note: When in the CLOC configuration; all leakage from the CLOC boundary must be quantified in accordance with the system operating procedure (N1-OP-13). Alternatively, if EC Isolation check valve LLRT results are satisfactory, a CLOC configuration is not required and leakage from EC Penetrations X-5A and X-5B inside and outside isolation valves (CKV-39-03: IV-39-05 and CKV-39-04: IV-39-06) will be included in the total leakage summary under N1-TSP-201-550. To manage the current configuration, both the System Operating Procedure and the Appendix J Program Plan will document the configuration of the Emergency Condenser System (CLOC or no CLOC). This flexibility to operate the EC System in a Standard configuration (no CLOC) or a Closed Loop System Configuration is supported by ECP-14-000871.

The current and historic configurations are documented in the table below. Note: The Initial CLOC configuration went into effect following N1R22. The X in the box reflects the system configuration following the refueling outage.

Refuel Outage	Closed Loop Configuration (CLOC)	Standard Configuration (not CLOC)
Plant Startup		X
N1R22	X	
N1R23		X

The chart below outlines Appendix J testing requirements during a CLOC System Configuration and a Standard System Configuration (not CLOC).

Function	Valve Number	Penetration	App. J Test Requirement in System CLOC config.	App. J Requirement in Normal System config
EC Loop 11 Return (outboard)	IV-39-05	X-5B	Appendix J Tested	Appendix J Tested
EC Loop 11 Return (inboard)	CKV-39-03	X-5B	Not Tested (alternate)	Appendix J Tested
EC Loop 12 Return (outboard)	IV-39-06	X-5A	Appendix J Tested	Appendix J Tested
EC Loop 12 Return (inboard)	CKV-39-04	X-5A	Not Tested (alternate)	Appendix J Tested

3.12.3 Unit 2 Notes

PIV Pressure Isolation Valve testing required by Improved Technical Specification 3.4.6.1. List of Pressure Isolation Valves is in TRM Table T3.4.6-1.

Note – 1 The following relief valve tests shall be performed in the following order (Appendix I):

- VT: Visual Examination
- LA: As–Found Seat–Tightness
- RT: Valve Set Pressure
- LL: As-Left Seat–Tightness at least once every 10 years. Compliance with the Nine Mile Point Unit 2 seat tightness criteria shall be determined, using the applicable criteria in Engineering Specification M2–0004, “ASME OM IST Relief Valve and Vacuum Relief Valve Acceptance Criteria.”
- BD: Verification of the Integrity of the Balancing Devices.

Note – 2 Valves leak–rate tested per Improved Technical Specification SR 3.6.1.3.11, Primary Containment Leakage, Potential Bypass Leakage Paths and Table 3.6.1.3-1.

Note – 3 The leak rate requirement “LK” may be satisfied by correlation of the Appendix J test results (Safety Evaluation #93-076)

Note – 4 LLRT performed quarterly since valves are stroke-timed closed quarterly. Technical Specifications permit leakage rate testing at least once every 184 days AND within 92 days after opening the valve, as required by Improved Technical Specification SR 3.6.1.3.6.

Note – 5 2CSL*RV105 and 2CSL*RV123 are specifically exempted from Type C testing by Note 25 in USAR Table 6.2-56. They are also exempt from Type C testing on the basis that they terminate below the minimum suppression pool water level.

Note – 6 Valves *RV125, *RV126, and *RV127 are Class 3 “pressure relief valves.” They are two–stage devices, in that they have an initial opening range over which they will reclose (approximately but not greater than 2 inches) and a larger non–reclosing range over which they perform their active safety function. After opening to their non–reclosing position, the valves must be reset manually. These valves are tested at least once every ten years. Periodic testing is performed in situ by measuring:

a) the force required to lift the valve disk to near the top of the reclosing range
b) the force required to lift the valve disc to near the top of its non–reclosing range. The valve is not replaced unless it requires maintenance. The testing measures the force required to lift the disk off the seat, using a calibrated force gauge.

Note – 7 Tested functionally as part of the monthly diesel surveillance. A successful starting, loading, and running of the diesel provide adequate demonstration that this component is capable of performing its safety-related functions.

3.12.3 Unit 2 Notes (Cont.)

Note – 8 This non-ASME, skid-mounted component is tested on an augmented basis, commensurate with its importance to safety. This check valve is mounted upside down such that the disk lays in the full open position by gravity. No degradation mechanism exists since dry air is used and no movement takes place unless an upstream pipe break occurs. Reverse flow closure capability shall be demonstrated via freedom of movement checks performed during disassembly and inspection activities. The D&I shall be performed on a 24-month sampling basis. Specifically, one of four associated check valves shall be disassembled and inspected every 24-months such that all four valves are exercised within an 8-year period. D&I may be performed during plant operation with other LCO activities or during refueling outages.

Note – 9 The FPW valves 2FPW*SOV218, *SOV219, *SOV220, and *SOV221 have been abandoned in place and are considered passive for all modes of operation. The valve electrical leads have been lifted, and caps have been installed to blank the inboard and outboard pipe ends. Since these valves are Containment Isolation Valves, only the Appendix J test will be performed. They have no position indication. LDCN–U–1397 (ECN–2M10220) and SER 90–121 have been approved to justify and implement the change.

Note – 10 Design Change PC2-0139-99 (ref. DDC 2M11650A) replaced these valves with leak-tight valves. They are the credited inlet boundary for the ADS Receiver Tanks (TK4 & TK5). Therefore, they are tested as part of the Receiver Tank boundary, with an acceptance criterion of 1 scfh per ADS valve. For 2GSN*V70A and TK4, the criterion is 3 scfh; for 2GSN*V70B and TK5, the criterion is 4 scfh.

Note – 11 RD-5Y: Refer to Vendor Manual for rupture disks, N20227. The replacement rupture disk shall pass visual examination in accordance with NMPC receipt inspection procedures. Refer to DER NM-2002-2406, PM Assessment Analyses GTS-04-008, GTS-05-008, GTS-04-012 and GTS-05-012 justified 5-year replacement interval.

Note – 12 This valve is part of a leak-rate tested boundary. The acceptance criterion for the system is 3 scfh. Therefore, the maximum leakage the valve could have is 3 scfh.

Note – 13 Fails open on loss of electric power; fails as-is on loss of hydraulics.

Note – 14 RD–5Y: The replacement rupture disks shall pass visual examination in accordance with NMPNS receipt inspection procedures. Refer to PM Basis #14876, TPM Record IAS-06-001 for increase from 2 to 5 year replacement interval justification.

Note – 15 Valve exercising or stroke time testing may be delayed until the repeatable test condition (935–1035 psig reactor pressure) is reached or met. (Reference NUREG–1482, Revision 2, Section 3.1.1.2, Testing at a Refueling Outage Frequency for Valves Tested During Power Ascension)

Note – 16 2ICS*V39 and 2ICS*V40 are “simple check valves,” and must be exercised quarterly in accordance with OM Code. In addition, the set point shall be verified at least once per 10 years, although this is not a Code requirement.

Note – 17 Tested functionally with RCIC turbine. Successful cold start satisfies the functional test.

Note – 18 Refer to Vendor Manual for rupture disks, N20227. The replacement rupture disk shall pass visual examination in accordance with NMPC receipt inspection procedures.

3.12.3 Unit 2 Notes (Cont.)

Note – 19 Improved Technical Specification SR 3.6.1.7.1, SR 3.6.1.7.2, and SR 3.6.1.7.3, “Suppression Chamber / Drywell Vacuum Breakers,” satisfies the test requirements specified in OM Code-2012, Appendix I.

Note – 20 USAR Section 6.2.1.1.2 states, “No vacuum relief valves are provided between the drywell and the reactor building atmosphere. The primary containment structure can accommodate sub–atmospheric pressure of approximately 10 psia at maximum operating water level.” Also see Safety Classification (Appendix B) Determination No.89–067 for additional information. Therefore, Appendix I, I-1380, Test Frequency, Classes 2 and 3 Vacuum Relief Valves, Except for Primary Containment Vacuum Relief Valves, is the correct OM Code section.

Note – 21 The excess flow check valves with PID Coordinates “CHR1” are listed on Chart I on PID–28C.

Note – 22 Although these valves are outside the scope of Code-required inservice testing, they are tested on an augmented basis. The leak rate test performed every refueling outage will be credited for the reverse flow exercise. See IST Bases document NER-2A-002-ISC for details.

Note – 23 All 18 Main Steam SRVs are Class 1 Main Steam Pressure Relief Valves with Auxiliary Actuation Devices as defined in OM Code-2012, Appendix I. They are not equipped with direct position indication. The SRVs are removed for as–found testing, preventive maintenance, and as–left testing. Since the SRV equipment mark number designates a particular location and set-point, and since there are several spares for each setpoint, the SRV serial number shall be used to track component performance and location. The sample size shall be as identified in Appendix I and specified in the NMP2 Technical Support testing schedule. The applicable set-point and leakage criteria are in Technical Specification List M2–0004, “ANSI/ASME OM–1 Relief & Vacuum Relief Valve Acceptance Criteria.” Tests for SRVs shall be in accordance with the sequence stipulated in Appendix I, I-3300: “When on–line testing is performed to satisfy periodic testing requirements, visual examination may be performed out of sequence.” Paragraph I-3310, Class 1 Main Steam Pressure Relief Valves With Auxiliary Actuating Devices, states, “Tests before maintenance or set-pressure adjustment, or both, shall be performed for I-3310(a), (b), and (c) in sequence. The remaining tests shall be performed in sequence after maintenance or set-pressure adjustments.”

a. visual examination [VT];
b. seat tightness determination [LA];
c. set pressure determination [RT];
d. determination of electrical characteristics and pressure integrity of solenoid valve(s) [SO]
e. determination of pressure integrity and stroke capability of air actuator [AO];
f. determination of compliance with the Owner’s seat tightness criteria [LL].

3.12.3 Unit 2 Notes (Cont.)

Note – 24 Tested per Improved Technical Specification SR 3.6.1.3.10, "Primary Containment Isolation Valves;" TIP explosive isolation valve operability.

Note – 25 Scram Inlet and Outlet valves AOV126 and AOV127, the scram pilot valve SOV139, the scram discharge riser check V114, the drive water check V137, and the cooling water check valve V138 are tested functionally by Technical Specification-required surveillance testing. See IST Bases document NER–2A–002–RDS.

Note – 26 The backup scram valves SOV137 and SOV138 are tested every refueling outage by an Operations surveillance procedure. See IST Bases document NER-2A-002-RDS.

Note – 27 The scram discharge volume air isolation valves SOV154 and SOV155 are tested with the SDV vent and drain valves. See IST Bases document NER-2A-002-RDS.

Note – 28 The alternate rod insertion (ARI) valves are tested by an I&C technical procedure. See IST Bases document NER-2A-002-RDS.

Note – 29 The accumulator charging water check valve V115 is tested every refueling outage by an Operations surveillance procedure. See IST Bases document NER-2A-002-RDS.

Note – 30 Type C leakage rate testing not required. (NIP–DES–04, Note (d); Improved Technical Specification TRM 3.6.1 and Table T3.6.1-2)

Note – 31 May be tested in the reverse direction. (NIP–DES–04, Note (n); USAR Table 6.2-65; Improved Technical Specification TRM 3.6.1 and Table T3.6.1-2)

Note – 32 Outboard Isolation Valve bonnet pressure relief valves are Type C tested as part of 2RHS*MOV15A, B assembly. (NIP–DES–04, Note (n); Improved Technical Specification TRM 3.6.1 and Table T3.6.1-2).

Note – 33 Valves are tested as a pair. Should the test fail, both valves shall be declared inoperable and shall be repaired or replaced as necessary.

Note – 34 Maintaining 2SLS*MOV5A&B with the motor-operated stem in the open position meets the safety function for ATWS SLS automatic injection. This allows the valves to act as simple check valves which are tested for the open safety position per ISTC. The forward flow test is performed during refueling outage during the demineralized water injection test. Closed position testing to meet the GDC 55/56 criteria after SLS injection is accomplished by inserting the stem to the closed position. The stem is exercised and timed quarterly to the closed position.

4.0-A Attachments – Unit 1

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2. Pump Relief Request Index
3. Pump Relief Requests
4. Valve Relief Request Index
5. Valve Relief Requests
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16. Check Valve Condition Monitoring Plan Index

4.0-B Attachments – Unit 2

1. System and P&ID Listing
2. Pump Relief Request Index
3. Pump Relief Requests
4. Valve Relief Request Index
5. Valve Relief Requests
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12. Technical Position Index
13. Technical Positions
14. Inservice Testing Pump Table
15. Inservice Testing Valve Table
16. Check Valve Condition Monitoring Plan Index

Attachment 1 – Unit 1

System Name / Code / P&ID

SYSTEM NAME	CODE	P&ID(s)
Automatic Depressurization	ADS	C18002C-001
Breathing Air & Service Water to Drywell	BA/SW	C18578C
Condensate Transfer System	CNS	C18003-001, C18003-002, C18048C
Control Room Chilled Water and HVAC	CRAC	C18047C
Control Rod Drive	CRD	C18016C-001, C18016C-002
Core Spray	CRS	C18007-001, C18007-002
Combustible Gas Control	CTN	C18014C-001, C18014C-003, C18014C-004
Hydrogen-Oxygen Monitoring	CTN(H2O2)	C18014C-002, C18014C-003
Containment Spray	CTN-SP	C18012C-001, C18012C-002
Reactor Water Cleanup System	CU	C18009C-001, C18009C-002
Diesel Generator Air Start, Fuel/Lube Oil Systems	DG	C18026C-001, C18026C-002
Emergency Cooling	EC	C18017C-001, C18017C-002
Emergency Service Water	ESW	C18022C-001, C18027C-001, C18027C-002
Spent Fuel Pool Cooling	FP	C18008C
Feedwater	FW/HPCI	C18005-001, C18005-002
Instrument Air	IA	C18011C-001, C18011C-002
Liquid Poison	LP	C18019C
Main Steam System	MS	C18002C-001
Transversing Incore Probe (TIP)	NEU	C18014C-002, C19405C, C19046C
Primary Containment Vacuum Relief	PCS	C18006C-001, C18006C-002
Reactor Building Closed Loop Cooling	RBCLC	C18022C-002
Reactor Building Ventilation	RBV	C18013C
Reactor Recirculation	RR	C18020C-001
Reactor Vessel Instrumentation	RXVI	C18015C, C18016C-003
Shutdown Cooling	SDC	C18018C-001, C18018C-002
Sampling	SS	C18041C-002, C18041C-007
Waste Disposal	WDS	C18045C-007, C18045C-009

Attachment 2 – Unit 1

Pump Relief Request Index

Pump Relief Request Index

RELIEF REQUEST NUMBER	RELIEF REQUEST TITLE	APPROVAL DATE
RBCLC-PR-01	Alternate Frequency for RBCLC Pump Testing	11/13/2018
DG-PRE-01	Alternative Relief Evaluation for Emergency Diesel Generator Fuel Oil Transfer Pumps	Not Required

Attachment 3 – Unit 1

Pump Relief Requests

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(2)
RBCLC-PR-01, Rev. 0, Reactor Building Closed Loop Cooling Water Pumps

1. ASME Code Component(s) Affected

The following Reactor Building Closed Loop Cooling (RBCLC) Pumps are affected:

Component	Description	Class	Group
PMP-70-01	Reactor Building Closed Loop Cooling Water #11	3	A
PMP-70-02	Reactor Building Closed Loop Cooling Water #12	3	A
PMP-70-03	Reactor Building Closed Loop Cooling Water #13	3	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

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-3000-1, Inservice Test Parameters, provides the parameters for Flow Rate (Q) and Differential Pressure (ΔP) for Group A pump testing.

Table ISTB-3400-1, Inservice Test Frequency, provides Group A Test frequency for Group A pumps as “Quarterly”.

ISTB-5121, Group A Test Procedure, states, in part, that “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. The test parameters shown in Table ISTB-3000-1 shall be determined and recorded as required by this paragraph.

4. Reason for Request

Pursuant to 10 CFR 50.55a, *Codes and standards*, paragraph (z)(2), an alternative is proposed to the pump test requirements of the ASME OM-2012 Code. The basis of the request is that compliance with the Code requirements results in hardship or unusual difficulty with no compensating increase in the level of quality and safety.

The RBCLC system is not a fixed resistance system. For the RBCLC system, no pump test loops or individual pump flow instrumentation is installed. Individual pump flow can only be determined by measuring system flow rate. The system flow rate and differential pressure are a function of the number of pumps running and system heat loads. During normal plant operations, system heat loads prevent removing the RBCLC system from service. Operating conditions do not permit single pump operation at repeatable test conditions to allow individual pump parameters (i.e., flow rate and differential pressure) to be measured.

4. Reason for Request (Cont.)

Therefore, during normal plant operation, operating a single RBCLC pump at a fixed reference condition (per ISTB-5121) to perform a Group A test (per ISTB-3400) would require reducing system heat loads and may result in a plant shutdown to cold shutdown conditions. Complying with the Code would require NMPNS, Unit No. 1, to enter cold shutdown conditions every quarter where RBCLC system operating conditions allow single pump operation. Cold shutdown reduces system heat loads sufficiently to allow single RBCLC pump operation at a fixed reference condition and thus allows measurement of individual pump parameters (i.e., flow rate and differential pressure).

Obtaining flow rate and differential pressure measurements (parameters required by Table ISTB-3000-1 for an individual RBCLC pump on a quarterly basis poses a significant hardship (plant shutdown).

Alternatively, compliance could be achieved by a major system redesign and modification such as installation of individual pump test loops with flow instrumentation. This would allow a single pump to be removed from the system flow path and operated on a test flow path at Code required fixed reference conditions. Such a major system modification would be costly and burdensome with no compensating increase in the level of quality or safety.

5. Proposed Alternative and Basis for Use

Quarterly, during normal system operation, vibration (V) shall be measured for each RBCLC pump. During cold shutdowns, all the applicable parameters for a Group A test from Table ISTB-3000-1 (flow rate (Q), vibration (V), and differential pressure (ΔP)) shall be measured for each RBCLC pump. The comprehensive test specified in Table ISTB-3400-1 will also be performed biennially. The testing alternative described above will still allow an adequate determination of pump operational readiness and permit detection of component degradation.

Therefore, relief is requested pursuant to 10 CFR 50.55a(z)(2) based on the determination that compliance with the Code required Group A pump test requirements cannot be achieved without major system modifications resulting in a hardship or unusual difficulty without a compensating increase in the level of quality and safety and the proposed alternative provides reasonable assurance of pump operational readiness.

6. Duration of Proposed Alternative

This request, upon approval, will be applied to the NMPNS, Unit No. 1, fifth 10-year interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028.

7. Precedent

This relief request was previously approved for the fourth 10-year interval at NMPNS, Unit No. 1, as documented in NRC safety evaluation, “Nine Mile Point Nuclear Station – Safety Evaluation of Relief Requests [RBCLC-PR-01] for the Unit No. 1 Fourth 10-Year and Unit No. 2 Third 10-Year Pump and Valve Inservice Testing Program (TAC Nos. MD9202 and MD9203),” dated December 29, 2008 (ML083500039).

Alternative Relief Evaluation Providing an Acceptable Level of Quality and Safety

**In Accordance with 10 CFR 50.55a(f)(4), DG-PRE-01, Rev 0,
Emergency Diesel Generator Fuel Oil Transfer Pumps**

1. ASME Code Component(s) Affected

The following Emergency Diesel Generator Fuel Oil Transfer Pumps are affected:

Component	Description	Class	Group
PMP-82-40	Emergency Diesel Generator #102 Fuel Oil Transfer	N	B
PMP-82-41	Emergency Diesel Generator #103 Fuel Oil Transfer	N	B

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

10 CFR 50.55a(f)(4), Inservice Testing Standards Requirements for Operating Plants, published July 18, 2017, requires an augmented inservice testing program be developed for pumps and valves within the scope of the ASME, OM Code that are not code class 1, 2, or 3 components.

10 CFR 50.55a(f)(4), states: "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 testing 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 paragraphs (f)(2) and (3) of this section and that are incorporated by reference in paragraph (a)(1)(iv) of this section, to the extent practical within the limitations of design, geometry, and materials of construction of the components. 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 a hardship or unusual difficulty without a compensating increase in the level of quality and safety, where documented and available for NRC review."

Table ISTB-3400-1, Inservice Test Frequency, requires either a quarterly Group A or Group B test, a Biennial Comprehensive test and a Pump Periodic Verification test (PPVT).

4. Reason for Evaluation

Pursuant to 10 CFR 50.55a(f)(4) a deviation from the ASME OM Code provisions is being implemented since the testing performed at NMPNS, Unit No. 1, provides an acceptable level of quality and safety.

The Emergency Diesel Generator Fuel Oil Transfer pumps transfer fuel oil from the storage tank to the day tank to support continuous diesel generator operation. These pumps are safety-related, active and operate when the diesel engine is operating. They are controlled by a level switch in the day tank. However, these pumps are not supplied with an emergency power source. The pump discharge pressure is controlled by a pressure switch set at approximately 75 psi. No pump discharge pressure gauge is installed. These pumps are positive displacement pumps and are augmented in the Inservice Testing Program.

The Emergency Diesel Generator Fuel Oil Transfer pumps are required to produce 10 gpm in order to meet design requirements. The discharge pressure needs to be sufficient to overcome piping and elevation requirements in order to ensure the 10 gpm requirement is met.

These pumps are presently tested to meet quarterly Group A pump testing requirements. The pump discharge pressure is maintained by a pressure switch during pump operation and the pump flow acceptance criteria is required to be between 12.4 gpm and 14.3 gpm. The present test acceptance criterion includes an alert range between 12.0 gpm and 12.4 gpm in order to detect pump degradation. The acceptance criterion also ensures sufficient flow and pressure to meet the requirements for the PPVT.

The testing described above provides an acceptable level of quality and safety.

5. Proposed Alternative and Basis for Use

NMPNS, Unit No. 1, will continue to test the Emergency Diesel Generator Fuel Oil Transfer pumps as Group A pumps with acceptance criterion sufficient to meet the PPVT requirements. This testing will include an alert range to detect pump degradation.

This testing provides an acceptable level of quality and safety and also ensures the pump degradation is detected and that the design requirements are met.

Therefore, the alternative relief is being implemented pursuant to 10 CFR 50.55a(f)(4) based on the determination that the testing at NMPNS, Unit No. 1, provides an acceptable level of quality and safety and that the proposed alternative provides reasonable assurance of pump operational readiness.

6. Duration of Proposed Alternative

This alternative will be applied to the NMPNS, Unit No. 1, fifth 10-year interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028.

Attachment 4 – Unit 1

Valve Relief Request Index

Valve Relief Request Index

RELIEF REQUEST NUMBER	RELIEF REQUEST TITLE	APPROVAL DATE
GV-RR-03	Elapsed Time Between Successive Openings of PIVs	11/13/2018
ADS-VR-01	ERV Power Operated Valves Tested Each Cycle	11/13/2018
CRD-VR-01	Stroke Time Testing of SCRAM Discharge Volume Valves	11/13/2018
CTNH202-VR-01	H2/O2 Sample and Return Valve Stroke Time Testing Group 1	11/13/2018
CTNH202-VR-02	H2/O2 Sample and Return Valve Stroke Time Testing Group 2	11/13/2018
MS-VR-01	Reactor Pressure Vessel Safety Valve Testing	11/13/2018
IA-VRE-01	Alternative Relief Evaluation in Accordance with 10CFR50.55a(f)(4)	Not Required

Attachment 5 – Unit 1

Valve Relief Requests

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
GV-RR-03, Elapsed Time Between Successive Openings of PIVs

1. ASME Code Component(s) Affected

Refer to Attachment 1, "Affected Components"

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

ISTC-3630, *Leakage Rate for Other Than Containment Isolation Valves*, states, "Category A valves with a leakage requirement not based on an Owner's 10 CFR 50, Appendix J program, shall be tested to verify their seat leakages [are] within acceptable limits. Valve closure before seat leakage testing shall be by using the valve operator with no additional closing force applied."

ISTC-3630(a), *Frequency*, states, "Tests shall be conducted at least once every 2 yr."

4. Reason for Request

Pursuant to 10 CFR 50.55a, *Codes and standards*, paragraph (z)(1), an alternative to the requirement of ASME OM Code ISTC-3630(a) is requested. The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety.

ISTC-3630 requires that leakage rate testing for pressure isolation valves (PIVs) be performed at least once every two years. PIVs are not specifically included in the scope for performance-based testing as provided for in 10 CFR 50, Appendix J, *Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors*, Option B, *Performance-Based Requirements*. These motor-operated and check valve PIVs are, in some cases, containment isolation valves (CIVs), but are not within the Appendix J scope since the Reactor Shutdown Cooling System valves are considered water-sealed.

The Nine Mile Point, Unit 1 (NMP1) leakage rate testing program is in accordance with the Nuclear Energy Institute (NEI) 94-01, *Industry Guideline for Implementing Performance-Based Option of 10 CFR 50, Appendix J*, Revision 0, dated July 21, 1995.

The Nine Mile Point, Unit 2 (NMP2) Technical Specifications (TS) contain a requirement to establish the leakage rate testing program in accordance with the guidelines contained in NEI 94-01, Revision 2-A, *Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J,* dated October 2008.

NEI 94-01, Paragraph 10.2.3.2, "Extended Test Interval," [as approved in the final safety evaluation for NEI 94-01, Revision 3, via letter dated June 8, 2012 (ADAMS Accession No. ML121030286)], states:

4. Reason for Request (cont.)

> "Test intervals for Type C valves may be increased based upon completion of two consecutive periodic as–found Type C tests where the result of each test is within a licensee's allowable administrative limits. Elapsed time between the first and last tests in a series of consecutive passing tests used to determine performance shall be 24 months or the nominal test interval (e.g., refueling cycle) for the valve prior to implementing Option B to Appendix J. Intervals for Type C testing may be increased to a specific value in a range of frequencies from 30 months up to a maximum of 75 months. Test intervals for Type C valves should be determined by a licensee in accordance with Section 11.0."

The concept behind the Option B alternative for CIVs is that licensees should be allowed to adopt cost effective methods for complying with regulatory requirements. Additionally, NEI 94-01 describes the risk-informed basis for the extended test intervals under Option B. That justification shows that for CIVs, which have demonstrated good performance by the successful completion of two consecutive leakage rate tests over two consecutive cycles, may increase their test frequencies. Further, it states that if the component does not fail within two operating cycles, further failures appear to be governed by the random failure rate of the component. NEI 94-01 also presents the results of a comprehensive risk analysis, including the conclusion that "the risk impact associated with increasing [leak rate] test intervals is negligible (i.e., less than 0.1 percent of total risk)."

The valves identified in this request are all in water applications. Testing is performed with water pressurized to pressures lower than function maximum pressure differential; however, the observed leakage is adjusted to the function maximum pressure differential value in accordance with ISTC-3630(b)(4). This proposed alternative is intended to provide for a performance-based scheduling of PIV tests at NMP1 and NMP2. The reason for requesting this alternative is dose reduction to conform with NRC and industry As Low As Reasonably Achievable (ALARA) radiation dose principles. The nominal fuel cycle lengths at NMP1 and NMP2 are 24 months. However, since refueling outages may be scheduled slightly beyond 24 months, a 4-1/2 year period is used to provide a bounding timeframe to encompass two refueling outages. The review of recent historical data identified that PIV testing each refueling outage results in a total personnel dose of approximately 1 Rem, assuming all of the PIVs remain classified as good performers. The proposed extended test intervals would provide for a savings of approximately 1 Rem over an approximate 4-year period (two refuel outages).

NUREG-0933, "Resolution of Generic Safety Issues," Issue 105, "Interfacing Systems LOCA at LWRs," discussed the need for PIV leak rate testing based primarily on three pre-1985 historical failures of applicable valves industry-wide. These failures all involved human errors in either operations or maintenance. None of these failures involved inservice equipment degradation. The performance of PIV leak rate testing provides assurance of acceptable seat leakage with the valve in a closed condition. Typical PIV testing does not identify functional problems, which may inhibit the valve's ability to reposition from open to closed.

For check valves, functional testing is accomplished in accordance with ASME OM Code paragraph ISTC-3522, "Category C Check Valves." For power-operated valves, full stroke functional testing is accomplished in accordance with the ASME OM Code paragraph ISTC-3521 "Category A and Category B Valves." Performance of the separate two-year PIV leak rate testing

4. Reason for Request (cont.)

does not contribute any additional assurance of functional capability; it only determines the seat tightness of the closed valves.

5. Proposed Alternative and Basis for Use

NMP1 and NMP2 propose to perform PIV testing at intervals ranging from every refueling outage to every third refueling outage. The specific interval for each valve would be a function of its performance and would be established in a manner consistent with the CIV process under 10 CFR 50 Appendix J, Option B. A conservative control will be established such that if any valve fails either PIV test, the test interval for both tests will be reduced consistent with Appendix J, Option B requirements until good performance is reestablished.

The functional capability of the check valves is demonstrated by the open and close exercising. This testing is separate and distinct from PIV testing and is performed at a refuel outage frequency in accordance with ASME OM Code, paragraph ISTC-3522.

Note that NEI 94-01 is not the sole basis for this relief request, given NEI 94-01 does not address seat leakage testing with water. This document was cited as an approach similar to the requested alternative method.

If this proposed alternative is authorized and the PIVs continue to exhibit good performance, the PIV test frequency could be extended such that the leak test would not be required each refueling outage. The extension of test frequencies will be consistent with the guidance provided for Appendix J, Type C leak rate tests as detailed in NEI 94-01, Revision 3-A, Paragraph 10.2.3.2, "Extended Test Interval."

Additional basis for this relief request is provided below:

- Separate functional testing of motor-operated valve (MOV) PIVs and Check Valve PIVs per the ASME OM Code will continue.
- The low likelihood of valve mis-positioning during power operations (e.g., procedures, interlocks).
- Relief valves in the low pressure (LP) piping – these relief valves may not provide Inter-System Loss of Coolant Accident (ISLOCA) mitigation for inadvertent PIV mis-positioning but their relief capacity can accommodate conservative PIV seat leakage rates.
- Alarms that identify high pressure (HP) to LP leakage – Operators are highly trained to recognize symptoms of a present ISLOCA and to take appropriate actions.

The primary basis for this alternative request is the historically good performance of the PIVs. Since approval of the previous request, (as described in precedent 1 in Section 7), the leakage test intervals are based on performance; therefore, additional leakage test data is not included in this interval alternative request.

Based on valve performance history, there is continued assurance of valve operational readiness, as required by ASME OM-2012 Code, paragraph ISTC-3630. Therefore, this proposed alternative to extend the testing frequency consistent with the testing frequencies discussed within NEI 94-01, Revision 3-A, Paragraph 10.2.3.2, "Extended Test Interval," will continue to provide

5. Proposed Alternative and Basis for Use (cont.)

assurance of the valves' 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 NMP1 Fifth 10-Year and NMP2 Fourth 10-year intervals, which are scheduled to begin January 1, 2019, and conclude on December 31, 2028.

7. Precedence

1. This relief request was previously approved for the fourth and third 10-year intervals for NMP1 and NMP2, respectively, in letter from NRC (J. G. Danna) to Exelon Generation Company, LLC (B. C. Hanson), “Nine Mile Point Nuclear Station, Units 1 and 2 – Re: Alternative [GVRR-3] to the Requirements of the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants (CAC Nos. MF9073 and MF9074),” dated May 30, 2017 (ML17136A112).

2. A similar relief request was approved for Fermi Power Station for the third IST Interval in a letter from NRC (R. J. Pascarelli) to Detroit Edison (J. M. Davis), "Fermi 2 – Evaluation of In-Service Testing Program Relief Requests VRR-011, VRR-012, and VRR-013 (TAC Nos. ME2558, ME2557, and ME2556),” dated September 28, 2010 (ML102360570).

3. A similar relief request was approved for Quad Cities Nuclear Power Station, Units 1 and 2 for the fifth IST interval in a letter from NRC (J. Wiebe) to Exelon (M. J. Pacilio), "Quad Cities Nuclear Power Station, Units 1 and 2 – Safety Evaluation in Support of Request for Relief Associated with the Fifth 10-Year Interval Inservice Testing Program (TAC Nos. ME7981, ME7982, ME7983, ME7984, ME7985, ME7986, ME7987, ME7988, ME7990, ME7991, ME7992, ME7993, ME7994, and ME7995),” dated February 14, 2013 (ML13042A348).

4. A similar relief request was approved for Dresden Nuclear Power Station, Units 2 and 3 for the fifth IST interval in a letter from NRC (T. L. Tate) to Exelon (B. C. Hanson), "Dresden Nuclear Power Station, Units 2 and 3 – Relief Request to Use an Alternative from the American Society of Mechanical Engineers Code Requirements (CAC Nos. MF5089 andMF5090),” dated October 27, 2015 (ML15174A303).

5. A similar relief request was approved for Peach Bottom Atomic Power Station, Units 2 and 3 for the fourth interval in a letter from NRC (D. A. Broaddus) to Exelon (B. C. Hanson), "Peach Bottom Atomic Power Station, Units 2 and 3 – Safety Evaluation of Relief Request GVRR-2 Regarding the Fourth 10-Year Interval of the Inservice Testing Program (CAC Nos. MF7630 and MF7631)," dated September 21, 2016 (ML16235A340).

8. References

1. NEI 94-01,“*Industry Guideline for Implementing Performance-Based Option of 10 CFR 50, Appendix J*,” Revision 3-A

8. References (cont.)

2. NUREG 0933, “Resolution of Generic Safety Issues,” Section 3, Issue 105: "Interfacing Systems LOCA at LWRs (Rev. 4)”

3. Letter from NRC (S. Bahadur) to NEI (B. Bradley), ‘Final Safety Evaluation of Nuclear Energy Institute (NEI) Report, 94-01, Revision 3, “Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J” (TAC No. ME2164),’ dated June 8, 2012 (ADAMS Accession No. ML121030286)

Attachment 1
Affected Components

UNIT 1

Component	System	Code Class	Category
CKV-40-03	CS	1	A/C
CKV-40-13	CS	1	A/C
CKV-40-20	CS	2	A/C
CKV-40-21	CS	1	A/C
CKV-40-22	CS	1	A/C
CKV-40-23	CS	2	A/C
CKV-38-165	SDC	2	A/C
CKV-38-166	SDC	2	A/C
CKV-38-167	SDC	2	A/C
CKV-38-168	SDC	2	A/C
CKV-38-169	SDC	1	A/C
CKV-38-170	SDC	1	A/C
CKV-38-171	SDC	1	A/C
CKV-38-172	SDC	1	A/C

UNIT 2

Component	System	Code Class	Category
2CSH*V108	CSH	1	A/C
2CSH*MOV107	CSH	1	A
2CSL*V101	CSL	1	A/C
2CSL*MOV104	CSL	1	A
2ICS*V156	ICS	1	A/C
2ICS*V157	ICS	1	A/C
2RHS*V16A	RHS	1	A/C
2RHS*V16B	RHS	1	A/C
2RHS*V16C	RHS	1	A/C

Attachment 1
Affected Components (continued)

UNIT 2

Component	System	Code Class	Category
2RHS*V39A	RHS	1	A/C
2RHS*V39B	RHS	1	A/C
2RHS*MOV104	RHS	1	A
2RHS*MOV112	RHS	1	A
2RHS*MOV113	RHS	1	A
2RHS*MOV24A	RHS	1	A
2RHS*MOV24B	RHS	1	A
2RHS*MOV24C	RHS	1	A
2RHS*MOV40A	RHS	1	A
2RHS*MOV40B	RHS	1	A
2RHS*MOV67A	RHS	1	A
2RHS*MOV67B	RHS	1	A

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
ADS-VR-01, Electromatic Relief Valves (ERVs) Power Operated Valves Tested Each Cycle

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

The following Main Steam Electromatic Relief Valves (ERVs) are affected:

Component	Description	Class	Category
PSV-01-102A	Main Steam ERV	1	B
PSV-01-102B	Main Steam ERV	1	B
PSV-01-102C	Main Steam ERV	1	B
PSV-01-102D	Main Steam ERV	1	B
PSV-01-102E	Main Steam ERV	1	B
PSV-01-102F	Main Steam ERV	1	B

2. <u>Applicable Code Edition and Addenda</u>

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

3. <u>Applicable Code Requirement</u>

ISTC-3510, Exercising Test Frequency, states, in part: "Power-operated relief valves shall be exercise tested once per fuel cycle."

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

ISTC-5111, Valve Testing Requirements, states, in part: "*(a)* Testing shall be performed in the following sequence or concurrently. If testing in the following sequence is impractical, it may be performed out of sequence, and a justification shall be documented in the record of tests for each test or in the test plan:
(1) leakage testing
(2) stroke testing
(3) position indication testing"

ISTC-5113, Valve Stroke Testing, states, in part: "*(a)* Active valves shall have their stroke times measured when exercised in accordance with para. ISTC-3500."

ISTC-5114, Stroke Test Acceptance Criteria, states, in part: "Test results shall be compared to the reference values established in accordance with para. ISTC-3300, ISTC-3310, or ISTC-3320."

4. Reason for Request

Pursuant to 10 CFR 50.55a, *Codes and standards*, paragraph (z)(1), an alternative is proposed to the power-operated relief valve test requirements of the ASME OM-2012 Code. The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety.

There are six ERVs installed on the main steam (MS) lines inside the drywell. Each ERV consists of a main valve, a pilot valve assembly, and a solenoid actuator (see Figure 1). The ERVs are opened by either signals from automatic actuation instrumentation or manually and, thus, do not rely on spring setpoints for valve actuation.

The ASME OM-2012 Code-required testing for the six ERVs would be satisfied by manually stroking open each ERV with the reactor at pressure once every operating cycle. It would be performed during plant startup following a refueling outage (RFO). Experience in the industry and at NMPNS, Unit No. 1 (NMP1), indicates that manually opening the ERVs during plant operation can increase the potential for main disc seat leakage and pilot valve seat leakage. NMP1 experienced main disc seat leakage in March 2001 and pilot valve seat leakage in December 2002, both of which were attributed to debris on the seats caused by testing the valves using steam. Leakage from the main valve disc can cause increases in suppression pool (torus) temperature and level, requiring more frequent suppression pool cooling and pump-down operations, and diverts steam from the power generation steam cycle. Excessive leakage from the pilot valve can cause inadvertent opening of the main valve and impair its ability to re-close.

The proposed alternative will allow testing of the ERVs that is appropriate to demonstrate functionality without cycling the valves in place using reactor steam pressure. This is consistent with NUREG-0737, "Clarification of TMI Action Item Requirements," Item II.K.3.16, "Reduction of Challenges and Failures of Relief Valves," which recommended that the number of relief valve openings be reduced as much as possible and that unnecessary challenges should be avoided.

5. Proposed Alternative and Basis for Use

This relief request proposes an alternative to performing in-situ ERV steam pressure testing every RFO. The proposed alternative consists of a combination of offsite steam testing of the main valves, actuator cycling, and other inspections and maintenance activities. The proposed alternative would provide an acceptable level of quality and safety, as further discussed below.

System Description

There are six Dresser model 1525VX solenoid-actuated, pilot-operated ERVs installed at NMP1. The ERVs are connected to the MS lines between the MS line flow restrictor and the inboard MS isolation valve. Each ERV has its own discharge pipe that is equipped with an acoustic monitor to detect flow noise and a thermocouple to sense discharge fluid temperature to monitor for valve actuation and/or leakage.

5. Proposed Alternative and Basis for Use (cont.)

The ERVs have two functional modes of operation: the automatic depressurization system (ADS) mode and the overpressurization relief mode. In the ADS mode, the ERVs depressurize the reactor vessel in the event of a small break loss of coolant accident (SBLOCA) by relieving steam to the torus, allowing the core spray system to inject (spray) cooling water into the reactor vessel. The ADS mode actuates on concurrent "lo-lo-lo" reactor water level and high drywell pressure signals. The six ERVs, three primary valves, and three backup valves are required to be operable for the ADS mode. Operation of three ERVs is sufficient to depressurize the reactor coolant system (RCS) and permit full core spray system flow.

The ERVs also provide overpressure protection (relief mode) for the reactor and MS piping by limiting reactor pressure during transients that result in a pressure increase. In the overpressurization relief mode, pressure switches that monitor reactor vessel pressure actuate six ERVs at staggered setpoints to ensure sufficient margin between the analyzed peak transient pressure and the lowest setpoint for the reactor head safety valves to prevent safety valve actuation during anticipated transients.

Valve Operation

Steam under pressure from the reactor enters the main valve and passes upward around the disc guide. Steam enters the chamber below the main disc through a small orifice located in the disc retainer plate. Inlet steam pressure holds the main valve disc closed. A main disc spring is provided to keep the main valve disc in the closed position at low pressures or while depressurized. The pilot valve disc is held in the closed position by a pilot valve spring and steam pressure in the chamber below the pilot disc. When the solenoid actuator is energized, the actuator plunger depresses the pilot valve operating lever, thereby opening the pilot valve. When the pilot valve is opened, steam is released through the outlet port at a faster rate than supplied through the inlet orifice. This causes the chamber below the main disc to depressurize, causing the valve to open. To close the valve, the solenoid actuator is de-energized, thereby closing the pilot valve and allowing steam pressure to reseat the main valve.

1. Exercise Test Frequency Alternative to ISTC-3510

The six ERVs are currently tested in accordance with approved relief request ADS-VR-01. This includes the exercising of all six ERV solenoid actuators and the replacement of three (3) of the six (6) main valves each RFO. Inspections and precision preventative maintenance are performed each RFO for all six of the solenoid actuators and pilot valve assemblies.

For the proposed alternative, all six of the ERV solenoid actuators will be exercised each RFO, and two (2) of the six (6) main valves will be replaced with pretested spare valves each RFO such that all six valves will be replaced with pretested spare valves over a 6-year period. Inspections and precision preventive maintenance (described below) will be performed each RFO for all six of the solenoid actuators and pilot valve assemblies, with the IST requirements incorporated as part of the preventive maintenance activities. This combination of testing, inspections, and

5. Proposed Alternative and Basis for Use (cont.)

maintenance activities provides an acceptable level of quality and safety without requiring the six ERVs to be stroked with reactor steam during plant startup.

Solenoid Actuator

Each ERV solenoid actuator will be exercised each RFO. The closing stroke de-energizes the solenoid and allows the actuator to return to its fail-safe (closed) position. This test will be performed with the pilot valve and solenoid actuator mounted in their normal installed positions inside the drywell, which allows the solenoid actuator to be actuated electrically from the control room by placing the control switch in the Open position. The pilot valve operating lever and pilot valve stem will be secured in the Open position during this test to prevent damage to the pilot valve assembly, which could result from dry-stroking with no backpressure. The maintenance activities include detailed inspections of the electrical and mechanical components of the solenoid actuator.

NMP1 licensee event report (LER) 03-001, "Technical Specification Cooldown Rate Exceeded During Required Cooldown for a Failed Solenoid Actuated Pressure Relief Valve," reported an event involving an ERV that failed to open due to high resistance in the solenoid actuator cutout switch contacts. The high resistance contacts limited the current through the solenoid operating coil, which reduced the force that the plunger applied to the pilot valve operating lever. Further investigation and examination showed that the high contact resistance was due to the tin coating having been worn off the cutout switch contacts, allowing excessive contact oxidation to occur. Preventive maintenance activities now include inspection and cleaning of the cutout switch contacts, as necessary, to assure that the contact surfaces are clean and free of oxidation, corrosion, and discoloration. The contact tin plating is verified to be intact and not worn off exposing the copper base material. Associated springs and mechanisms are inspected, and the as-left contact resistances are verified. Resistance checks are performed on both actuator coils, and actuator operating currents during electrical actuation are verified to be within acceptance limits. These steps provide substantial indication that the solenoid actuator is capable of functioning as designed and producing its full output force.

Stroke timing of the solenoid actuator is not performed since the actuator is a sub-component of the total ERV. Degradation is monitored through the preventive maintenance inspections in lieu of trending millisecond stroke time variations.

Pilot Valve

Each ERV pilot valve will be exercised each RFO when the new/refurbished pilot valve assembly is installed in the pilot housing. Note that the pilot valve housing is permanently welded to the outside of the ERV enclosure located in the drywell (see Figure 1). Removal and reinstallation of the pilot valve assembly does not affect the ERV main valve. The maintenance activities include inspections of the pilot valve assembly parts and the pilot valve housing interior to identify any damage or wear that could impair free movement of the stem or proper valve seating. Parts are

5. Proposed Alternative and Basis for Use (cont.)

refurbished or replaced as necessary. Cleanliness of parts and components and absence of foreign material are verified prior to reassembly.

NMP1 has experienced a stuck-open ERV event caused by improper maintenance. NMP1 LER 04-001, "Manual Reactor Scram and Cooldown Rate Exceeding Technical Specification Limits Due to Electromatic Relief Valve Failure to Close," reported an event involving an ERV that stuck open due to a maintenance error in which an extraneous gasket was installed in the pilot valve housing. This condition allowed steam to bypass the pilot valve seat, thereby preventing steam pressure from building up under the main valve disc to close the valve when given the closure signal. Appropriate precautions and instructions have been incorporated into the ERV maintenance procedure to ensure that the correct gasket is used and sufficient torque is applied to prevent steam from bypassing the pilot valve seat.

Prior to re-installing the pilot valve assembly inside the pilot housing, pilot stem/disc leak testing and freedom of movement and reseat functionality are demonstrated. A complete cleanliness inspection must be performed prior to installing the pilot valve assembly back into the housing. The housing is thoroughly cleaned and vacuumed to remove moisture and debris to minimize the potential for debris blocking or hindering pilot valve performance. Following installation of the pilot valve assembly inside the housing, the pilot valve operating lever and pilot valve assembly freedom of movement and clearance adjustments are confirmed, followed by stroking the solenoid actuator plunger by hand to the full extent of travel. This ensures that the solenoid actuator plunger, pilot valve operating lever, and pilot valve assembly function as a unit, while eliminating the risk of damage resulting from electrically stroking the pilot valve in the absence of steam pressure (referred to as dry-stroking). The pilot valve freedom of movement check allows the pilot valve disc to return to its fail-safe (closed) position. NMP1 LER 00-04-01, "Manual Reactor Scram and Unusual Event Declaration Due to Stuck Open Electromatic Relief Valve and Failed Vacuum Breaker on Electromatic Relief Valve Discharge Line," reported an event involving an ERV that unexpectedly opened and would not reclose. The cause was attributed to a bent stem in the pilot valve assembly and partial disengagement of the pilot valve disc from the stem. It was determined that the pilot valve stem-disc separation had occurred as a result of dry-stroking the ERV pilot valve using the solenoid actuator. (Reference NRC Inspection Report 2000-008.)

Stroke timing of the pilot valve is not practical since the test is performed by hand and the pilot valve is a sub-component of the total ERV. Degradation of the pilot valve assemblies is monitored through the preventive maintenance inspections.

<u>Main Valve</u>

A sampling program is proposed that will remove and replace two of the six ERV main valves with pre-tested spare main valves during each RFO, such that all six ERV main valves are replaced every three RFOs (approximately 6 years). Each ERV main valve will be stroke tested at an offsite steam test facility once every 6 years (three RFOs). A 6-month grace period would be allowed to accommodate variations in fuel cycle length and extended shutdown periods. The main valve testing will capture the exercise and stroke time test data required by the ASME OM-2012 Code.

Main valve testing will be performed at an offsite steam test facility. As shown in Figure 1, the main valve is housed in a heavy steel enclosure that is attached to the main steam line inlet

5. Proposed Alternative and Basis for Use (cont.)

flange. The pilot valve assembly is installed inside the pilot valve housing, and the housing is welded onto the outside of the enclosure and physically separated from the ERV main valve body. Thus, only the main valve of the ERV can be sent to the test facility. A spare pilot valve assembly and a spare solenoid actuator, both representative of the components used at the plant, will be installed at the test facility to allow testing the main valve. The valve will be installed on a test steam header in the same orientation as the plant installation. The test conditions at the test facility will be similar to those in the plant, including ambient temperature and steam conditions. The main valve will receive an initial seat leak test, a functional test to ensure it is capable of operating and closing, and a final seat leak test. Valve stroke time will be obtained during the exercise test. Valve seat tightness will be verified by a cold bar test, and if not free of fog, leakage will be measured and verified to be below specified acceptance criteria. This initial testing will be completed prior to plant startup from the RFO.

After initial testing, the main valves will be completely disassembled, inspected and refurbished, and then retested. The refurbished main valves will be stored at the offsite test facility and returned to the plant prior to the next scheduled use. The offsite test facility's storage requirements will ensure the valves are protected from physical damage. The valves will be stored in an area meeting ANSI/ ASME N45.2.2 Class B storage requirements, with the storage area temperature maintained between 50°F and 90°F. Maintaining the ERVs in a controlled environment during storage minimizes the potential for any valve degradation.

Prior to installation at the plant, the spare main valves will be inspected for foreign material and damage. The steam line and ERV discharge line openings will also be inspected to verify cleanliness and absence of foreign material. Procedural requirements ensure that the proper ERV inlet flange gasket separating ring thickness is provided so proper crush of the flexitallic gasket is achieved when the valve is installed. The valves are then installed and necessary connections completed, including connecting the vent tube and installing the enclosure cover and bellows assembly. Proper connections will be verified per procedure.

The four main valve discs that are not exercised during each RFO will have inspections and maintenance performed on their solenoid actuators and pilot valve assemblies as described above. Review of past surveillance testing and preventive maintenance history indicates that the ERV main valves are highly reliable. During the second 10-year IST interval (1986 to 1999), the ERVs were inspected and refurbished at 48-month intervals (every two RFOs). From 1999 to 2004, the preventive maintenance interval for the ERV main valves was extended to 6 years, and since 2004, the preventive maintenance interval for the ERV main valves has been 10 years. These preventive maintenance activities have found the ERV main valves in excellent condition with no significant degradation noted. The table below lists the most recent preventive maintenance performed for each ERV main valve:

5. Proposed Alternative and Basis for Use (cont.)

Table 1: ERV Surveillance Test	
Valve Number	Date of Last Preventive Maintenance
PSV-01-102A (ERV-111)	2/17/2017
PSV-01-102B (ERV-112)	2/19/2015
PSV-01-102C (ERV-121)	9/10/2015
PSV-01-102D (ERV-122)	2/25/2015
PSV-01-102E (ERV-113)	2/20/2015
PSV-01-102F (ERV-123)	2/10/2017

Prior to 2011 the plant Technical Specifications (TS) required each ERV to be manually stroked open, once per operating cycle, until the downstream acoustic monitors or thermocouples indicated the valve was open and passing steam. However, following approval of the license amendment in a Safety Evaluation Report (SER) dated September 28, 2011, Nine Mile Point Nuclear Station, Unit No. 1 – Issuance of Amendment Regarding Changes to Modify Surveillance Requirements for Testing of the Main Steam Electromatic Relief Valves (TAC No. ME4849), the TS only requires manual operation of each ERV solenoid actuator each operating cycle. Therefore, no TS surveillance test data exists to show how the main valve will perform if not stroked, fully open, for a period beyond approximately 48 months, which is the present test interval. The only failure of an ERV to open during the last 20 years is the event reported in NMP1 LER 03-001, which was caused by a problem with the solenoid actuator for ERV-111, not with the main valve.

The proposed sampling program whereby two of the six ERV main valves will be removed and replaced with pre-tested spare main valves during each RFO is consistent with the requirements of ASME OM Code Case OMN-17, Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves. OMN-17 specifies that Class 1 pressure relief valves shall be tested at least once every 72 months (6 years) with a 6-month grace period and that a minimum of 20% of the valves from each valve group shall be tested within any 24-month interval. It also allows that the testing requirements may be satisfied by installing pretested valves to replace valves that have been in service provided the valves removed from service are tested prior to resumption of electric power generation and have been subjected to the specified maintenance.

Additionally, the NRC has previously authorized extensions of the Mandatory Appendix I, 5-year test interval, for testing ASME Class 1 pressure relief valves. For Nine Mile Point Unit 2 (NMP2), the NRC authorized the alternative described in Relief Request MSS-VR-01, Revision 1, to extend the test interval for Class 1 MS safety relief valves to 3 refueling cycles (approximately 6 years, plus 6 months grace), as documented in SER dated January 29, 2016. Also, for the James A. Fitzpatrick plant, the NRC authorized the alternative described in Relief Request VRR-06 Revision 1, to extend the test interval for Class 1 MS safety relief valves to 72 months (6 years) with a

5. Proposed Alternative and Basis for Use (cont.)

6-month grace period, as documented in SER dated October 1, 2009, and associated license amendment dated July 21, 2010.

Based on the above discussion, extending the main valve exercising interval from every RFO (approximately 2 years) to every 6 years, plus a 6-month grace period, is reasonable and will not adversely impact the ability of the valves to perform their safety functions or result in additional valve failures. The testing and refurbishment activities performed at the off-site test facility on the partial compliment sample (two valves each RFO) will ensure that main valve degradation mechanisms are detected in a timely manner. Monitoring of the ERV discharge line temperatures during plant operation also provides an indication of degradation of the installed main valves.

2. Position Indication Verification Alternative to ISTC-3700 and ISTC-5111

This proposed alternative performs position indication verification for the six ERVs by observing the control room position indicating lights during the solenoid actuator test. Each ERV is equipped with red and green indicating lights, which provide control room open and closed indication, respectively, by monitoring the solenoid actuator plunger position. A blue indicating light is also provided in the control room, which monitors power to the solenoid actuator. The blue light is "On" when the solenoid is deenergized (valve closed) and "Off” when the solenoid is energized (valve open). As previously noted, the pilot valve operating lever and pilot valve stem will be secured in the open position during this test to prevent damage to the pilot valve assembly, which could result from dry-stroking with no backpressure. Solenoid actuator plunger movement will be observed locally in the drywell and compared to the control room indication to verify that solenoid actuator operation is accurately indicated. The proposed position indication verification alternative provides indirect pilot valve position, which ultimately represents the position of the main valve disc when steam is present, without cycling the ERVs in place with reactor steam pressure. This test is performed every RFO for each of the six ERVs.

The proposed position indication verification alternative provides an acceptable level of quality and safety without requiring indication of main valve obturator movement.

3. Stroke Time Testing Alternative to ISTC-5113 and ISTC-5114

Since the ERVs are not being in-situ tested, and since only the main valve is being tested at the offsite test facility (as previously noted), ERV full stroke time from initiating signal to indication of the end of the operating stroke cannot be obtained. Instead, main valve stroke times will be measured at the test facility. Stroke time acceptance criteria will use a pre-established reference value that represents good performance for this valve type. Since the whole valve assembly is not being tested and the test facility cannot duplicate the control circuitry, a simplified valve actuation circuit will be used. Although these differences may result in minor differences in measured stroke time compared to previous test data for in-situ testing of the complete ERV, the stroke times measured at the test facility will be comparable to each other and, thus, can be used to detect abnormalities in valve performance.

5. Proposed Alternative and Basis for Use (cont.)

The proposed alternatives described above will maintain acceptable power-operated relief valve test accuracy and continue to provide an acceptable level of quality and safety; therefore, this proposed alternative is being requested pursuant to 10 CFR 50.55a(z)(1).

6. Duration of Proposed Alternative

This request, upon approval, will be applied to the NMP1 fifth 10-year interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028.

7. Precedence

1. This relief request was previously approved for the fourth 10-year interval at NMP1, as documented in NRC safety evaluation, “Nine Mile Point Nuclear Station, Unit No. 1 – Request for Alternative: Automatic Depressurization System (ADS)-VR-01 for the Testing of Main Steam Electromatic Relief Valves Associated with the Fourth 10-Year Inservice Testing Interval (TAC No. ME4848),” dated September 28, 2011 (ML112660001).

2. The NRC has authorized similar alternatives to the current method of ERV in-situ steam pressure testing, via the following NRC safety evaluations:

   - Oyster Creek Nuclear Generating Station – Relief Request [RR-RV-53] Re: Reactor Inservice Testing of Main Steam Electromatic Relief Valves (TAC No. MC8672), dated August 31, 2006 - ADAMS Accession No. ML062220410.

   - Dresden Nuclear Power Station, Units 2 and 3 and Quad Cities Nuclear Power Station , Units 1 and 2 – Issuance of Amendments for Main Steam Line Relief Valves and Associated Relief Requests [RV-021 and RV-030E, respectively] (TAC Nos. MC1792 through MC1795), dated October 19, 2004 – ADAMS Accession No. ML042600571 (ML042600563).

NMP1, Dresden, Quad Cities, and Oyster Creek all use the same Dresser model 1525VX solenoid actuated, pilot-operated ERVs. Similarities and differences between the proposed NMP1, alternative and the authorized alternatives for Dresden, Quad Cities, and Oyster Creek are summarized below:

Similarities

- A partial compliment of the ERV main valves will be removed and replaced with pre-tested spare main valves during each RFO.
- Preventive maintenance is performed on all of the ERV solenoid actuators and their associated cutout switches during each RFO.

7. Precedence (cont.)

Differences

- NMP1 classifies the ERVs as OM Category B power-operated valves and tests the ERVs in accordance with the OM Code-2012, Subsection ISTC. The Dresden and Quad Cities relief requests cite both Subsection ISTC and Appendix I of the OM Code for ERV testing requirements, and the Oyster Creek relief request cites only Appendix I of the OM Code.
- The proposed change for NMP1, includes a 6-month grace period on the 6-year interval for steam testing the ERVs at the offsite test facility. For Dresden, Quad Cities, and Oyster Creek, the ERV main valve testing is in accordance with Appendix I of the OM Code, which specifies a test interval of five years.
- For Dresden, Quad Cities, and Oyster Creek, the offsite testing includes both the main valve and the pilot valve. For NMP1, the pilot valve cannot be tested with the main valve because of the unique heavy steel enclosure that houses the main valve. The pilot valve housing is welded onto the outside of the enclosure and is physically separated from the ERV main valve body.
- For Dresden, Quad Cities, and Oyster Creek, the pilot valve assemblies for the ERVs that are not scheduled for removal and offsite testing are replaced with new or refurbished assemblies each RFO. For NMP1, all six of the ERV pilot valve assemblies will be replaced with new or refurbished assemblies each RFO.
- For Dresden, Quad Cities, and Oyster Creek, the pilot valve is dry stroked using the solenoid actuator. For NMP1, dry stroking will not be performed due to a past event where dry stroking caused pilot valve damage. Instead, separate testing, inspections, and maintenance will be performed for the solenoid actuators and the pilot valve assemblies.

8. References

1. Letter from L.A. Hopkins (Niagara Mohawk Power Corporation) to Document Control Desk (NRC), LER 03-001, “Technical Specification Cooldown Rate Exceeded During Required Cooldown for a Failed Solenoid Actuated Pressure Relief Valve,” dated June 23, 2003 (ML031880016)

2. Letter from L.A. Hopkins (NMPC) to Document Control Desk (NRC), LER 04-001, "Manual Reactor Scram and Cooldown Rate Exceeding Technical Specification Limits Due to Electromatic Relief Valve Failure to Close," dated July 1, 2004 (ML041950181)

3. Letter from L. A. Hopkins (NMPC) to Document Control Desk (NRC), LER 00-[0]04, Supplement 1, "Manual Reactor Scram and Unusual Event Declaration Due to Stuck Open Electromatic Relief Valve and Failed Vacuum Breaker on Electromatic Relief Valve Discharge Line," dated December 6, 2000 (ML003777259)

4. Letter from M. G. Evans (NRC) to J. H. Mueller (NMPC), “NRC's Nine Mile Point Inspection Report 05000220/2000-008, 05000410/2000-008,” dated December 22, 2000 (ML003780274)

8. References (cont.)

5. Letter from T. L. Tate (NRC) to B. Hanson (Exelon Generation Company, LLC), “Nine Mile Point Nuclear Station, Unit 2 – Safety Evaluation by the Office of Nuclear Reactor Regulation for Relief Request MSS-VR-01, Revision 1 (CAC No. MF5773),” dated January 29, 2016 (ML15345A006)

6. Letter from N. L. Salgado (NRC) to Vice President, Operations (Entergy Nuclear Operations, Inc.), “James A. Fitzpatrick Nuclear Power Plant–Relief Request VRR-06, Revision 1 from the Requirements of the OM Code Re: Inservice Testing of Safety Relief Valves (TAC No. ME1818),” dated October 1, 2009 (ML092730032)

7. Letter from B. K. Vaidya (NRC) to Vice President, Operations (Entergy Nuclear Operations, Inc.), “James A. Fitzpatrick Nuclear Power Plant – Issuance of Amendment Regarding Testing of Safety/Relief Valves (TAC No. ME2810),” dated July 21, 2010 (ML101750325)

8. NUREG-0737, "Clarification of TMI Action Item Requirements," Item II.K.3.16, "Reduction of Challenges and Failures of Relief Valves," November 1980 (ML051400209)

9. ASME OM Code Case OMN-17, Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves

10. ANSI/ ASME N45.2.2, “Packaging, Receiving, Storage, and Handling of Items for Nuclear Power Plants; QA Cases – December 1978”

11. Letter from NRC (R. V. Guzman) to NMPNS (T. A. Lynch), “Nine Mile Point Nuclear Station, Unit No. 1 – Issuance of Amendment [No. 210] Regarding Changes to Modify Surveillance Requirements for Testing of the Main Steam Electromatic Relief Valves (TAC No. ME4849),” dated September 28, 2011 (ML112500067)

Figure 1

ERV with Enclosure as Installed at NMPNS, Unit 1

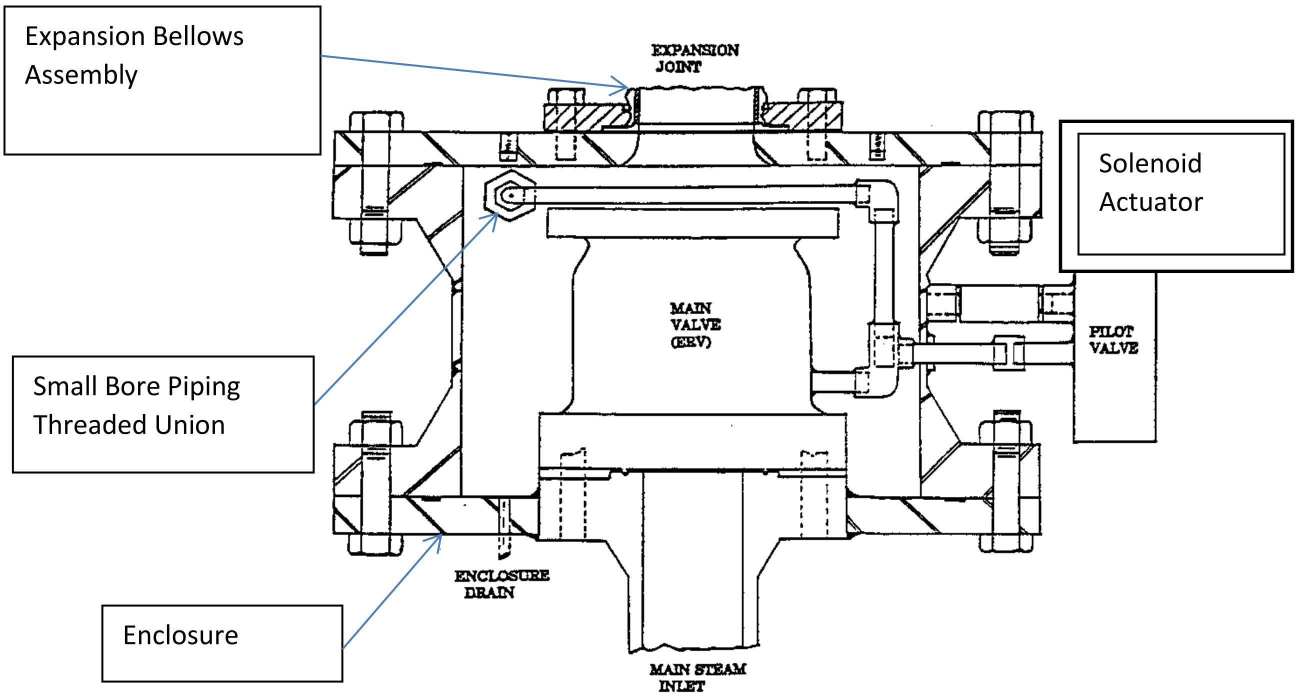
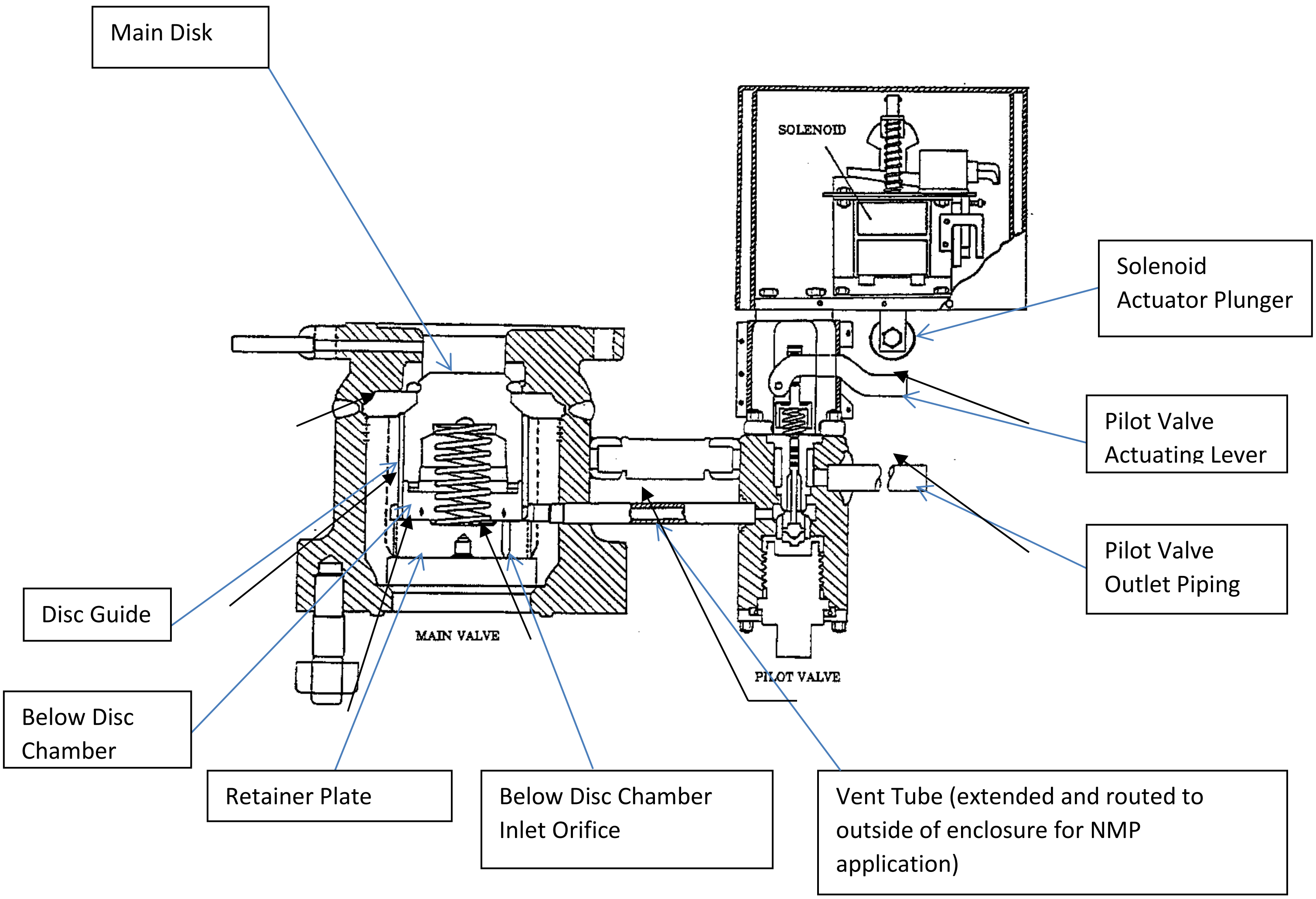


Figure 1 (continued)

Standard ERV similar to other Plants
(Cutaway view of internals is applicable to NMP1)



Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
CRD-VR-01, Stroke Time Testing of SCRAM Discharge Volume Valves

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

The following Scram Discharge Volume (SDV) containment isolation valves (CIVs) are affected:

Component	Description	Class	Category
IV-44.2-15	SDV VENT INBOARD IV	2	A
IV-44.2-16	SDV VENT OUTBOARD IV	2	A
IV-44.2-17	SDV DRAIN OUTBOARD IV	2	A
IV-44.2-18	SDV DRAIN INBOARD IV	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**

ISTC-5131, Valve Stroke Testing, states, in part, "*(a)* Active valves shall have their stroke times measured when exercised in accordance with para. ISTC-3500."

4. **Reason for Request**

Pursuant to 10 CFR 50.55a, *Codes and standards*, paragraph (z)(1), an alternative is proposed to the power-operated valve test requirements of the ASME OM-2012 Code. The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety.

The SDV CIVs are normally open valves. These valves close on the loss of air or the de-energizing of the solenoid valves (SOV-113-275 and SOV-113-276 for IV-44.2-16 and IV-44.2-17; and SOV-113-273 and SOV-113-274 for IV-44.2-15 and IV-44.2-18). The SDV air header and valve arrangement are single failure proof. The solenoid valves are powered from either reactor trip bus (RTB) 131 or 141 through fuses. Removing the fuses to fail-safe test these valves causes a scram in approximately six (6) seconds due to the de-energizing of SOV-113-271 and SOV-113-272. Venting the scram air header due to exercising of the valves by pulling fuses subjects the control rod drives to higher differential pressures than observed during a scram at normal operating conditions. The high differential pressure applied to control rods fully inserted has resulted in equipment damage.

Testing via the safety-related scram exhaust path cannot be performed during power operation since this could result in a plant trip. The safety-related exhaust path (scram path) is through SOV-113-275 and SOV-113-276 or SOV-113-273 and SOV-113-274 exhaust ports. A test solenoid valve (SOV-113-277) was installed as a result of Information Bulletin (IEB) No. 80-17

4. Reason for Request (Cont.)

dated July 3, 1980, to permit fail-safe and stroke time testing without causing a scram. The test solenoid exhaust path (test path) adds a restriction that is not present in the scram path. When the test solenoid is energized, the SDV air header and valve actuators are vented through SOV-113-277.

The restriction is due to exhausting air through the SOV-113-274 and SOV-113-276 air inlet supply port, since the solenoids are energized. The solenoid valve employs an internal pilot in the inlet port. Air can exhaust through the inlet port; however, the flow path is not a fixed resistance path. The variable resistance can cause variations in the quarterly stroke time measurements of the valves. These variations can result in inaccurate stroke times and mask the true valve performance. This limits the ability to accurately monitor for and detect degradation. Additionally, the test path is not the safety-related exhaust path (scram path) for the CIVs.

Stroke time testing through the scram path can be performed during refueling outages. Stroke times obtained during refueling outage tests (using the scram vent path) have provided consistent accurate results. This testing method provides an accurate indication of valve performance and provides the ability to monitor for and detect degradation.

5. Proposed Alternative and Basis for Use

The SDV CIVs will be full stroke exercised and fail safe tested quarterly using the test solenoid valve. These valves will be stroke-time tested through the scram path during refueling outages.

The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety; therefore, the alternative testing is proposed pursuant to 10CFR50.55a(z)(1).

6. Duration of Proposed Alternative

This request, upon approval, will be applied to the NMPNS, Unit No. 1, fifth 10-year interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028.

7. Precedent

This relief request was previously approved for the fourth 10-year interval at NMPNS, Unit No. 1, as documented in NRC safety evaluation, “Nine Mile Point Nuclear Station – Safety Evaluation of Relief Requests [CRD-VR-01] for the Unit No. 1 Fourth 10-Year and Unit No. 2 Third 10-Year Pump and Valve Inservice Testing Program (TAC Nos. MD9202 and MD9203),” dated December 29, 2008 (ML083500039).

8. Reference

NRC Information Bulletin (IEB) No. 80-17, Failure of 76 of 185 Control Rods to Fully Insert During Scram at a BWR,” dated July 3, 1980 (ML8005050076)

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
CTNH2O2-VR-01, H2/O2 Sample and Return Valve Stroke Time Testing Group 1

1. ASME Code Component(s) Affected

The following Hydrogen and Oxygen sample and return containment isolation valves (CIVs) are affected:

Component	Description	Class	Category
IV-201.2-109	#11 TORUS RETURN INBOARD IV	2	A
IV-201.2-110	#11 TORUS SAMPLE INBOARD IV	2	A
IV-201.2-111	#11 TORUS SAMPLE OUTBOARD IV	2	A
IV-201.2-112	#11 TORUS RETURN OUTBOARD IV	2	A
IV-201.7-01	#11 SAMPLE STREAM B INBOARD IV	2	A
IV-201.7-02	#11 SAMPLE STREAM B OUTBOARD IV	2	A
IV-201.7-08	DW CAM SAMPLE INBOARD IV	2	A
IV-201.7-09	DW CAM SAMPLE OUTBOARD IV	2	A
IV-201.7-10	#11 DW RETURN INBOARD IV	2	A
IV-201.7-11	#11 DW RETURN OUTBOARD IV	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

ISTC-5131, Valve Stroke Testing, states, in part "*(a)* Active valves shall have their stroke times measured when exercised in accordance with para. ISTC-3500."

ISTC-5132, Stroke Test Acceptance Criteria, states, "Test results shall be compared to the reference values established in accordance with para. ISTC-3300, ISTC-3310, or ISTC-3320."

4. Reason for Request

Pursuant to 10 CFR 50.55a, *Codes and standards*, paragraph (z)(1), an alternative is proposed to the power-operated valve test requirements of the ASME OM-2012 Code. The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety.

These pneumatically operated valves are grouped together on common control switches. The groups are:

- IV-201.7-08, IV-201.7-09, IV-201.7-10, & IV-201.7-11
- IV-201.2-109, IV-201.2-112, IV-201.2-110, IV-201.2-111, IV-201.7-01, & IV-201.7-02

4. Reason for Request (Continued)

These arrangements have a common closed light (green) for a group of valves and individual open lights (red) for each valve. Reference values are established for each group by timing the valves for at least three exercises. The exercising is conducted over a sufficient interval to prevent erroneous data due to pre-conditioning. An individual reference value is developed for each valve in a group. A composite (group) reference value is developed by averaging the individual reference values. Typically, the individual valve's reference values are within + \ - 0.5 second of the group reference value.

As needed, primarily after rework or repair, the individual reference values and the group reference value are re-established. This group reference value is used as a common reference value for each valve in the group. The valve stroke-time test uses switch-actuation-to-red-light-out (closed indication) for open-to-close stroke time. The stroke-time of the slowest valve is observed and recorded. Typically, the slowest valve is not always the same component within the group. If the slowest valve exceeds the acceptance criterion (i.e., ± 50% of the group reference value), the group is declared inoperable. Corrective action is then taken, per ISTC-5133, Stroke Test Corrective Action.

The group reference values are less than 10 seconds, significantly below the Updated Final Safety Analysis Report (UFSAR), Table VI-3b, Primary Containment Isolation Valves Lines Entering Free Space of the Containment, maximum operating time of 60 seconds. While some performance degradation is masked by this testing methodology, nuclear safety will not be compromised. Prior to any valve degrading and exceeding the UFSAR maximum operating time of 60 seconds, the acceptance criterion would be significantly exceeded, and corrective action would be taken. The proposed alternate testing method provides an adequate capability to monitor and detect individual valve degradation prior to exceeding the UFSAR maximum operating time. This method provides an equivalent level of quality and safety compared to the Code required individual valve stroke-timing.

5. Proposed Alternative and Basis for Use

NMPNS proposes to establish individual reference values, group reference values, and group acceptance criteria. Stroke-timing of the valve groups will record the slowest operating valves' corresponding stroke-time. NMPNS will then compare the slowest valve stroke-time to the acceptance criterion to determine the valve group operability status. Corrective actions will be taken, as required, for exceeding the acceptance criterion.

Therefore, relief is requested pursuant to 10CFR50.55a(z)(1) based on the proposed alternative providing an acceptable level of quality and safety.

6. Duration of Proposed Alternative

This request, upon approval, will be applied to the NMPNS, Unit No. 1, fifth 10-year interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028.

7. Precedent

This relief request was previously approved for the fourth 10-year interval at NMPNS, Unit No. 1, as documented in NRC safety evaluation, "Nine Mile Point Nuclear Station – Safety Evaluation of Relief Requests [CTNH202-VR-01] for the Unit No. 1 Fourth 10-Year and Unit No. 2 Third 10-year Pump and Valve Inservice Testing Program (TAC Nos. MD9202 and MD9203)," dated December 29, 2008 (ML083500039).

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
CTNH2O2-VR-02, H2/O2 Sample and Return Valve Stroke Time Testing Group 2

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

The following Hydrogen and Oxygen sample and return containment isolation valves (CIVs) are affected:

Component	Description	Class	Category
IV-201.2-23	#12 TORUS SAMPLE INBOARD IV	2	A
IV-201.2-24	#12 TORUS SAMPLE OUTBOARD IV	2	A
IV-201.2-29	#12 DRYWELL SAMPLE INBOARD IV	2	A
IV-201.2-30	#12 DRYWELL SAMPLE OUTBOARD IV	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**

ISTC-5151, Valve Stroke Testing, states, in part, "*(a)* Active valves shall have their stroke times measured when exercised in accordance with para. ISTC-3500."

ISTC-5152, Stroke Test Acceptance Criteria, states, "Test results shall be compared to the reference values established in accordance with para. ISTC-3300, ISTC-3310, or ISTC-3320."

4. **Reason for Request**

Pursuant to 10 CFR 50.55a, *Codes and standards*, paragraph (z)(1), an alternative is proposed to the power-operated valve test requirements of the ASME OM-2012 Code. The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety.

These solenoid operated valves are grouped together on a common control switch. The group is:

- IV-201.2-23, IV-201.2-24, IV-201.2-29, & IV-201.2-30

This arrangement has a common closed light (green) for each pair of valves and individual open lights (red) for each valve. A reference value is established for each pair by timing the valves for at least three exercises. The exercising is conducted over a sufficient interval to prevent erroneous data due to pre-conditioning. A composite (group) reference value is developed by averaging the valve pair reference values. Individual reference values are not established. These valves stroke in less than 2 seconds and are all designated as "rapid acting" valves. A limiting value of 2 seconds is assigned to the group.

4. **Reason for Request (cont.)**

As needed, primarily after rework or repair, the individual reference values and the group reference value are re-established. This group reference value is used as a common reference value for each valve in the group. The valve stroke-time test uses switch-actuation-to-red-light-out (closed indication) for open-to-close stroke time. The stroke-time of the slowest valve is observed and recorded. Typically, the slowest valve is not always the same component within the group. If the slowest valve exceeds the acceptance criterion (i.e., ± 50% of the group reference value), the group is declared inoperable. Corrective action is then taken, per ISTC-5133, Stroke Test Corrective Action.

The group limiting value of 2 seconds is significantly below the Updated Final Safety Analysis Report (UFSAR), Table VI-3b, Primary Containment Isolation Valves Lines Entering Free Space of the Containment, maximum operating time of 60 seconds. While some performance degradation is masked by this testing methodology, nuclear safety will not be compromised. Prior to any valve degrading and exceeding the UFSAR maximum operating time of 60 seconds, the acceptance criterion would be significantly exceeded, and corrective action would be taken. The proposed alternate testing method provides an adequate capability to monitor and detect individual valve degradation prior to exceeding the UFSAR maximum operating time of 60 seconds. This method provides an equivalent level of quality and safety compared to the Code required individual valve stroke-timing.

5. Proposed Alternative and Basis for Use

NMPNS proposes to establish valve pair reference values, group reference values, and group acceptance criteria. Stroke-timing of the valve groups will record the slowest operating valve's corresponding stroke-time. NMPNS will then compare the slowest valve stroke-time to the acceptance criterion to determine the valve group operability status. Corrective actions will be taken, as required, for exceeding the acceptance criterion.

Therefore, relief is requested pursuant to 10CFR50.55a(z)(1) based on the proposed alternative providing an acceptable level of quality and safety.

6. Duration of Proposed Alternative

This request, upon approval, will be applied to the NMPNS, Unit No. 1, fifth 10-year interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028.

7. Precedent

This relief request was previously approved for the fourth 10-year interval at NMPNS, Unit No. 1, as documented in NRC safety evaluation, "Nine Mile Point Nuclear Station – Safety Evaluation of Relief Requests [CTNH202-VR-02] for the Unit No. 1 Fourth 10-Year and Unit No. 2 Third 10-Year Pump and Valve Inservice Testing Program (TAC Nos. MD9202 and MD9203)," dated December 29, 2008 (ML083500039).

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
MS-VR-01, Reactor Pressure Vessel Safety Valve Testing

1. ASME Code Component(s) Affected

The following Reactor Pressure Vessel Safety Valves are affected:

Component	Description	Class	Category
PSV-01-119A	Reactor Pressure Vessel Safety Valve	1	C
PSV-01-119B	Reactor Pressure Vessel Safety Valve	1	C
PSV-01-119C	Reactor Pressure Vessel Safety Valve	1	C
PSV-01-119D	Reactor Pressure Vessel Safety Valve	1	C
PSV-01-119F	Reactor Pressure Vessel Safety Valve	1	C
PSV-01-119G	Reactor Pressure Vessel Safety Valve	1	C
PSV-01-119H	Reactor Pressure Vessel Safety Valve	1	C
PSV-01-119J	Reactor Pressure Vessel Safety Valve	1	C
PSV-01-119M	Reactor Pressure Vessel Safety 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 I-1320, Test Frequencies, Class 1 Pressure Relief Valves, subparagraph *(a) 5-Yr Test Interval*, 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 the Class 1 pressure relief valve test requirements of the ASME OM Code Mandatory Appendix I, I-1320(a). The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety.

4. Reason for Request (Continued)

The nine (9) reactor pressure vessel safety valves provide Code-required overpressure protection to the reactor pressure vessel and the Class 1 reactor recirculation system and are located on the reactor vessel head inside the primary containment. In the event of main steam isolation valve (MSIV) closure, the safety valves are designed and sized to limit the pressure rise to 110% of the design pressure.

The Dresser Model 3777QA, spring-loaded safety valves have shown exemplary test history at NMPNS, Unit 1 (NMP1), as shown in MS-VR-01 Table 1, Reactor Head Safety Valve Test Results. However, given the current 24-month operating cycle for NMP1 is required to remove and test approximately fifty (50) percent of the safety valves every refueling outage (i.e., alternating between either four or five of the nine each outage), so that all valves are removed and tested every two refueling outages. This ensures compliance with the ASME OM Code requirements for testing Class 1 pressure relief valves within a 5-year interval. Approval of extending the test interval to 6 years with a grace period of six months would reduce the number of safety valves tested at NMP1 over three (3) refueling outages by at least four.

Code Case OMN-17, Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves, was published in the ASME OM-2009 Code Edition. This Code Case has not been approved for use in Regulatory Guide (RG) 1.192, *Operations and Maintenance Code Case Acceptability, ASME OM Code*, nor incorporated in 10 CFR 50.55a by reference; however, the NRC has allowed licensees to use ASME Code Case OMN-17, provided all requirements are met. Code Case OMN-17 allows the Owner to extend the test frequencies for Class 1 pressure relief valves to a 72-month (6-year) test interval, with a 6-month grace period, providing the requirements of the Code Case are satisfied. The Code Inquiry from Code Case OMN-17, references, in part, ASME OM Code 2001 Edition through the 2006 Addenda of Mandatory Appendix I, paragraph I-1320. NMP1 is preparing to implement the ASME OM-2012 Code Edition and has verified no revisions were made to Mandatory Appendix I in this edition, since the OMa-2006 Addenda of the ASME OM Code, that would affect the implementation of Code Case OMN-17. NMP1 currently meets or exceeds all the requirements specified in Code Case OMN-17.

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), Exelon proposes that the subject Class 1 Reactor Pressure Vessel Safety Valves be tested at least once every three (3) refueling cycles (approximately 6 years/72 months) with a minimum of 20% of the valves tested within any 24-month interval. This 20% would consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve would not exceed the 72 months, except that a 6-month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods and certification of the valve prior to installation.

5. Proposed Alternative and Basis for Use (Continued)

After as-found set pressure testing, the valves shall be disassembled and inspected to verify that parts are free of defects resulting from time-related degradation or service induced wear. As-left set pressure testing shall be performed following maintenance and prior to returning the valve(s) to service. Each valve shall be disassembled and inspected prior to the start of the 72-month interval. Disassembly and inspection prior to the implementation of Code Case OMN-17 may be used.

The safety valve testing and maintenance cycle at NMP1 consists of removal of the safety valve complement requiring testing and transportation to an off-site test facility. Upon receipt at the off-site facility, the valves are subject to an as-found inspection, seat leakage and set pressure testing. Prior to the return of a complement of safety valves for installation in the plant, the valves are disassembled and inspected to verify the internal surfaces and parts are free from defects resulting from time related degradation or service induced wear prior to the start of the next test interval. During this process, any identified adverse conditions are corrected; damaged or worn parts, springs, gaskets and seals are replaced and the valve seats are lapped, if necessary; and the valve is reassembled. Following reassembly, the valve's set pressure is recertified with an acceptance criterion of ±1%. This existing process is in accordance with ASME OM Code Case OMN-17, paragraphs (d) *Maintenance* and (e) *Disassembly and Inspection*.

After recertification testing, the safety valves are stored at the test facility for future use. The storage area is inspected and maintained to the requirements of ANSI/ASME N45.2.2, *Packing, Handling, Shipping, Storage and Handling of Items for Nuclear Power Plants*, which will minimize the potential for any valve degradation.

NMP1 has reviewed the as-found set pressure test results for all of the safety valves tested since March 2011 as shown in Attachment 1. No safety valve tested exceeded the as-found set pressure test acceptance criterion of ±3%. However, as required by Code Case OMN-17 paragraph (c), *Requirements for Testing Additional Valves (same as* Appendix I, I-1320(c)), NMP1 will expand the scope of safety valve testing upon an as-found set-pressure (first test actuation) failure. Specifically, for each valve tested for which the as-found set-pressure (first test actuation) exceeds the greater of either the plus/minus tolerance limit of the Owner established set-pressure acceptance criteria or ±3% of valve nameplate set-pressure, two additional valves shall be tested from the same valve group.

Based on the valve performance history and safety valve maintenance practices, there is continued assurance of valve operational readiness, consistent with ASME OM-2012 Code, Mandatory Appendix I. Therefore, the proposed alternative for testing the subject Class 1 safety valves at least once every three (3) refueling cycles (approximately 6 years/72 months) with a minimum of 20% of the valves tested within any 24-month interval, including a 6-month grace period, would maintain acceptable valve operational readiness and provide 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 NMP1 Fifth 10-Year Interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028.

7. Precedence

1. A similar relief request was authorized for use during the third 10-year interval at NMP2, as documented in letter from NRC (T. L. Tate) to Exelon Generation Company, LLC (B. Hanson), "Nine Mile Point Nuclear Station, Unit 2 – Safety Evaluation by the Office of the Nuclear Reactor Regulation for Relief Request MSS-VR-01, Revision 1 (CAC No. MF5773)," dated January 29, 2016 (ML15345A006). *[Authorized the 6-month grace afforded by Code Case OMN-17.]*

2. A similar relief request was authorized for use via MSS-VR-01 during the third 10-year interval for NMP2, as documented in letter from NRC (M. G. Kowal) to Nine Mile Point Nuclear Station, LLC (K. J. Polson), "Nine Mile Point Nuclear Station – Safety Evaluation of Relief Requests [MSS-VR-01] for the Unit No. 1 Fourth 10-Year and Unit No. 2 Third 10-Year Pump and Valve Inservice Testing Program (TAC Nos. MD9202 and MD9203)," dated December 29, 2008 (ML083500039). *[Authorized the Extended Test Interval to 6 years for Safety Valve testing.]*

3. Peach Bottom Atomic Power Station, Units 2 and 3 – Safety Evaluation of Relief Request 01A-VRR-3 Regarding the Fourth 10-Year Interval of the Inservice Testing Program (TAC Nos. MF2509 and MF2510), dated April 30, 2014 (ML14094A051).

8. References

1. ASME OM Code Case OMN-17, Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves

2. ANSI/ASME N45.2.2, Packing, Handling, Shipping, Storage and Handling of Items for Nuclear Power Plants

3. RG 1.192, *Operations and Maintenance Code Case Acceptability, ASME OM Code*, Revision 1, dated August 2014

MS-VR-01 Table 1
Reactor Pressure Vessel Safety Valve Test Results

Safety Valve Tested	Serial No.	Setpoint (psig)	As-Found Setpoint Test Results (psig)	Max Set Pressure +3% (psig)	Min Set Pressure -3% (psig)	Accept/ Reject	Time from last test (Years)
Refueling Outage 24, March 2017							
PSV-01-119C	BK6524	1218	1200	1254.5	1181.4	Accept	4
PSV-01-119F	BK6254	1245	1239	1282.3	1201.8	Accept	4
PSV-01-119H	BR08508	1218	1198	1254.5	1181.4	Accept	4
PSV-01-119J	BK6325	1227	1226	1263.8	1190.1	Accept	4
Refueling Outage 23, March 2015							
PSV-01-119A	BK6267	1236	1214	1273.0	1198.9	Accept	2
PSV-01-119B	BK6317	1227	1220	1263.8	1190.1	Accept	2
PSV-01-119D	BL6303	1254	1233	1291.6	1219.3	Accept	2
PSV-01-119G	BL6280	1236	1225	1273.0	1198.9	Accept	2
PSV-01-119M	BK6250	1218	1214	1254.5	1181.4	Accept	2
Refueling Outage 22, March 2013							
PSV-01-119A	BK6535	1236	1239	1273.0	1198.9	Accept	2
PSV-01-119B	BK6253	1227	1195	1263.8	1190.1	Accept	2
PSV-01-119C	BK6520	1218	1236	1254.5	1181.4	Accept	2
PSV-01-119D	BK6292	1254	1248	1291.6	1219.3	Accept	2
PSV-01-119F	BK6297	1245	1230	1282.3	1201.8	Accept	2
PSV-01-119G	BK6256	1236	1203	1273.0	1198.9	Accept	2
PSV-01-119H	BK6521	1218	1235	1254.5	1181.4	Accept	2
PSV-01-119J	BK6319	1227	1196	1263.8	1190.1	Accept	2
PSV-01-119M	BK6522	1218	1194	1254.5	1181.4	Accept	2
Refueling Outage 21, March 2011							
PSV-01-119A	BK6267	1236	1273	1273.0	1198.9	Accept	2
PSV-01-119B	BK6317	1227	1259	1263.8	1190.1	Accept	2
PSV-01-119C	BK6524	1218	1223	1254.5	1181.4	Accept	2
PSV-01-119D	BK6303	1254	1268	1291.6	1219.3	Accept	2
PSV-01-119F	BK6254	1245	1251	1282.3	1201.8	Accept	2
PSV-01-119G	BK6280	1236	1235	1273.0	1198.9	Accept	2
PSV-01-119H	BR08508	1218	1245	1254.5	1181.4	Accept	2
PSV-01-119J	BK6325	1227	1239	1263.8	1190.1	Accept	2
PSV-01-119M	BK6250	1218	1246	1254.5	1181.4	Accept	2

Comments for MS-VR-01 Table 1:

Maintenance History: Prior to installation, each valve was fully disassembled, inspected, reassembled and as left recertified by NWS Technologies, Spartanburg, South Carolina.

- Number of as-found setpoint tests results acceptable: 27
- Number of as-found setpoint tests results unacceptable: 0

Alternative Relief Evaluation in Accordance with 10 CFR 50.55a(f)(4)
IA-VRE-01, Instrument Air Receiver #11 Discharge Check Valve

1. ASME Code Component(s) Affected

The following Instrument Air (IA) Check valve is affected:

Component	Description	Class	Group
CKV-94-51	Instrument Air Receiver #11 Discharge Check Valve	N	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

10 CFR 50.55a(f)(4), Inservice Testing Standards Requirements for Operating Plants, published July 18, 2017, requires an augmented inservice testing program be developed for pumps and valves within the scope of the ASME, OM Code that are not code class 1, 2, or 3 components.

10 CFR 50.55a(f)(4), states: "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 testing 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 paragraphs (f)(2) and (3) of this section and that are incorporated by reference in paragraph (a)(1)(iv) of this section, to the extent practical within the limitations of design, geometry, and materials of construction of the components. 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 a hardship or unusual difficulty without a compensating increase in the level of quality and safety, where documented and available for NRC review."

ISTC-5221(a)(2), Valve Obturator Movement, states: Check valves that have a safety function in only the open direction shall be exercised by initiating flow and observing that the obturator has traveled either the full open position or to the position required to perform its intended function(s) (see para. ISTA-1100), and verify closure."

4. Reason for Evaluation

Pursuant to 10 CFR 50.55a(f)(4) a deviation from the ASME OM Code provisions is being implemented since compliance with the Code would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

4. Reason for Evaluation (Cont.)

Instrument air receiver #11 outlet discharge check valve, CKV-94-51, is required to open to supply instrument air to safety-related pneumatic components. The open function is tested quarterly in procedure N1-ST-Q21, Instrument Air Valves Quarterly Operability Test, which meets the ASME OM Code requirements. There is no test performed at NMP1 that verifies closure of check valve CKV-94-51.

Check valve CKV-94-51 closes if the instrument air header is being supplied by the service air system. This function is considered a backup and is not a safety-related function. The failure of check valve CKV-94-51 to close would have no impact on the instrument air loads being supplied during operation of the service air system. In this event, the service air system would continue to pressurize the instrument air header up to the discharge of the positive displacement, piston-cylinder, instrument air pumps. The back leakage through this type of pump is minimal and would have no effect on the instrument air header pressure.

There are two potential methods to verify closure of check valve CKV-94-51. First, the instrument air header would have to be removed from service and depressurized to allow removal of CKV-94-51 from the system for disassembly and inspection as there are no test ports or isolation valves that would allow an alternative means. Second, the instrument air compressors would have to be shutdown and instrument air supplied by the service air system to allow for radiography to be performed.

Such testing as described above would be a hardship with no compensating increase in the level of quality or safety.

5. Proposed Alternative and Basis for Use

The open function of check valve CKV-94-51 will continue to be tested quarterly in procedure N1-ST-Q21, Instrument Air Valves Quarterly Operability Test. This quarterly test will ensure the ability of the check valve to open to perform the safety function of supplying instrument air to the required pneumatic loads of the instrument air system.

The closure verification of CKV-94-51 will not be performed since failure of this valve to close will have no effect on either the operation of the instrument air system or on the ability of the service air system to provide a backup air supply to the instrument air pneumatic loads.

Therefore, the alternative relief is being implemented pursuant to 10 CFR 50.55a(f)(4) based on the determination that compliance with the Code required valve test requirements cannot be achieved without component testing that would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety and the proposed alternative provides reasonable assurance of valve operational readiness.

6. Duration of Proposed Alternative

This alternative will be applied to the NMPNS, Unit No. 1, fifth 10-year interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028. NRC approval is not required for this Alternative Relief Evaluation in accordance with 10CFR50.55a(f)(4).

Attachment 6 – Unit 1

Relief Request RAI and SER

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

November 13, 2018

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

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNITS 1 AND 2 - RELIEF FROM THE REQUIREMENTS OF THE ASME CODE (EPID L-2017-LLR-0145 THROUGH EPID L-2017-LLR-0152)

Dear Mr. Hanson:

By letter dated December 20, 2017 (Agencywide Documents Access and Management System Accession No. ML17354A837), Exelon Generation Company, LLC (the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants requirements at the Nine Mile Point Nuclear Station (Nine Mile Point), Units 1 and 2, during the fifth and fourth 10-year inservice testing intervals, respectively. The purpose of this letter is to provide the results of the NRC staff's review of Relief Requests GVRR-3, ADS-VR-01, CRD-VR-01, CTNH202-VR-01, CTNH202-VR-02, MS-VR-01, RBCLC-PR-01, and MSS-VR-01.

In Relief Request GVRR-3, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed to perform pressure isolation valves testing at intervals ranging from every refueling outage to every third refueling outage at Nine Mile Point, Units 1 and 2.

In Relief Request ADS-VR-01, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed a combination of offsite steam testing of the main valves, actuator cycling, and other inspections and maintenance activities in lieu of performing in-situ main steam electromatic relief valves steam pressure testing every refueling outage at Nine Mile Point, Unit 1.

In Relief Request CRD-VR-01, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed to full stroke exercised and fail safe test the scram discharge volume containment isolation valves using the test solenoid valve quarterly and to stroke-time test through the scram path during refueling outages at Nine Mile Point, Unit 1.

In Relief Requests CTNH202-VR-01 and CTNH202-VR-02, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, for the affected hydrogen and oxygen sample and return containment isolation valves, the licensee proposed to establish individual reference values, group reference values, and group acceptance criteria, and compare the slowest valve stroke-time to the acceptance criterion to determine the valve group operability status at Nine Mile Point, Unit 1.

In Relief Request MS-VR-01, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed that the subject Class 1 reactor pressure vessel safety valves be tested at least once every three refueling cycles (approximately 6 years) with a minimum of 20 percent of the valves tested within any 24-month interval at Nine Mile Point, Unit 1. This 20 percent would consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve would not exceed 72 months, except that a 6-month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods and certification of the valve prior to installation.

In Relief Request RBCLC-PR-01, pursuant to 10 CFR 50.55a(z)(2), the licensee requested to use the proposed alternative on the basis that complying with the specified requirement would result in hardship or unusual difficulty, without a compensating increase in the level of quality or safety. Specifically, the licensee proposed measuring reactor building closed loop cooling (RBCLC) pumps vibration quarterly during normal system operation, measuring all applicable parameters (i.e., flow rate, vibration, and differential pressure during cold shutdown), and performing a comprehensive test biennially at Nine Mile Point, Unit 1.

In Relief Request MSS-VR-01, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed testing the affected pressure main steam safety relief valves at least once every three refueling cycles (approximately 6 years), with a minimum of 20 percent of the valves tested within any 24-month interval instead of the required 5-year test interval at Nine Mile Point, Unit 2.

The NRC staff has reviewed the subject request and concludes, as set forth in the enclosed safety evaluation, that Exelon Generation Company, LLC has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1) and 10 CFR 50.55a(z)(2). The proposed alternatives described in Relief Requests GVRR-3, ADS-VR-01, CRD-VR-01, CTNH202-VR-01, CTNH202-VR-02, MS-VR-01, and MSS-VR-01 provide an acceptable level of quality and safety. The proposed alternative described in Relief Request RBCLC-PR-01 provides reasonable assurance that the affected pumps are operational ready. Therefore, the NRC staff authorize the use of the alternative requests described in Relief Requests GVRR-3, ADS-VR-01, CRD-VR-01, CTNH202-VR-01, CTNH202-VR-02, MS-VR-01, RBCLC-PR-01, and MSS-VR-01. The fifth and fourth 10-year inservice testing intervals for Nine Mile Point, Units 1 and 2, are scheduled to begin on January 1, 2019, and end on December 31, 2028.

If you have any questions, please contact the Nine Mile Point Nuclear Station Project Manager, Michael Marshall, at (301) 415-2871 or Michael.Marshall@nrc.gov.

Sincerely,

James G. Danna, Chief
Plant Licensing Branch I
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-220 and 50-410

Enclosure:
Safety Evaluation

cc: Listserv

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO RELIEF REQUESTS GVRR-3, ADS-VR-01, CRD-VR-01, CTNH202-VR-01, CTNH202-VR-02, MS-VR-01, RBCLC-PR-01, AND MSS-VR-01

NINE MILE POINT NUCLEAR STATION, LLC

EXELON GENERATION COMPANY, LLC

NINE MILE POINT NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-220 AND 50-410

1.0 INTRODUCTION

By letter dated December 20, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17354A837), Exelon Generation Company, LLC (Exelon or the licensee) submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to certain American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) requirements at Nine Mile Point Nuclear Station (Nine Mile Point), Units 1 and 2, during the fifth and fourth 10-year inservice testing intervals, respectively. The purpose of this letter is to provide the results of the NRC staff's review of Relief Requests GVRR-3, ADS-VR-01, CRD-VR-01, CTNH202-VR-01, CTNH202-VR-02, MS-VR-01, RBCLC-PR-01, and MSS-VR-01.

In Relief Request GVRR-3, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed to perform pressure isolation valves testing at intervals ranging from every refueling outage to every third refueling outage at Nine Mile Point, Units 1 and 2.

In Relief Request ADS-VR-01, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed a combination of offsite steam testing of the main valves, actuator cycling, and other inspections and maintenance activities in lieu of performing in-situ main steam electromatic relief valves steam pressure testing every refueling outage at Nine Mile Point, Unit 1.

In Relief Request CRD-VR-01, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed to full stroke exercised and fail safe test the scram discharge volume containment isolation valves using the test solenoid valve quarterly

and to stroke-time test through the scram path during refueling outages at Nine Mile Point, Unit 1.

In Relief Requests CTNH202-VR-01 and CTNH202-VR-02, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, for the affected hydrogen and oxygen sample and return containment isolation valves, the licensee proposed to establish individual reference values, group reference values, and group acceptance criteria and compare the slowest valve stroke-time to the acceptance criterion to determine the valve group operability status at Nine Mile Point, Unit 1.

In Relief Request MS-VR-01, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed that the subject Class 1 reactor pressure vessel safety valves be tested at least once every three refueling cycles (approximately 6 years), with a minimum of 20 percent of the valves tested within any 24-month interval at Nine Mile Point, Unit 1. This 20 percent would consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve would not exceed 72 months, except that a 6-month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods and certification of the valve prior to installation.

In Relief Request RBCLC-PR-01, pursuant to 10 CFR 50.55a(z)(2), the licensee requested to use the proposed alternative on the basis that complying with the specified requirement would result in hardship or unusual difficulty, without a compensating increase in the level of qualify or safety. Specifically, the licensee proposed measuring RBCLC pumps vibration quarterly during normal system operation, measuring all applicable parameters (i.e., flow rate, vibration, and differential pressure during cold shutdown, and performing a comprehensive test biennially at Nine Mile Point, Unit 1.

In Relief Request MSS-VR-01, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety. Specifically, the licensee proposed testing the affected pressure main steam safety relief valves (SRVs) at least once every three refueling cycles (approximately 6 years) with a minimum of 20 percent of the valves tested within any 24-month interval instead of the required 5-year test interval at Nine Mile Point, Unit 2.

2.0 REGULATORY EVALUATION

Section 50.55a(f) of 10 CFR states, in part, that inservice testing (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.

Section 50.55a(z) of 10 CFR states, in part, that alternatives to the requirements of paragraph (f) of 10 CFR 50.55a may be used when authorized by the 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.

Pursuant to 10 CFR 50.55a(a)(3), alternatives to requirements may be authorized by the NRC if the licensee demonstrates that: (i) the proposed alternatives provide an acceptable level of

quality and safety or (ii) compliance with the specified requirements would result in hardship or unusual difficulty, without a compensating increase in the level of quality and safety.
Based on the above, and subject to the following technical evaluation, the NRC staff finds that regulatory authority exists for the licensee to request, and the Commission to authorize, the alternatives requested by the licensee.

3.0 TECHNICAL EVALUATION

3.1 Relief Request GVRR-3

3.1.1 Applicable Code Requirements

The applicable ASME OM Code edition and addenda for the Nine Mile Point, Unit 1, fifth 10-year IST interval and Nine Mile Point, Unit 2, fourth 10-year IST interval is the 2012 Edition with no addenda. The licensee requested an alternative to the requirements in Section ISTC-3630, "Leakage Rate for Other Than Containment Isolation Valves," of the OM Code, 2012 Edition with no Addenda.

ASME OM Code, ISTC-3630, "Leakage Rate for Other Than Containment Isolation Valves," states, in part, that, "Category A valves with a leakage requirement not based on an owner's 10 CFR 50, Appendix J, program shall be tested to verify the seat leakages are within acceptable limits. Valve closure before seat leakage testing shall be by using the valve operator with no additional closing force applied."

ASME OM Code, ISTC-3630(a), "Frequency," states that, "Tests shall be conducted at least once every 2 years."

3.1.2 Code Components Affected

Alternative testing is for the following valves:

Table 1

Valve ID	Function	Category	Class
CKV-40-03	Core Spray (CS)	A/C	1
CKV-40-13	CS	A/C	1
CKV-40-20	CS	A/C	2
CKV-40-21	CS	A/C	1
CKV-40-22	CS	A/C	1
CKV-40-23	CS	A/C	2
CKV-38-165	Shut Down Cooling (SDC)	A/C	2
CKV-38-166	SDC	A/C	2
CKV-38-167	SDC	A/C	2
CKV-38-168	SDC	A/C	2
CKV-38-169	SDC	A/C	1
CKV-38-170	SDC	A/C	1
CKV-38-171	SDC	A/C	1
CKV-38-172	SDC	A/C	1
2CSH*V108	High Pressure Core Spray (CSH)	A/C	1
2CSH*MOV107	CSH	A	1
2CSL*V101	Low Pressure Core Spray (CSL)	A/C	1

Valve ID	Function	Category	Class
2CSL*MOV104	CSL	A	1
2ICS*V156	Reactor Core Isolation Cooling (ICS)	A/C	1
2ICS*V157	ICS	A/C	1
2RHS*V16A	Residual Heat Removal (RHS)	A/C	1
2RHS*V16B	RHS	A/C	1
2RHS*V16C	RHS	A/C	1
2RHS*V39A	RHS	A/C	1
2RHS*V39B	RHS	A/C	1
2RHS*MOV104	RHS	A	1
2RHS*MOV112	RHS	A	1
2RHS*MOV113	RHS	A	1
2RHS*MOV24A	RHS	A	1
2RHS*MOV24B	RHS	A	1
2RHS*MOV24C	RHS	A	1
2RHS*MOV40A	RHS	A	1
2RHS*MOV40B	RHS	A	1
2RHS*MOV67A	RHS	A	1
2RHS*MOV67B	RHS	A	1

3.1.3 <u>Reason for Request</u>

The licensee stated, in part:

> ISTC-3630 requires that leakage rate testing for pressure isolation valves (PIVs) be performed at least once every two years. PIVs are not specifically included in the scope for performance-based testing as provided for in 10 CFR 50 Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," Option B, "Performance Based Requirements." These motor-operated and check valve PIVs are, in some cases, containment isolation valves (CIVs), but are not within the Appendix J scope since the Reactor Shutdown Cooling System valves are considered water-sealed.
>
> ....
>
> The Nine Mile Point, Unit 1 (NMP1) Technical Specifications (TS) contain a requirement to establish the leakage rate testing program is in accordance with NEI 94-01, "Industry Guideline for Implementing Performance-Based Option of 10 CFR 50, Appendix J," Revision 0, dated July 21, 1995.
>
> The Nine Mile Point, Unit 2 (NMP2) Technical Specifications contain a requirement to establish the leakage rate testing program in accordance with the guidelines contained in NEI 94-01, Revision 2-A, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated October 2008.
>
> NEI 94-01, Paragraph 10.2.3.2, "Extended Test Interval," [as approved in the final safety evaluation for NEI 94-01, Revision 3, via letter dated June 8, 2012 (ADAMS Accession No.ML121030286)], states:

> Test intervals for Type C valves may be increased based upon completion of two consecutive periodic as-found Type C tests where the result of each test is within a licensee's allowable administrative limits. Elapsed time between the first and last tests in a series of consecutive passing tests used to determine performance shall be 24months or the nominal test interval (e.g., refueling cycle) for the valve prior to implementing Option B to Appendix J. Intervals for Type C testing may be increased to a specific value in a range of frequencies from 30 months up to a maximum of 60 months. Test intervals for Type C valves should be determined by a licensee in accordance with Section 11.0.

The concept behind the Option B alternative for CIVs is that licensees should be allowed to adopt cost effective methods for complying with regulatory requirements. Additionally, NEI 94-01 describes the risk-informed basis for the extended test intervals under Option B. That justification shows that for CIVs which have demonstrated good performance by the successful completion of two consecutive leakage rate tests over two consecutive cycles, may increase their test frequencies. Further, it states that if the component does not fail within two operating cycles, further failures appear to be governed by the random failure rate of the component. NEI 94-01 also presents the results of a comprehensive risk analysis, including the conclusion that "the risk impact associated with increasing [leak rate] test intervals is negligible (i.e., less than 0.1 percent of total risk)."

The valves identified in this relief request are all in water applications. Testing is performed with water pressurized to pressures lower than function maximum pressure differential; however, the observed leakage is adjusted to the function maximum pressure differential value in accordance with ISTC 3630(b)(4). This proposed alternative is intended to provide for a performance-based scheduling of PIV tests at NMP1 and NMP2. The reason for requesting this alternative is dose reduction to conform with NRC and industry As Low As Reasonably Achievable (ALARA) radiation dose principles. The nominal fuel cycle lengths at NMP1 and NMP2 are 24 months. However, since refueling outages may be scheduled slightly beyond 24 months, a 4-1/2 year period is used to provide a bounding timeframe to encompass two refueling outages. The review of recent historical data identified that PIV testing each refueling outage results in a total personnel dose of approximately 1 Rem [roentgen equivalent man], assuming all of the PIVs remain classified as good performers. The proposed extended test intervals would provide for a savings of approximately 1 Rem over an approximate 4-year period (two refuel outages).

NUREG-0933, "Resolution of Generic Safety Issues," Issue 105, "Interfacing Systems LOCA at LWRs," discussed the need for PIV leak rate testing based primarily on three pre-1985 historical failures of applicable valves industry-wide. These failures all involved human errors in either operations or maintenance. None of these failures involved inservice equipment degradation. The performance of PIV leak rate testing provides assurance of acceptable seat leakage with the valve in a closed condition. Typical PIV testing does not identify functional problems, which may inhibit the valve's ability to reposition from open to closed.

> For check valves, functional testing is accomplished in accordance with ASME OM Code paragraph ISTC-3522, "Category C Check Valves." For power-operated valves, full stroke functional testing is accomplished in accordance with the ASME OM Code paragraph ISTC-3521 "Category A and Category B Valves." Performance of the separate two-year PIV leak rate testing does not contribute any additional assurance of functional capability; it only determines the seat tightness of the closed valves.

The licensee also provided the following additional basis for this relief request:

- Separate functional testing of motor-operated valve (MOV) PIVs and Check Valve PIVs per ASME OM Code will continue.

- The low likelihood of valve mis-positioning during power operations (e.g., procedures, interlocks).

- Relief valves in the low pressure (LP) piping - these relief valves may not provide Inter-System Loss of Coolant Accident (ISLOCA) mitigation for inadvertent PIV mis-positioning but their relief capacity can accommodate conservative PIV seat leakage rates.

- Alarms that identify high pressure (HP) to LP leakage - Operators are highly trained to recognize symptoms of a present ISLOCA and to take appropriate actions.

The primary basis for this relief request is the historically good performance of the PIVs. The historical test data that demonstrate acceptable PIVs performance was provided earlier in the previous proposed alternative for the Nine Mile Point, Unit 1, fourth 10-year IST interval, and Nine Mile Point, Unit 2, third 10-year IST Interval, dated December 27, 2016 (ADAMS Accession No. ML17003A096).

3.1.4 <u>Proposed Alternative and Basis for Use</u>

The licensee stated:

> NMP1 and NMP2 propose to perform PIV testing at intervals ranging from every refueling outage to every third refueling outage. The specific interval for each valve would be a function of its performance and would be established in a manner consistent with the CIV process under 10 CFR 50 Appendix J, Option B. A conservative control will be established such that if any valve fails either PIV test, the test interval for both tests will be reduced consistent with Appendix J, Option B requirements until good performance is reestablished.
>
> The functional capability of the check valves is demonstrated by the open and close exercising. This testing is separate and distinct from PIV testing and is performed at a refuel outage frequency in accordance with ASME OM Code, paragraph ISTC-3522.

The proposed alternative would apply to the Nine Mile Point, Unit 1, fifth 10-year IST and Nine Mile Point, Unit 2, fourth 10-year IST intervals, which are scheduled to begin January 1, 2019, and conclude on December 31, 2028.

3.1.5 NRC Staff Evaluation

The licensee has proposed an alternative test in lieu of the requirements found in the 2012 Edition of the ASME OM Code, Section ISTC-3630(a), for 35 PIVs noted in Table 1 above. Specifically, the licensee proposes to functionally test and verify the leakage rate of these PIVs using the 10 CFR Part 50, Appendix J, Option B performance-based schedule. Valves would initially be tested at the required interval schedule, which is currently every refueling outage, or 2 years, as specified by ASME OM Code Section ISTC-3630(a). Valves that have demonstrated good performance for two consecutive cycles may have their test interval extended to 75 months. Any PIV leakage test failure would require the component to return to the initial interval of every refueling outage, or 2 years, until good performance can again be established.

Pressure isolation valves are defined as two valves in series within the reactor coolant pressure boundary, which separate the high pressure reactor coolant system from an attached lower pressure system. Failure of a PIV could result in an over-pressurization event, which could lead to a system rupture and possible release of fission products to the environment. This type of failure event was analyzed under NUREG/CR-5928, "ISLOCA Research Program," dated July 1993. The purpose of NUREG/CR-5928 was to quantify the risk associated with an ISLOCA event. NUREG/CR-5928 analyzed boiling-water reactor (BWR) and pressurized-water reactor designs. The conclusion of the analysis resulted in ISLOCA not being a risk concern for BWR design. Nine Mile Point, Units 1 and 2, are a BWR design.

Option B in 10 CFR Part 50, Appendix J, is a performance-based leakage test program. Guidance for implementation of acceptable leakage rate test methods, procedures, and analyses is provided in Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995 (ADAMS Accession No. ML003740058). RG 1.163 endorses Nuclear Energy Institute (NEI) Topical Report 94-01, Revision 0, "Industry Guideline For Implementing Performance-Based Option of 10 CFR 50, Appendix J," dated July 26, 1995, with the limitation that Type C component test intervals cannot extend greater than 60 months. The current version of NEI 94-01 is Revision 3-A (ADAMS Package Accession No. ML122210254), which allows Type C containment isolation valves test intervals to be extended to 75 months, with a permissible extension for non-routine emergent conditions of 9 months (i.e., 84 months total). As stated in a letter dated December 6, 2012, the NRC staff finds the guidance in NEI 94-01, Revision 3-A, acceptable (ADAMS Accession No. ML12226A546), with the following conditions:

1) Extended interval for Type C local leak rate tests (LLRTs) may be increased to 75 months with the requirement that a licensee's post-outage report include the margin between Type B and Type C leakage rate summation and its regulatory limit. In addition, a corrective action plan shall be developed to restore the margin to an acceptable level. Extensions of up to 9 months (total maximum interval of 84 months for Type C tests) are permissible only for non-routine emergent conditions. This provision (9-month extension) does not apply to valves that are restricted and/or limited to 30-month intervals in Section 10.2 (such as BWR main steam isolation valves) or to valves held to the base interval (30 months) due to unsatisfactory LLRT performance.

2) When routinely scheduling any LLRT valve interval beyond 60-months and up to 75 months, the primary containment leakage rate testing program trending or monitoring must include an estimate of the amount of understatement in the Type B and Type C total and must be included in a licensee's post-outage report. The report must include the reasoning and determination of the acceptability of the extension, demonstrating that the LLRT totals calculated represent the actual leakage potential of the penetrations.

The 35 PIVs are currently being leak-tested every refueling outage, or 2 years. The licensee considers performance of the leakage test of the 35 PIVs to be inconsistent with ALARA based on radiation exposure. Overall completion of leak test requirements averages a dose of 1 Rem over a 4-year period. As noted in the licensee's relief request proposal, the valves have maintained a history of good performance. Extending the leakage test interval based on good performance and the low risk factor is in consistent with Option B of 10 CFR Part 50, Appendix J, and NUREG/CR-5928. Therefore, the NRC staff concludes that the licensee's proposed alternative provides an acceptable level of quality and safety.

3.2 Relief Request ADS-VR-01

3.2.1 Applicable Code Requirements

The applicable ASME OM Code edition and addenda for Nine Mile Point, Unit 1, fifth 10-year IST interval is the 2012 Edition with no Addenda.

The licensee requested relief from the following Code requirements:

- ISTC-3510, Exercising Test Frequency, states, in part: "Power-operated relief valves shall be exercise tested once per fuel cycle."

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

- ISTC-5111, Valve Testing Requirements, states, in part: "(a) Testing shall be performed in the following sequence or concurrently. If testing in the following sequence in impractical, it may be performed out of sequence, and a justification shall be documented in the record of tests for each test or in the test plan:

  (1) leakage testing
  (2) stroke testing
  (3) position indication testing"

- ISTC-5113, Valve Stroke Testing, states, in part: "(a) Active valves shall have their stroke times measured when exercised in accordance with para. ISTC-3500."

- ISTC-5114, Stroke Test Acceptance Criteria, states, in part: "Test results shall be compared to the reference values established in accordance with para. ISTC-3300, ISTC-3310, or ISTC-3320."

3.2.2 Code Components Affected

Alternative testing is required for the following main steam electronic relief valves (ERVs):

Table 2

Component	Description	Class	Category
PSV-01-102A	Main Steam ERV	1	B
PSV-01-102B	Main Steam ERV	1	B
PSV-01-102C	Main Steam ERV	1	B
PSV-01-102D	Main Steam ERV	1	B
PSV-01-102E	Main Steam ERV	1	B
PSV-01-102F	Main Steam ERV	1	B

3.2.3 Reason for Request

The licensee stated, in part:

> There are six ERVs installed on the main steam (MS) lines inside the drywell. Each ERV consists of a main valve, a pilot valve assembly, and a solenoid actuator. The ERVs are opened by either signals from automatic actuation instrumentation or manually and, thus, do not rely on spring setpoints for valve actuation.
>
> The ASME OM-2012 Code-required testing for the six ERVs would be satisfied by manually stroking open each ERV with the reactor at pressure once every operating cycle. It would be performed during plant startup following a refueling outage (RFO). Experience in the industry and at NMP1 indicates that manually opening the ERVs during plant operation can increase the potential for main disc seat leakage and pilot valve seat leakage. NMP1 experienced main disc seat leakage in March 2001 and pilot valve seat leakage in December 2002, both of which were attributed to debris on the seats caused by testing the valves using steam. Leakage from the main valve disc can cause increases in suppression pool (torus) temperature and level, requiring more frequent suppression pool cooling and pump-down operations, and diverts steam from the power generation steam cycle. Excessive leakage from the pilot valve can cause inadvertent opening of the main valve and impair its ability to re-close.
>
> The proposed alternative will allow testing of the ERVs that is appropriate to demonstrate functionality without cycling the valves in place using reactor steam pressure. The request is consistent with NUREG-0737, "Clarification of TMI Action Item Requirements," Item II.K.3.16, "Reduction of Challenges and Failures of Relief Valves," which recommended that the number of relief valve openings

be reduced as much as possible and that unnecessary challenges should be avoided.

3.2.4 Proposed Alternative and Basis for Use

The licensee stated, in part:

> This relief request proposes an alternative to performing in-situ ERV stream pressure testing every RFO [refueling outage]. The proposed alternative consists of a combination of offsite steam testing of the main valves, actuator cycling, and other inspections and maintenance activities.
>
> The proposed alternative will allow testing of the ERVs that is appropriate to demonstrate functionality without cycling the valves in place using reactor steam pressure. The request is consistent with NUREG-0737, "Clarification of TMI Action Item Requirements," Item II.K.3.16, "Reduction of Challenges and Failures of Relief Valves," which recommended that the number of relief valve openings be reduced as much as possible and that unnecessary challenges should be avoided.

The licensee stated, in part:

> This relief request proposes an alternative to performing in-situ ERV steam pressure testing every RFO. The proposed alternative consists of a combination of offsite steam testing of the main valves, actuator cycling, and other inspections and maintenance activities. The proposed alternative would provide an acceptable level of quality and safety, as further discussed below.
>
> System Description
>
> There are six Dresser model 1525VX solenoid-actuated, pilot-operated ERVs installed at NMP1. The ERVs are connected to the MS lines between the MS line flow restrictor and the inboard MS isolation valve. Each ERV has its own discharge pipe that is equipped with an acoustic monitor to detect flow noise and a thermocouple to sense discharge fluid temperature to monitor for valve actuation and/or leakage.
>
> Valve Operation
>
> Steam under pressure from the reactor enters the main valve and passes upward around the disc guide. Steam enters the chamber below the main disc through a small orifice located in the disc retainer plate. Inlet steam pressure holds the main valve disc closed. A main disc spring is provided to keep the main valve disc in the closed position at low pressures or while depressurized. The pilot valve disc is held in the closed position by a pilot valve spring and steam pressure in the chamber below the pilot disc. When the solenoid actuator is energized, the actuator plunger depresses the pilot valve operating lever, thereby opening the pilot valve. When the pilot valve is opened, steam is released through the outlet port at a faster rate than supplied through the inlet orifice. This causes the chamber below the main disc to depressurize, causing the valve to

open. To close the valve, the solenoid actuator is de-energized, thereby closing the pilot valve and allowing steam pressure to reseat the main valve.

Exercise Test Frequency Alternative to ISTC-3510

For the proposed alternative, all six of the ERV solenoid actuators will be exercised each RFO, and two (2) of the six (6) main valves will be replaced with pretested spare valves each RFO such that all six valves will be replaced with pretested spare valves over a 6-year period with a six month grace period. Inspections and precision preventive maintenance (described below) will be performed each RFO for all six of the solenoid actuators and pilot valve assemblies, with the IST requirements incorporated as part of the preventive maintenance activities.

Solenoid Actuator

Each ERV solenoid actuator will be exercised each RFO. The closing stroke de-energizes the solenoid and allows the actuator to return to its fail-safe (closed) position. This test will be performed with the pilot valve and solenoid actuator mounted in their normal installed positions inside the drywell, which allows the solenoid actuator to be actuated electrically from the control room by placing the control switch in the Open position. The pilot valve operating lever and pilot valve stem will be secured in the open position during this test to prevent damage to the pilot valve assembly, which could result from dry-stroking with no backpressure. The maintenance activities include detailed inspections of the electrical and mechanical components of the solenoid actuator.

NMP1 licensee event report (LER) 03-001, "Technical Specification Cooldown Rate Exceeded During Required Cooldown for the Failed Solenoid Actuated Pressure Relief Valve," reported an event involving an ERV that failed to open due to high resistance in the solenoid actuator cutout switch contacts. The high resistance contacts limited the current through the solenoid operating coil, which reduced the force that the plunger applied to the pilot valve operating lever. Further investigation and examination showed that the high contact resistance was due to the tin coating having been worn off the cutout switch contacts, allowing excessive contact oxidation to occur. Preventive maintenance activities now include inspection and cleaning of the cutout switch contacts, as necessary, to assure that the contact surfaces are clean and free of oxidation, corrosion, and discoloration. The contact tin plating will be verified to be intact and not worn off exposing the copper base material. Associated springs and mechanisms will be inspected, and the as-left contact resistances are verified. Resistance checks will be performed on both actuator coils, and actuator operating currents during electrical actuation are verified to be within acceptance limits. These steps provide substantial indication that the solenoid actuator is capable of functioning as designed and producing its full output force.

Stroke timing of the solenoid actuator will not be performed since the actuator is a sub-component of the total ERV. Degradation is monitored through the preventive maintenance inspections in lieu of trending millisecond stroke-time variations.

Pilot Valve

Each ERV pilot valve will be exercised each RFO when the new/refurbished pilot valve assembly is installed in the pilot housing. Note that the pilot valve housing is permanently welded to the outside of the ERV enclosure located in the drywell. Removal and reinstallation of the pilot valve assembly does not affect the ERV main valve. The maintenance activities will include inspections of the pilot valve assembly parts and the pilot valve housing interior to identify any damage or wear that could impair free movement of the stem or proper valve seating. Parts are refurbished or replaced as necessary. Cleanliness of parts and components and absence of foreign material are verified prior to reassembly.

NMP1 has experienced a stuck-open ERV event caused by improper maintenance. NMP1 LER 04-001, "Manual Reactor Scram and Cooldown Rate Exceeding Technical Specification Limits Due to Electromatic Relief Valve Failure to Close," reported an event involving an ERV that stuck open due to a maintenance error in which an extraneous gasket was installed in the pilot valve housing. This condition allowed steam to bypass the pilot valve seat, thereby preventing steam pressure from building up under the main valve disc to close the valve when given the closure signal. Appropriate precautions and instructions have been incorporated into the ERV maintenance procedure to ensure that the correct gasket is used and sufficient torque is applied to prevent steam from bypassing the pilot valve seat.

Prior to re-installing the pilot valve assembly inside the pilot housing, pilot stem/disc leak testing and freedom of movement and reseat functionality will be demonstrated. A complete cleanliness inspection will be performed prior to installing the pilot valve assembly back into the housing. The housing is thoroughly cleaned and vacuumed to remove moisture and debris to minimize the potential for debris blocking or hindering pilot valve performance. Following installation of the pilot valve assembly inside the housing, the pilot valve operating lever and pilot valve assembly freedom of movement and clearance adjustments are confirmed, followed by stroking the solenoid actuator plunger by hand to the full extent of travel. This ensures that the solenoid actuator plunger, pilot valve operating lever, and pilot valve assembly function as a unit, while eliminating the risk of damage resulting from electrically stroking the pilot valve in the absence of steam pressure (referred to as dry-stroking). The pilot valve freedom of movement check allows the pilot valve disc to return to its fail-safe (closed) position. NMP1 LER 00-004-01, "Manual Reactor Scram and Unusual Event Declaration Due to Stuck Open Electromatic Relief Valve and Failed Vacuum Breaker on Electromatic Relief Valve Discharge Line," reported an event involving an ERV that unexpectedly opened and would not reclose. The cause was attributed to a bent stem in the pilot valve assembly and partial disengagement of the pilot valve disc from the stem. It was determined that the pilot valve stem-disc separation had occurred as a result of dry-stroking the ERV pilot valve using the solenoid actuator.

Stroke timing of the pilot valve is not practical since the test is performed by hand and the pilot valve is a sub-component of the total ERV. Degradation of the pilot valve assemblies will be monitored through the preventive maintenance inspections.

Main Valve

A sampling program is proposed that will be replaced every three RFOs (approximately 6 years). Each ERV main valve will be stroke tested at an offsite steam test facility once every 6 years (three RFOs) [rather than once every RFO (approximately 24 months)]. A 6-month grace period would be allowed to accommodate variations in fuel cycle length and extended shutdown periods. The main valve testing will capture the exercise and stroke-time test data required by the ASME OM-2012 Code.

The main valve is housed in a heavy, steel enclosure that is attached to the main steam line inlet flange. The pilot valve assembly is installed inside the pilot valve housing, and the housing is welded onto the outside of the enclosure and physically separated from the ERV main valve body. Thus, only the main valve of the ERV can be sent to the test facility. A spare pilot valve assembly and a spare solenoid actuator, both representative of the components used at the plant, will be installed at the test facility to allow testing the main valve. The valve will be installed on a test steam header in the same orientation as the plant installation. The test conditions at the test facility will be similar to those in the plant, including ambient temperature and steam conditions. The main valve will receive an initial seat leak test, a functional test to ensure it is capable of opening and closing, and a final seat leak test. Valve stroke time will be obtained during the exercise test. Valve seat tightness will be verified by a cold bar test, and if not free of fog, leakage will be measured and verified to be below specified acceptance criteria. This initial testing will be completed prior to plant startup from the RFO.

After initial testing, the main valves will be completely disassembled, inspected and refurbished, and then retested. The refurbished main valves will be stored at the offsite test facility and returned to the plant prior to the next scheduled use. The offsite test facility's storage requirements will ensure the valves are protected from physical damage. The valves will be stored in an area meeting ANSI/ASME N45.2.2 Class B storage requirements, with the storage area temperature maintained between 50°F and 90°F. Maintaining the ERVs in a controlled environment during storage minimizes the potential for any valve degradation.

Prior to installation at the plant, the spare main valves will be inspected for foreign material and damage. The steam line and ERV discharge line openings will also be inspected to verify cleanliness and absence of foreign material. Procedural requirements will ensure that the proper ERV inlet flange gasket separating ring thickness is provided so proper crush of the flexitallic gasket is achieved when the valve is installed. The valves will then be installed and necessary connections completed, including connecting the vent tube and installing the enclosure cover and bellows assembly. Proper connections will be verified per procedure.

The four main valve discs that are not exercised during each RFO will have inspections and maintenance performed on their solenoid actuators and pilot valve assemblies as described above. Review of past surveillance testing and

preventive maintenance history indicates that the ERV main valves are highly reliable.

The testing and refurbishment activities performed at the off-site test facility on the partial compliment sample (two valves each RFO) will ensure that main valve degradation mechanisms are detected in a timely manner. Monitoring of the ERV discharge line temperatures during plant operation also provides an indication of degradation of the installed main valves.

Position Indication Verification Alternative to ISTC-3700 and ISTC-5111

This proposed alternative performs position indication verification for the six ERVs by observing the control room position indicating lights during the solenoid actuator test. Each ERV is equipped with red and green indicating lights which provide control room open and close indication, respectively, by monitoring the solenoid actuator plunger position. A blue indicating light is also provided in the control room which monitors power to the solenoid actuator. The blue light is "On" when the solenoid is deenergized (valve closed) and "Off" when the solenoid is energized (valve open). As previously noted, the pilot valve operating lever and pilot valve stem will be secured in the open position during this test to prevent damage to the pilot valve assembly, which could result from dry-stroking with no backpressure. Solenoid actuator plunger movement will be observed locally in the drywell and compared to the control room indication to verify that solenoid actuator operation is accurately indicated. The proposed position indication verification alternative provides indirect pilot valve position, which ultimately represents the position of the main valve disc when steam is present, without cycling the ERVs in place with reactor steam pressure.

This test will be performed every RFO for each of the six ERVs. The proposed position indication verification alternative provides an acceptable level of quality and safety without requiring indication of main valve obturator movement.

Stroke Time Testing Alternative to ISTC-5113 and ISTC-5114

Since the ERVs are not being in-situ tested, and since only the main valve is being tested at the offsite test facility (as previously noted), ERV full stroke time from initiating signal to indication of the end of the operating stroke cannot be obtained. Instead, main valve stroke times will be measured at the test facility. Stroke time acceptance criteria will use a pre-established reference value that represents good performance for this valve type. Since the whole valve assembly is not being tested and the test facility cannot duplicate the control circuitry, a simplified valve actuation circuit will be used. Although these differences may result in minor differences in measured stroke time compared to previous test data for in-situ testing of the complete ERV, the stroke times measured at the test facility will be comparable to each other and, thus, can be used to detect abnormalities in valve performance.

3.2.5 NRC Staff Evaluation

The licensee has proposed alternatives in lieu of the requirements found in the 2012 Edition of the ASME OM Code, Sections ISTC-3510, ISTC-3700, ISTC-5111, ISTC-5113, and ISTC-5114,

for six ERVs noted in Table 2 above. Specifically, the licensee proposes to exercise all six of the ERV solenoid actuators each refueling outage. Two of the six main valves would be replaced with pretested spare valves each refueling outage such that all six valves would be replaced with pretested spare valves over a 6-year period with a 6-month grace period. Inspections and precision preventive maintenance would be performed each refueling outage for all six of the solenoid actuators and pilot valve assemblies, with the IST requirements incorporated as part of the preventive maintenance activities.

The NRC staff has reviewed the licensee's proposed alternative testing of the ERVs. The functional capability of the valves is adequately verified. A manual actuation and valve leakage test will be performed at a steam test facility using test conditions similar to those for the installed valves in the plant, including valve orientation, ambient temperature, and steam conditions. Following ERV installation, the licensee's proposed testing includes verifying proper electrical connections and actuator performance. Although the tests of the ERVs at the steam test facility are not performed with the actual valve solenoids installed in the plant, the solenoids are adequately tested and verified by separate tests. This combination of testing, inspections, and maintenance activities provides an acceptable level of quality and safety, without requiring the six ERVs to be stroked with reactor steam during plant startup.

The NRC staff also finds that the licensee has had no failures of the valves to stroke open in the past 10 years. The licensee has adequately considered the applicable Nine Mile Point, Unit 1, operational experience regarding the necessary verification and testing of the ERV solenoid capability and the prevention and detection of possible damage to the ERV pilot valves during dry stroke testing following installation. The licensee stated that all of the components necessary to manually actuate the ERVs will continue to be tested to demonstrate the functional capability of the valves, without the need to stroke test the valves on-line with system steam pressure. The NRC staff also notes that the current testing requirements could result in seat leakage of the ERVs during power operation. Excessive seat leakage could result in excessive suppression pool temperature and level or in unidentified drywell leakage, which would likely be identified and corrected.

The proposed ERVs sampling test program is similar to the requirements of ASME OM Code Case OMN-17 for ASME Class 1 pressure safety/relief valves, which is approved for use in RG 1.192, Revision 2, "Operation and Maintenance Code Case Acceptability, ASME OM Code," dated March 2017 (ADAMS Accession No. ML16321A337). Therefore, the NRC staff finds that the proposed alternative testing in lieu of the ISTC-3510 requirement is acceptable. The NRC staff has reviewed position verification alternative to ISTC-3700 and ISTC-5111. As previously noted, the current dry stroke test with no backpressure will result in damage to the pilot valve assembly. To prevent valve damage, the licensee will secure the pilot valve operating lever and pilot valve stem in the open position while locally observing the solenoid actuator plunger movement, in conjunction with observing the control room indication. The proposed alternative will verify that solenoid actuator operation, and indirectly, that the pilot valve position is accurately indicated. The NRC staff finds that the proposed position verification alternative meets the intent of ASME OM Code requirements. Therefore, the NRC staff finds that the proposed alternative testing is acceptable.

The NRC staff has reviewed stroke-time test alternative to ISTC-5113 and ISTC-5114. Currently, the ASME OM-2012 Code-required testing for the six ERVs is satisfied by manually stroking open each ERV with the reactor at pressure. As previously noted, the proposed alternative will allow testing of main valves at an offsite facility. A pilot valve assembly and a solenoid actuator, both representative of the components used at the plant, will be installed at

the test facility to allow the testing of the main valve. The test conditions at the test facility are similar to those normal operating conditions in the plant. The NRC staff finds that the proposed alternative captures the valve stroke testing and the stroke-time test data required by ASME OM-2012 Code, and therefore, is acceptable. The NRC staff finds that with the proposed alternative, the valve stroke time is adequately measured and the results are compared to a pre-established reference value, and therefore, is acceptable.

The NRC staff finds that the proposed alternative testing of the ERVs and associated components provides reasonable assurance that the valves will continue to operate when called upon to perform their safety-related function. Therefore, the NRC staff finds that the proposed alternative testing frequency and methods to those required by the ASME OM-2012 Code Edition provide an acceptable level of quality and safety.

3.3 Relief Request CRD-VR-01

3.3.1 Applicable Code Requirements

The Nine Mile Point, Unit 1, fifth 10-year IST program interval begins on January 1, 2019, and is scheduled to end on December 31, 2028. The applicable ASME OM Code edition for the Nine Mile Point, Unit 1, fifth 10-year IST program interval is the 2012 Edition.

ISTC-5131, "Valve Stroke Testing," (a), states, "Active Valves shall have their stroke times measured when exercised in accordance with para. ISTC-3500."

3.3.2 Code Components Affected

The licensee has requested to use the proposed alternative described below for the scram discharge volume (SDV) containment isolation valves (CIVs) listed in the following table.

Table 3

Component	Description	ASME Code Class	ASME OM Valve Category
IV-44.2-15	SDV Vent Inboard Isolation Valve (IV)	2	A
IV-44.2-16	SDV Vent Outboard IV	2	A
IV-44.2-17	SDV Drain Outboard IV	2	A
IV-44.2-18	SDV Drain Inboard IV	2	A

3.3.3 Reason for Request

The licensee stated:

> The SDV CIVs are normally open valves. These valves close on the loss of air or the de-energizing of the solenoid valves (SOV-113-275 and SOV-113-276 for IV-44.2-16 and IV-44.2-17; and SOV-113-273 and SOV-113-274 for IV-44.2-15 and IV-44.2-18). The SDV air header and valve arrangement are single failure proof. The solenoid valves are powered from either reactor trip bus (RTB) 131 or 141 through fuses. Removing the fuses to fail-safe test these valves causes a scram in approximately six (6) seconds due to the de-energizing of SOV-113-271 and SOV-113-272. Venting the scram air header due to exercising of the valves

by pulling fuses subjects the control rod drives to higher differential pressures than observed during a scram at normal operating conditions. The high differential pressure applied to control rods fully inserted has resulted in equipment damage.

Testing via the safety-related scram exhaust path cannot be performed during power operation since this could result in a plant trip. The safety-related exhaust path (scram path) is through SOV-113-275 and SOV-113-276 or SOV-113-273 and SOV-113-274 exhaust ports. A test solenoid valve (SOV-113-277) was installed as a result of Information Bulletin (IEB) No. BL-80-17, ["Failure of 76 of 185 Control Rods to Fully Insert During a Scram at a BWR,"] dated July 3, 1980, to permit fail-safe and stroke time testing without causing a scram. The test solenoid exhaust path (test path) adds a restriction that is not present in the scram path. When the test solenoid is energized, the SDV air header and valve actuators are vented through SOV-113-277.

The restriction is due to exhausting air through the SOV-113-274 and SOV-113-276 air inlet supply port, since the solenoids are energized. The solenoid valve employs an internal pilot in the inlet port. Air can exhaust through the inlet port; however, the flow path is not a fixed resistance path. The variable resistance can cause variations in the quarterly stroke time measurements of the valves. These variations can result in inaccurate stroke times and mask the true valve performance. This limits the ability to accurately monitor for and detect degradation. Additionally, the test path is not the safety-related exhaust path (scram path) for the CIVs.

Stroke time testing through the scram path can be performed during refueling outages. Stroke times obtained during refueling outage tests (using the scram vent path) have provided consistent accurate results. This testing method provides an accurate indication of valve performance and provides the ability to monitor for and detect degradation.

3.3.4 Proposed Alternative and Basis for Use

The licensee stated that the SDV CIVs listed in Table 3 above will be full stroke exercised and fail safe tested quarterly using the test solenoid valve. These SDV CIVs will be stroke-time tested through the scram path during refueling outages.

3.3.5 NRC Staff Evaluation

Testing of the SDV CIVs by the safety-related scram exhaust path cannot be performed during power operation. A test solenoid valve was installed to permit fail safe and stroke-time testing, without causing a scram. The test solenoid exhaust path adds a restriction that is not present in the scram path and introduces a variable system resistance into the test flow path. The variable resistance can cause variations in the quarterly stroke-time measurements of the valves. These variations can result in inaccurate stroke times and mask true valve performance.

The quarterly test path is not the safety-related exhaust path for the SDV CIVs and does not provide accurate indication as to valve stroke times utilizing the normal flow path. Stroke-time testing through the scram path can be performed during refueling outages. Stroke times obtained during refueling outage tests provide consistent test results. The licensee proposes to

full-stroke exercise and fail safe test the valves quarterly using the test solenoid valve and stroke-time test the valves through the scram path during refueling outages, which has provided consistent and accurate stroke times. This testing method provides an accurate indication of valve performance and provides the ability to monitor for and detect degradation. Therefore, the licensee's proposed alternative will provide an acceptable level of quality and safety. The NRC staff finds the use of the proposed alternative for the current Nine Mile Point, Unit 1, IST program interval.

3.4 Relief Request CTNH202-VR-01

3.4.1 Applicable Code Requirements

ISTC-5131(a), "Valve Stroke Testing," states that, "Active valves shall have their stroke times measured when exercised in accordance with ISTC-3500."

ISTC-5132, "Stroke Test Acceptance Criteria," states that, "Test results shall be compared to the reference values established in accordance with ISTC-3300, ISTC-3310, or ISTC-3320."

3.4.2 Code Components Affected

Alternative testing is requested for the following valves:

Table 4

Valve Number	Valve Name	ASME Code Class	ASME OM Category
IV-201.2-109	#11 Torus Return Inboard Isolation Valve	2	A
IV-201.2-110	#11 Torus Sample Inboard Isolation Valve	2	A
IV-201.2-111	#11 Torus Sample Outboard Isolation Valve	2	A
IV-201.2-112	#11 Torus Return Outboard Isolation Valve	2	A
IV-201.7-01	#11 Sample Stream B Inboard Isolation Valve	2	A
IV-201.7-02	#11 Sample Stream B Outboard Isolation Valve	2	A
IV-201.7-08	DW CAM Sample Inboard Isolation Valve	2	A
IV-201.7-09	DW CAM Sample Outboard Isolation Valve	2	A
IV-201.7-10	#11 DW Return Inboard Isolation Valve	2	A
IV-201.7-11	#11 DW Return Outboard Isolation Valve	2	A

3.4.3 Reason for Request

The licensee stated, in part:

> These pneumatically operated valves are grouped together on common control switches. The groups are:
>
> - IV-201.8-08, IV-201.7-09, IV-201.7-10, & IV-201.7-11
> - IV-201.2-109, IV-201.2-112, IV-201.2-110, IV-201.2-111, IV-201.7-01, & IV-201.7-02
>
> These arrangements have a common closed light (green) for a group of valves and individual open lights (red) for each valve. Reference values are established for each group by timing the valves for at least three exercises. The exercising is

> conducted over a sufficient interval to prevent erroneous data due to preconditioning. An individual reference value is developed for each valve in a group. A composite (group) reference value is developed by averaging the individual reference values. Typically, the individual valve's reference values are within ± 0.5 second of the group reference value.
>
> As needed, primarily after rework or repair, the individual reference values and the group reference value are re-established. This group reference value is used as a common reference value for each valve in the group. The valve stroke-time test uses switch-actuation-to-red-light-out (closed indication) for open-to-close stroke time. The stroke time of the slowest valve is observed and recorded. Typically, the slowest valve is not always the same component within the group. If the slowest valve exceeds the acceptance criterion (i.e., ± 50% of the group reference value), the group is declared inoperable. Corrective action is then taken, per ISTC-5133, Stroke Test Corrective Action.
>
> The group reference values are less than 10 seconds, significantly below the Updated Final Safety Analysis Report (UFSAR), Table VI-3b, Primary Containment Isolation Valves Lines Entering Free Space of the Containment, maximum operating time of 60 seconds. While some performance degradation is masked by this testing methodology, nuclear safety will not be compromised. Prior to any valve degrading and exceeding the UFSAR maximum operating time of 60 seconds, the acceptance criterion would be significantly exceeded, and corrective action would be taken. The proposed alternative testing method provides an adequate capability to monitor and detect individual valve degradation prior to exceeding the UFSAR maximum operating time. This method provides an equivalent level of quality and safety compared to the Code required individual valve stroke-timing.

3.4.4 <u>Proposed Alternative and Basis for Use</u>

The licensee stated:

> NMPNS proposes to establish individual reference values, group reference values, and group acceptance criteria. Stroke-timing of the valve groups will record the slowest operating valves' corresponding stroke time. NMPNS will then compare the slowest valve stroke time to the acceptance criterion to determine the valve group operability status. Corrective actions will be taken, as required, for exceeding the acceptance criterion.

This request, upon approval, will be applied to the Nine Mile Point, Unit 1, fifth 10-year interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028.

3.4.5 <u>NRC Staff Evaluation</u>

The ASME OM Code requires that active valves have their stroke times measured and assessed when exercised in accordance with ISTC-3500. The valves listed in Table 4 have been placed in a group that is operated by a common control switch. Each valve group has a common closed light and individual valve open lights. Reference values are established for each group by timing the valves for at least three exercises. The exercising is conducted over a sufficient interval to prevent erroneous data due to preconditioning. An individual reference

value is developed for each valve in a group. A composite (i.e., group) reference value is developed by averaging the individual reference values.

The licensee proposes to establish power operated valve group stroke-time reference values and to evaluate acceptance based upon deviation from this reference. If the slowest valve in the group exceeds the acceptance criterion, the group is declared inoperable, and corrective actions are taken. The proposed acceptance criterion is consistent with the Code requirement, which states that valves with reference stroke times less than or equal to 10 seconds shall exhibit no more than a 50 percent change in stroke time when compared to the reference value. The proposed alternative will detect individual valve degradation, provide reasonable assurance of valve operational readiness, and provide an acceptable level of quality and safety.

3.5 Relief Request CTNH202-VR-02

3.5.1 Applicable Code Requirements

ISTC-5151(a), "Valve Stroke Testing," states that, "Active valves shall have their stroke times measured when exercised in accordance with ISTC-3500."

ISTC-5122, "Stroke Test Acceptance Criteria," states that, "Test results shall be compared to the reference values established in accordance with ISTC-3300, ISTC-3310, or ISTC-3320."

3.5.2 Code Components Affected

Alternative testing is requested for the following valves:

Table 5

Valve Number	Valve Name	ASME Code Class	ASME OM Category
IV-201.2-23	#12 Torus Sample Inboard Isolation Valve	2	A
IV-201.2-24	#12 Torus Sample Outboard Isolation Valve	2	A
IV-201.2-29	#12 Drywell Sample Inboard Isolation Valve	2	A
IV-201.2-30	#12 Drywell Sample Outboard Isolation Valve	2	A

3.5.3 Reason for Request

The licensee stated, in part:

> These solenoid operated valves are grouped together on common control switch. The group is:
>
> - IV-201.2-23, IV-201.2-24, IV-201.2-29, & IV-201.2-30
>
> This arrangement has a common closed light (green) for each pair of valves and individual open lights (red) for each valve. A reference value is established for each pair by timing the valves for at least three exercises. The exercising is conducted over a sufficient interval to prevent erroneous data due to pre-conditioning. A composite (group) reference value is developed by averaging the individual valve pair reference values. Individual reference values are not established. These valves stroke in less than 2 seconds and are all designated as

"rapid acting" valves. A limiting value of 2 seconds is assigned to the group. As needed, primarily after rework or repair, the individual reference values and the group reference value are re-established. This group reference value is used as a common reference value for each valve in the group. The valve stroke-time test uses switch actuation to red light out (closed indication) for open to close stroke time. The stroke time of the slowest valve is observed and recorded. Typically, the slowest valve is not always the same component within the group. If the slowest valve exceeds the acceptance criterion (i.e., ± 50% of the group reference value), the group is declared inoperable. Corrective action is then taken, per ISTC-5153, Stroke Test Corrective Action.

The group limiting value of 2 seconds is significantly below the Updated Final Safety Analysis Report (UFSAR), Table VI-3b, Primary Containment Isolation Valves Lines Entering Free Space of the Containment, maximum operating time of 60 seconds. While some performance degradation is masked by this testing methodology, nuclear safety will not be compromised. Prior to any valve degrading and exceeding the UFSAR maximum operating time of 60 seconds, the acceptance criterion would be significantly exceeded, and corrective action would be taken. The proposed alternative testing method provides an adequate capability to monitor and detect individual valve degradation prior to exceeding the UFSAR maximum operating time of 60 seconds. This method provides an equivalent level of quality and safety compared to the Code required individual valve stroke timing.

3.5.4 Proposed Alternative and Basis for Use

The licensee stated, in part:

> NMPNS proposes to establish valve pair reference values, group reference values, and group acceptance criteria. Stroke-timing of the valve groups will record the slowest operating valves' corresponding stroke-time. NMPNS will then compare the slowest valve stroke-time to the acceptance criterion to determine the valve group operability status. Corrective actions will be taken, as required, for exceeding the acceptance criterion.
>
> This request, upon approval, will be applied to the NMPNS, Unit No. 1, fifth 10-year interval, which begins on January 1, 2019, and is scheduled to end on December 31, 2028.

3.5.5 NRC Staff Evaluation

The ASME OM Code requires that active valves have their stroke times measured and assessed when exercised in accordance with ISTC-3500. The valves listed in Table 5 are solenoid operated valves that are grouped together on a common control switch. The valves are paired, and each pair has a common closed light and individual open lights. A reference value is established for each pair of valves by timing the valves for at least three exercises. The exercising is conducted over a sufficient interval to prevent erroneous data due to preconditioning. A composite (i.e., group) reference value is developed by averaging the valve pair reference values. The valves stroke in less than 2 seconds and are designated as rapid acting valves. A limiting value of 2 seconds is assigned to the group.

The licensee proposes to establish valve group stroke-time reference values and to evaluate acceptance based upon deviation from this reference. If the slowest valve in the group exceeds the acceptance criterion, the group is declared inoperable, and corrective actions are taken. The acceptance criterion is consistent with the Code requirement, which states that valves with reference stroke times less than or equal to 2 seconds may have a maximum stroke time of 2 seconds. The proposed alternative will detect individual valve degradation, provide reasonable assurance of valve operational readiness, and provide an acceptable level of quality and safety.

3.6 Relief Request MS-VR-01

3.6.1 Applicable Code Requirements

Appendix I, paragraph I-1320, "Test Frequencies, Class 1 Pressure Relief Valves," (a) "5-Year Test Interval" states that 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 percent of the valves from each valve group shall be tested within any 24-month interval. This 20 percent 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 the ASME OM Code, allows a 6-year test interval, plus an additional 6-month grace period coinciding with a refueling outage, in order to accommodate extended shutdown periods.

3.6.2 Code Components Affected

Alternative testing is requested for the following valves:

Table 6

Valve Number	Valve Name	ASME Code Class	ASME OM Category
PSV-01-119A	Reactor Pressure Vessel Safety Valve (RPVSV)	1	C
PSV-01-119B	RPVSV	1	C
PSV-01-119C	RPVSV	1	C
PSV-01-119D	RPVSV	1	C
PSV-01-119E	RPVSV	1	C
PSV-01-119F	RPVSV	1	C
PSV-01-119G	RPVSV	1	C
PSV-01-119H	RPVSV	1	C
PSV-01-119J	RPVSV	1	C
PSV-01-119M	RPVSV	1	C

3.6.3 <u>Reason for Request</u>

The licensee stated, in part:

> The nine (9) reactor pressure vessel safety valves provide Code-required overpressure protection to the reactor pressure vessel and the Class 1 reactor recirculation system and are located on the reactor vessel head inside the primary containment. In the event of main steam isolation valve (MSIV) closure, the safety valves are designed and sized to limit the pressure rise to 110% of the design pressure.
>
> The Dresser Model 3777QA, spring-loaded safety valves have shown exemplary test history at NMP1. However, given the current 24-month operating cycle, NMP1 is required to remove and test approximately fifty (50) percent of the safety valves every refueling outage (i.e., alternating between either four or five of the nine each outage), so that all valves are removed and tested every two refueling outages. This ensures compliance with the ASME OM Code requirements for testing Class 1 pressure relief valves within a 5-year interval.

3.6.4 <u>Proposed Alternative and Basis for Use</u>

The licensee stated, in part:

> As an alternative to the Code-required 5-year test interval per Mandatory Appendix I, paragraph I-1320(a), Exelon proposes that the subject Class 1 Reactor Pressure Vessel Safety Valves be tested at least once every three (3) refueling cycles (approximately 6 years/72 months) with a minimum of 20% of the valves tested within any 24-month interval. This 20% would consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve would not exceed the 72 months, except that a 6-month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods and certification of the valve prior to installation.
> After as-found set pressure testing, the valves shall be disassembled and inspected to verify that parts are free of defects resulting from time-related degradation or service induced wear. As-left set pressure testing shall be performed following maintenance and prior to returning the valve(s) to service. Each valve shall be disassembled and inspected prior to the start of the 72-month interval. [This process is in accordance with ASME OM Code Case-OMN-17.]

The proposed alternative would be used for the entire fifth 10-year interval, which begins June 1, 2018, and ends on September 30, 2027.

3.6.5 <u>NRC Staff Evaluation</u>

ASME published Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves," in the 2009 Edition of the OM Code. Code Case OMN-17 allows extension of the test frequency for SRVs from 5 years to 72 months with a 6-month grace period. The Code case imposes a special maintenance requirement to disassemble and inspect each SRV to verify that parts are free from defects resulting from the time-related

degradation or maintenance-induced wear prior to the start of the extended test interval. The NRC staff recognizes that although Mandatory Appendix I, paragraph I-1320(a) of the ASME OM Code does not require that SRVs be routinely refurbished when tested on a 5-year interval, routine refurbishment provides additional assurance that set pressure drift during subsequent operation is minimized. Consistent with the special maintenance requirement in Code Case OMN-17, the licensee stated that each reactor pressure vessel safety valve will be as-found tested, disassembled, inspected, and repaired prior to installation to verify that parts were free from defects resulting from time-related degradation or maintenance-induced wear.

The NRC staff finds that extending the test interval of safety valves 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 reactor pressure vessel safety valves because they will be disassembled, inspected, and reworked to defect free condition prior to the start of the extended test interval. The additional maintenance that is beyond what is required by OM Code Mandatory Appendix I when testing reactor pressure vessel safety valves on a 5-year interval justifies extension of the test interval for up to 72 months, plus a 6-month grace period, while providing an acceptable level of quality and safety.

3.7 Relief Request RBCLC-PR-01

3.7.1 Applicable Code Requirements

The Nine Mile Point, Unit 1, fifth 10-year IST program interval begins on January 1, 2019, and is scheduled to end on December 31, 2028. The applicable ASME OM Code edition for the Nine Mile Point, Unit 1, fifth 10-year IST program interval is the 2012 Edition. The licensee requested an alternative to the pump testing requirements of the ASME OM Code.

Table ISTB-3000-1,"Inservice Test Parameters," provides the parameters for flow rate (Q) and differential pressure (ΔP) for the Group A pump test.

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," provides Group A pump test frequency as quarterly.

ISTB-5121, "Group A Test Procedure," states, in part, that, "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. The test parameters shown in Table ISTB-3000-1 shall be determined and recorded as required by this paragraph."

3.7.2 Code Components Affected

The licensee has requested to use the proposed alternative described below for the pumps listed in the following table.

Table 7

Pump ID	Pump Description	ASME Code Class	ASME OM Pump Group
PMP-70-01	Reactor Building Closed Loop Cooling Water (RBCLC) #11	3	A
PMP-70-02	RBCLC #12	3	A
PMP-70-03	RBCLC #13	3	A

3.7.3 Reason for Request

The licensee stated, in part:

> The RBCLC system is not a fixed resistance system. For the RBCLC system, no pump test loops or individual pump flow instrumentation is installed. Individual pump flow can only be determined by measuring system flow rate. The system flow rate and differential pressure are a function of the number of pumps running and system heat loads. During normal plant operations, system heat loads prevent removing the RBCLC system from service. Operating conditions do not permit single pump operation at repeatable test conditions to allow individual pump parameters (i.e., flow rate and differential pressure) to be measured.
>
> Therefore, during normal plant operation, operating a single RBCLC pump at a fixed reference condition to perform a Group A test would require reducing system heat loads and may result in a plant shutdown to cold shutdown conditions. Complying with the Code would require NMP1 to enter cold shutdown conditions every quarter, where RBCLC system operating conditions allow single pump operation. Cold shutdown reduces system heat loads sufficiently to allow single RBCLC pump operation at a fixed reference condition and thus allows measurement of individual pump parameters (i.e., flow rate and differential pressure). [Performing the Group A test on an individual pump on a quarterly basis poses a significant hardship.]
>
> Alternatively, compliance could be achieved by a major system redesign and modification such as installation of individual pump test loops with flow instrumentation. This would allow a single pump to be removed from the system flow path and operated on a test flow path at Code required fixed reference conditions. Such a major system modification would be costly and burdensome with no compensating increase in the level of quality or safety.

3.7.4 Proposed Alternative and Basis for Use

Quarterly, during normal system operation, the licensee will measure vibration for each RBCLC pump. During cold shutdowns, all the applicable parameters for a Group A test (flow rate, vibration, and differential pressure) shall be measured for each RBCLC pump. The comprehensive pump test will also be performed biennially for each RBCLC pump.

3.7.5 NRC Staff Evaluation

There are no test loops or individual flow instrumentation for the RBCLC system pumps. Individual pump flow can only be determined by measuring the system flow rate. The system

flow rate and differential pressure are a function of the number of pumps running and the system heat loads. Therefore, the operating conditions when two or more pumps are running do not permit repeatable test conditions for individual pump parameters to be measured. Normal system heat loads require operation of more than one RBCLC pump, and operation of a single RBCLC pump for pump testing may result in a plant shutdown. Imposing the ASME OM Code requirements for a Group A test would necessitate a system redesign and modification such as the installation of a test loop and flow instrumentation, which would be costly and burdensome to the licensee. As such, the licensee proposes for each RBCLC pump to perform the quarterly Group A pump testing only measuring the vibration, and to defer the ASME OM Code-specified Group A test to cold shutdowns using the normal system flow path. The comprehensive pump test will be performed biennially as required by the ASME OM Code. Evaluation of the results from the ASME OM Code specified Group A test at cold shutdown, as well as the results from the pump vibration tests quarterly, along with the biennial comprehensive pump test, should allow an adequate determination of pump operational readiness and permit the detection of degradation.

The NRC staff finds that compliance with the ASME OM Code-required Group A pump test requirements cannot be achieved without major system modifications and would result in hardship or unusual difficulty, without a compensating increase in the level of quality or safety. The NRC staff also finds that the alternative described in the licensee's proposal provides reasonable assurance of pump operational readiness. It is noted that the NRC staff authorized the use of this alternative for the current Nine Mile Point, Unit 1, IST program interval.

3.8 <u>Relief Request MSS-VR-01</u>

3.8.1 Applicable Code Requirements

The applicable Code for the fourth interval of the Nine Mile Point, Unit 2, IST program is the ASME OM-2012 Code Edition with no Addenda.

The licensee requested relief from Mandatory Appendix I, I-1320, which requires that Class 1 pressure relief valves be tested at least once every 5 years, with a minimum of 20 percent of the valves from each valve group tested within any 24-month interval. This 20 percent 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.

3.8.2 Code Components Affected

Relief was requested for the following Nine Mile Point, Unit 2, Class 1 main SRVs:

2MSS*PSV120	2MSS*PSV121	2MSS*PSV122
2MSS*PSV123	2MSS*PSV124	2MSS*PSV125
2MSS*PSV126	2MSS*PSV127	2MSS*PSV128
2MSS*PSV129	2MSS*PSV130	2MSS*PSV131

2MSS*PSV132	2MSS*PSV133	2MSS*PSV134
2MSS*PSV135	2MSS*PSV136	2MSS*PSV137

3.8.3 Reason for Request

The licensee stated in its application:

> Appendix I, Section I-1320(a) of the ASME OM-2012 Code states, in part, that Class 1 pressure relief valves shall be tested at least once every 5 years, starting with initial electric power generation. This section also states a minimum of 20% of the pressure relief valves are tested within any 24-month interval and that the test interval for any individual valve shall not exceed 5 years. The required tests ensure that the Safety Relief Valves (SRVs), which are located on each of the Main Steam (MS) lines between the reactor vessel and the first isolation valve within the drywell, will open at the pressures assumed in the safety analysis.
>
> However, given the current 24-month operating cycle, NMP2 would be required to remove and test approximately half of the SRVs every refueling outage in order to ensure that all valves are removed and tested in compliance with the ASME OM-2012 Code requirements for testing Class 1 pressure relief valves within a 5-year interval. With a 5-year interval, NMP2 would be required to remove all 18 SRVs over 2 refuel cycles (i.e., 4 years). However, consistent with the previously approved alternative MSS-VR-01, Revision 1 (ML15345A006), approval of extending the test interval to 6.5 years will reduce the number of SRVs removed during an individual outage, such that the full scope of 18 SRVs are replaced over 3 refuel cycles (i.e., 6 years, plus 6 months grace). This is consistent with the test interval and grace period described in ASME Code Case OMN-17, Alternate Rules Class 1 Pressure/Safety Valves, and continues to provide an acceptable level of quality and safety while restoring the operational and maintenance flexibility that was lost when the 24-month fuel cycle produced the unintended consequence of additional testing burden. Without Code relief, the incremental outage work due to the inclusion of the additional 2 - 3 SRVs per outage would be contrary to the principle of maintaining radiation dose As Low As Reasonably Achievable (ALARA). The removal and replacement of the additional 2 - 3 SRVs per outage without Code relief results in an additional exposure of approximately 2 - 4 Rem each outage. Additionally, the grace period allows for flexibility in the scheduling of as-left and as-found set-pressure testing, which is based on a test-to-test frequency.

3.8.4 Proposed Alternative and Basis for Use

The licensee stated in its application:

> As an alternative to the Code required 5-year test interval per Appendix I, paragraph I-1320(a), Exelon proposes that the subject Class 1 pressure relief valves be tested at least once every three (3) refueling cycles (approximately 6 years/72 months) with a minimum of 20% of the valves tested within any 24-month interval. This 20% would consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve would not exceed 72 months except that a 6-month grace period

is allowed to coincide with refueling outages to accommodate extended shutdown periods and certification of the valve prior to installation. As-found testing using steam and subsequent valve maintenance are currently performed at an off-site test facility. Subsequent to completion of as-found testing, each SRV in the removed complement is disassembled to perform inspections and a complete valve overhaul. Any SRV that failed the as-found set-pressure test is inspected to determine the cause of the test failure. Valve overhaul is performed to ensure that parts are free of defects resulting from time related degradation or service induced wear. All identified adverse conditions are corrected, the disc and seats are lapped, and the valve is reassembled. Each SRV is then recertified for service through inspection and testing consistent with ASME OM Code requirements, including set-pressure, seat tightness, stroke time and disc lift verifications, solenoid coil pick up/drop out, and air actuator integrity tests.

After recertification testing, the SRVs are stored at the test facility for future use. The storage area is inspected and maintained to the requirements of ANSI/ASME N45.2.2, Packing, Handling, Shipping, Storage and Handling of Items for Nuclear Power Plants, which will minimize the potential for any valve degradation.

3.8.5 NRC Staff Evaluation

The Nine Mile Point, Unit 2, main steam SRVs are ASME Code Class 1 pressure relief valves, which provide overpressure protection for the reactor coolant pressure boundary to prevent unacceptable radioactive release and exposure to plant personnel. ASME OM Code, Mandatory Appendix I, requires that Class 1 pressure relief valves be tested at least once every 5 years. However, Mandatory Appendix I does not require that pressure relief valves be disassembled and inspected as part of the 5-year test requirement. In lieu of the 5-year test interval, the licensee proposed to implement requirements similar to ASME OM Code Case OMN-17, which allows a test interval of 6 years, plus a 6-month grace period. The ASME Committee on OM developed Code Case OMN-17 and published it in the 2009 Edition of the ASME OM Code. However, ASME OM Code Case OMN-17 imposes an additional special maintenance requirement to disassemble and inspect each pressure relief/safety valve to verify that parts are free from defects resulting from time-related degradation or service-induced wear, coincident with each required test during the interval. The purpose of this maintenance requirement is to reduce the potential for pressure relief valve set-point drift.

ASME OM Code Case OMN-17 has not yet been added to RG 1.192, nor is it included in 10 CFR 50.55a by reference. However, the NRC has allowed licensees to use ASME OM Code Case OMN-17 provided all requirements in the Code Case are met. Consistent with the special maintenance requirement in ASME OM Code Case OMN-17, each main steam SRV at Nine Mile Point, Unit 2, will be disassembled and inspected to verify that internal surfaces and parts are free from defects or service-induced wear prior to the start of the next test interval. This maintenance will also help to reduce the potential for set-point drift and increase the reliability of these SRVs to perform their design requirement functions. Consistent with the special maintenance requirement in ASME OM Code Case OMN-17, critical components will be inspected for wear and defects.

Additionally, the NRC staff's review of recent set-point testing results shows that the SRV maintenance practices employed at Nine Mile Point, Unit 2, have been effective, as evidenced by no test failures over the last three refueling outage test cycles.

Based on the historical performance of the set-point testing of the main steam SRVs at Nine Mile Point, Unit 2, and disassembly and inspection of the main steam SRVs prior to use, the NRC staff finds that the proposed alternative test frequency for the testing of the main steam SRVs at Nine Mile Point, Unit 2, in lieu of the requirements of the 2012 Edition with no Addenda, Mandatory Appendix I, Section 1320 of the ASME OM Code, provides an acceptable level of quality and safety.

4.0 CONCLUSION

As set forth above, the NRC staff has determined that Exelon has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1) for Relief Requests GVRR-3, ADS-VR-01, CRD-VR-01, CTNH202-VR-01, CTNH202-VR-02, MS-VR-01, and MSS-VR-01, and in 10 CFR 50.55a(z)(2) for Relief Request RBCLC-PR-01. The proposed alternatives described in Relief Requests GVRR-3, ADS-VR-01, CRD-VR-01, CTNH202-VR-01, CTNH202-VR-02, MS-VR-01, and MSS-VR-01 provide an acceptable level of quality and safety. The proposed alternative described in Relief Request RBCLC-PR-01 provides reasonable assurance that the affected pumps are operational ready and compliance with the code requirement would result in hardship or unusual difficultly, without a compensating increase in the level of qualify or safety. The NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1) or 10 CFR 50.55a(z)(2). Therefore, the NRC staff authorize the use of the alternative requests described in Relief Requests GVRR-3, ADS-VR-01, CRD-VR-01, CTNH202-VR-01, CTNH202-VR-02, MS-VR-01, RBCLC-PR-01, and MSS-VR-01. The fifth and fourth 10-year IST intervals for Nine Mile Point, Units 1 and 2, are scheduled to begin on January 1, 2019, and end on December 31, 2028.

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

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Date: November 13, 2018

SUBJECT: NINE MILE POINT NUCLEAR STATION, UNITS 1 AND 2 - RELIEF FROM THE REQUIREMENTS OF THE ASME CODE (EPID L-2017-LLR-0145 THROUGH EPID L-2017-LLR-0152) DATED NOVEMBER 13, 2018

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Attachment 7 – Unit 1

Code Case Index

CODE CASE NUMBER	**TITLE**
OMN-20	Inservice Test Frequency

Attachment 8 – Unit 1

Cold Shutdown Justification Index

CSJ NUMBER	REV #	TITLE
CRS-CSJ-01	0	CKV-40-20, CKV-40-21, CKV-40-22, and CKV-40-23
ESW-CSJ-01	0	CKV-72-21 and CKV-72-22
MS-CSJ-01	0	IV-01-03 and IV-01-04
RBCLC-CSJ-01	0	CKV-70-04, CKV-70-05, and CKV-70-06

Attachment 9 – Unit 1

Cold Shutdown Justifications

CRS-CSJ-01

Component ID	Class	Cat.	System
CKV-40-20	2	A/C	CRS
CKV-40-21	2	A/C	CRS
CKV-40-22	2	A/C	CRS
CKV-40-23	2	A/C	CRS

FUNCTION

Outboard Keep-Fill Pressure Isolation Check Valves (CKV-40-20 and CKV-40-23)

Inboard Keep-Fill Pressure Isolation Check Valves (CKV-40-21 and CKV-40-22)

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS

These valves are the outboard and inboard pressure isolation check valves in each set of two series check valve sets (one set for each loop).

These valves are tested during the leak test procedure every 2 years. It is not practicable to exercise the outboard valves quarterly in either the forward or reverse flow direction. The inboard valves are tested in the reverse flow direction quarterly; however, it is not practical to exercise the inboard valves quarterly in the open direction. Significant time is involved to setup test equipment to perform the exercise testing for the outboard valves and the open direction testing for the inboard valves. Exercising quarterly is costly and burdensome with no increase in safety.

ALTERNATE TESTING

The valves will be exercised open and closed during cold shutdowns.

ESW-CSJ-01

Component ID	Class	Cat.	System
CKV-72-21	3	C	ESW
CKV-72-22	3	C	ESW

FUNCTION

These Emergency Service Water Pump Discharge Check Valves and Service Water Header Check Valves must close to isolate the non-safety related normal service water loads from the emergency service water header when ESW starts.

These valves open to allow normal service to supply the reactor building cooling water heat exchangers. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

The service water system is required to operate during normal plant operations. The Emergency Service Water (ESW) pumps operate at a lower pressure than the normal service water header pressure. Exercising is not possible without isolating the associated service water header. System heat loads prevent removing or de-pressurizing an entire service water header during operation, since the removal could result in a plant trip. Partial-stroke exercising requires the same plant conditions as full-stroke exercising.

ALTERNATE TESTING

The valves will be exercised open and closed during cold shutdowns.

MS-CSJ-01

Component ID	Class	Cat.	System
IV-01-03	1	A	MS
IV-01-04	1	A	MS

FUNCTION

These Main Steam Line Isolation Valves must close to provide primary containment and reactor coolant pressure boundary isolation.

These valves open to provide steam to the main turbine and associated auxiliaries for power generation. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Full-stroke exercising and stroke-time testing results in loss of steam flow from one main steam line to the turbine.

To conduct this testing, the plant would undergo a significant transient (i.e., a greater than 50% power reduction must be achieved followed by a corresponding return to 100% power). This evolution typically would take a minimum 12 hours. Also, industry information indicates that closing these valves with high steam flow in the line may be a large contributing factor to observed seat degradation. The valves are designed for partial-stroke exercising with full steam flow during plant operation, however; part-stroke exercising these valves quarterly increases the risk of valve closure during plant power generation and is not recommended. (Ref. NUREG-1482, Rev. 2, Section 4.2.6).

ALTERNATE TESTING

The valves will be full-stroke exercised during cold shutdowns.

RBCLC-CSJ-01

Component ID	Class	Cat.	System
CKV-70-04	3	C	RBCLC
CKV-70-05	3	C	RBCLC
CKV-70-06	3	C	RBCLC

FUNCTION

These Pump Discharge Check Valves must open to allow the RBCLC pump to provide cooling water to various safety related loads.

These valves must close when the RBCLC pump stops to prevent cooling water from being diverted from safety related loads.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

The system flow rate and the number of pumps running are a function of the system heat loads. In most cases, it is not possible to operate the system with a single pump and align the system to achieve Code test conditions without adversely affecting plant operation. The system flow meter is in the common header. With more than one pump running, it is not possible to identify the flow that each pump is providing. During cold shutdowns, each pump is tested individually. This provides a measurable flow rate through a single valve which is used to verify full -stroke exercising of each pump's discharge check valve.

ALTERNATE TESTING

The valves will be full-stroke exercised open and closed during cold shutdowns.

Attachment 10 – Unit 1

Refueling Outage Justification Index

ROJ NUMBER	REV #	TITLE
ADS-ROJ-02	0	CKV-66-07, CKV-66-08, CKV-66-09, CKV-66-10, CKV-66-11, CKV-66-12, CKV-66-13, CKV-66-14, CKV-66-15, CKV-66-16, CKV-66-17, and CKV-66-18-
CRD-ROJ-01	0	CKV-44-*(108), FCV-44-*(126), and FCV-44-*(127)
CRD-ROJ-02	0	CKV-44-*(106)
CRD-ROJ-03	0	CKV-36-509, CKV-36-510, CKV-36-511, CKV-36-512, CKV-36-513, and CKV-36-514
CRS-ROJ-01	0	CKV-40-03 and CKV-40-13
CTNSP-ROJ-01	0	CKV-93-58, CKV-93-60, CKV-93-62, and CKV-93-64
EC-ROJ-01	0	CKV-36-57, CKV-36-62, CKV-36-67, and CKV-36-72
EC-ROJ-02	0	IV-39-05 and IV-39-06
FW-ROJ-01	0	CKV-31-01R and CKV-31-02R
MS-ROJ-01	0	CKV-01-76, CKV-01-77, CKV-01-78, and CKV-01-79
RBCLC-ROJ-01	0	CKV-70-93 and CKV-70-95
RR-ROJ-01	0	RR System Excess Flow Check Valves
RWCU-ROJ-01	0	IV-33-02R, and IV-33-04
RXVI-ROJ-01	0	RXVI System Excess Flow Check Valves
SDC-ROJ-01	0	CKV-38-216

Attachment 11 – Unit 1

Refueling Outage Justifications

ADS-ROJ-02

Component ID	Class	Cat.	System
CKV-66-07	2	C	ADS
CKV-66-08	2	C	ADS
CKV-66-09	2	C	ADS
CKV-66-10	2	C	ADS
CKV-66-11	2	C	ADS
CKV-66-12	2	C	ADS
CKV-66-13	2	C	ADS
CKV-66-14	2	C	ADS
CKV-66-15	2	C	ADS
CKV-66-16	2	C	ADS
CKV-66-17	2	C	ADS
CKV-66-18	2	C	ADS

FUNCTION

These check valves are located on the ADS electromatic relief valve discharge lines to the suppression pool (Torus) to minimize the temporary formation of a high water leg in the line after initial ADS valve actuation, thereby preventing high clearing loads during subsequent ADS valve actuation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These check valves are located inside the primary containment with no means for remotely observing operation of the valve obturators. Exercising these valves must be performed from inside primary containment. Since the primary containment is inerted with nitrogen, access is not available on a quarterly or cold shutdown basis. De-inerting primary containment at cold shutdowns solely to perform Inservice Testing is not required. Deferral of testing until refueling is acceptable based on NUREG-1482, Rev. 2, paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing"

ALTERNATE TESTING

The valves will be full-stroke exercised during refueling outages.

CRD-ROJ-01

Component ID	Class	Cat.	System	
CKV-44-*(108)	2	C	CRD	(SCRAM DISCHARGE (Typical of 129))
FCV-44-*(126)	1	B	CRD	(SCRAM INLET (Typical of 129))
FCV-44-*(127)	1	B	CRD	(SCRAM OUTLET (Typical of 129))

FUNCTION

CKV-44-*(108) - Scram Discharge Check

This valve must open during a reactor scram to vent the over-piston port of the CRD to the scram discharge volume.

This valve closes on reverse flow to prevent CRDHS scram discharge header backflow from entering the HCU through the outlet scram valve during and following a reactor scram.

FCV-44-*(126) - Scram Inlet Valve

This valve must open on a scram signal to direct accumulator discharge to the under-piston port of the CRD to allow rapid insertion of the control rod.

This valve is closed during normal reactor operation to isolate the accumulator from the directional control valve manifold. This is not an active safety function.

FCV-44-*(127) - Scram Outlet Valve

This valve must open on a scram signal to exhaust the over-piston port of the CRD to the scram discharge volume, which allows rapid insertion of the control rod.

This valve is closed during normal reactor operation to isolate the scram discharge volume from the directional control valve manifold. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Exercising these valves scrams the associated control rod. Scramming individual control rods at power may produce unacceptable peaking factors in the core. These valves cannot be partial-stroke tested. Removing air from the actuator of the FCV's causes the valves to go fully open. Testing at a frequency greater than that specified in Technical Specifications accelerates the wear on the CRD mechanisms with no commensurate improvement in safety.

ALTERNATE TESTING

These valves will be tested in conjunction with the control rod scram insertion time testing specified in TS 3.1.1. Acceptability of the valve stroke times and exercises will be shown by the respective CRD meeting its' required stroke time. This is consistent with NUREG 1482 Rev. 2, section 4.4.6.

CRD-ROJ-02

Component ID	Class	Cat.	System
CKV-44-*(106)	2	C	CRD (CHARGING WATER (Typical of 129))

FUNCTION

The Charging Water Check Valves must close during a reactor scram to ensure accumulator pressure is applied to the under-piston port in the control rod drive rather than the charging water riser. In addition, closure ensures the accumulator will retain its charge for a limited time in the event of loss of pressure in the charging header.

These valves open to allow continuous charging of the accumulator during normal operation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Closure verification of the charging water header check valves requires that the control rod drive pumps must be stopped to depressurize the charging water header. This test should not be performed during power operation because stopping the pumps results in a loss of cooling water to all control rod drive mechanisms, and seal damage could result. Additionally, this test cannot be performed during each cold shutdown because the control rod drive pumps supply seal water to the reactor recirculation pumps, and one of the recirculation pumps is usually kept running.

ALTERNATE TESTING

The charging water check valves will be tested each refueling outage by performing a scram accumulator pressure decay test. This is consistent with NUREG 1482, Rev. 2, section 4.4.6.

CRD-ROJ-03

Component ID	Class	Cat.	System
CKV-36-509	N	A/C	CRD
CKV-36-510	N	A/C	CRD
CKV-36-511	N	A/C	CRD
CKV-36-512	N	A/C	CRD
CKV-36-513	N	A/C	CRD
CKV-36-514	N	A/C	CRD

FUNCTION

These valves must close to isolate the reference leg from the CRD system if CRD is lost. Isolation maintains the reference leg water inventory during the loss of CRD. This function is important to safety.

The valves open to maintain reactor vessel water level reference leg backfill flow and purge non-condensible gases. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These valves are not equipped with obturator position indicators. The instruments on the lines protected by these check valves are typically required to operate during cold shutdowns as well as during normal operation. Exercising the check valve requires removing the Reactor Water Backfill system from service. This could cause spurious instrument signal fluctuations to occur, resulting in the inadvertent automatic initiation or trip of systems.

Valve testing requires extensive equipment setup and system reconfiguration. Exercising during cold shutdowns is costly and burdensome with no increase in safety and is not considered practical. (Ref. NUREG-1482, Rev. 2, Section 4.1.6)

ALTERNATE TESTING

The valves will be exercised open and closed during refueling outages.

CRS-ROJ-01

Component ID	Class	Cat.	System
CKV-40-03	1	A/C	CRS
CKV-40-13	1	A/C	CRS

FUNCTION

These Core Spray Injection Check Valves must open to permit core spray injection to the reactor vessel. These valves are also partially opened during quarterly pump testing through the test return line to the torus.

These valves must close to provide reactor coolant pressure boundary isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These valves have no provision for monitoring obturator position. During pump quarterly testing, the test flow rate is limited to approximately 2900 gpm by the size of the test line. Required system flow rate is 3400 gpm. From manufacturer's published information, it has been determined that these valves should be fully open at a flow rate of about 1600 gpm. During normal plant operation, reactor pressure precludes core spray injection to the reactor vessel. Additionally, the normal suction source for the core spray pumps is the Torus. The cleanliness of this water precludes its use as a water source for routine injection into the core. Temporary piping alterations are required to supply a reactor grade water source (condensate storage tank) for testing. Installation of this alteration on a routine basis or at cold shutdown is burdensome and costly, with no increase in plant safety and therefore deemed impractical.

ALTERNATE TESTING

The valves will be full-stroke exercised open during the design accident flow injection test each refueling outage.

CTNSP-ROJ-01

Component ID	Class	Cat.	System
CKV-93-58	2	C	CTNSP
CKV-93-60	2	C	CTNSP
CKV-93-62	2	C	CTNSP
CKV-93-64	2	C	CTNSP

FUNCTION

These valves open to establish flow through the associated spray sparger. This is not a safety function.

These valves have a safety function to remain closed.

TEST REQUIREMENT

ISTC-5221 (a) (3) Check valves that have a safety function in only the close direction shall be exercised by initiating flow and observing that the obturator has traveled at least the partially open position,3 and verify that on cessation or reversal of flow, the obturator has traveled to the seat. Observations shall be made by observing a direct indicator (e.g., a position-indicating device) or by other positive means (e.g., changes in system pressure, flow rate, level, temperature, seat leakage, testing, or nonintrusive testing results).

BASIS FOR JUSTIFICATION

The failure of CKV-93-60 or 93-62 to reseat after testing would result in entry into a 15 day limiting condition for operation (LCO 3.3.7.b). The failure of CKV-93-58 or 93-64 to reseat after testing would result in entry into LCO 3.1.4.d (Commence shutdown in one hour, cold in ten hours).

ALTERNATE TESTING

The bidirectional open tests will be performed during refueling outages as a result of the adverse effects if the valves were to fail to reseat.

EC-ROJ-01

Component ID	Class	Cat.	System
CKV-36-57	1	C	EC
CKV-36-62	1	C	EC
CKV-36-67	1	C	EC
CKV-36-72	1	C	EC

FUNCTION

These Excess Flow Check Valves must close on reverse flow in the event of an instrument line break.

These valves remain open to allow instrumentation to be in service. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These valves are located on instrument lines which function to provide signals relating emergency cooling system conditions to station operations personnel, as well as automatic trip systems for normal and emergency operation of the station. Exercising the excess flow check valves during normal operation imposes undue risk to plant operations personnel since the fluid medium is high pressure (normally greater than 800 psig), high temperature (approximately 200 - 300 °F) and highly contaminated reactor coolant or requires system intrusion to provide a test medium source. The instruments on the lines protected by these check valves are typically required to operate during cold shutdowns as well as during normal operation. Exercising the excess flow check valve requires removing the corresponding instrument from service. This could cause spurious instrument signal fluctuations to occur, resulting in the inadvertent automatic initiation or trip of systems.

ALTERNATE TESTING

The valves will be exercised open and closed during refueling outages.

EC-ROJ-02

Component ID	Class	Cat.	System
IV-39-05	1	A	EC
IV-39-06	1	A	EC

FUNCTION

These Emergency Condenser Return Isolation Valves must open to provide a condensate return flow path to the reactor vessel when the emergency condenser is placed in service.

These valves must close to provide primary containment and reactor coolant pressure boundary isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

To exercise these valves during plant operation would require closing manual block valves BV-39-01 and BV-39-02 to prevent system initiation. If testing were performed without closing the manual block valves during power operation, a slug of cold water would be delivered to the reactor, resulting in a power spike. Depending on initial plant conditions, a reactor scram could occur. The manual block valves cannot be operated during power operation due to their location inside the primary containment. Primary containment is inerted with nitrogen during normal operations and access is not available. Testing during cold shutdown would drain the EC Return Legs into the Reactor Vessel causing undesirable level changes. Closing the manual block valves to prevent draining requires de-inerting containment and drywell entry. It is not practical to de-inert containment during power operation and most cold shutdowns. De-inerting containment solely to allow inservice testing is not required. (Ref.: NUREG 1482 Rev. 2, Section 3.1.1.3).

ALTERNATE TESTING

The valves will be full -stroke exercised open and closed during each refueling outage.

FW-ROJ-01

Component ID	Class	Cat.	System
CKV-31-01R	2	C	FW/HPCI
CKV-31-02R	2	C	FW/HPCI

FUNCTION

Feedwater Injection Check Valves close on reverse flow to provide reactor coolant pressure boundary and primary containment isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

There is no provision for position indication of the obturator. As a result, valve closure must be verified by leakage testing. These valves open to provide feedwater flow during normal power operation. Exercising these valves closed during normal plant operation would require a significant reduction in power and the isolation of one loop of feedwater flow (reduction in normal feedwater supply to the reactor vessel). This would introduce undesirable operational transients which could result in a reactor trip. In addition, it could cause degrading feedwater nozzle temperature transients which could cause cracking (Reference: NUREG-0619). A partial stroke in the reverse direction is not possible for these valves. Valve testing requires extensive equipment setup and system reconfiguration. Exercising during cold shutdowns is costly and burdensome with no increase in safety. (Ref. NUREG-1482, Rev. 2, Section 4.1.6).

ALTERNATE TESTING

These valves will be full-stroke exercised open and closed during refueling outages.

MS-ROJ-01

Component ID	Class	Cat.	System
CKV-01-76	1	C	MS
CKV-01-77	1	C	MS
CKV-01-78	1	C	MS
CKV-01-79	1	C	MS

FUNCTION

Excess Flow Check Valves

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These valves are located on instrument lines that provide information to station operations personnel, as well as automatic trip systems for normal and emergency operation of the station. Exercising the excess flow check valves during normal operation imposes an undue risk to plant operations personnel since the fluid medium is high pressure (normally greater than 800 psig), high temperature (approximately 200 - 300 ^{o}F) and highly contaminated reactor coolant or requires system intrusion to provide a test medium source. The instruments on the lines protected by these check valves are typically required to operate during cold shutdowns as well as during normal operation. Exercising the excess flow check valve requires removing the corresponding instrument from service. This could cause spurious instrument signal fluctuations to occur, resulting in the inadvertent automatic initiation or trip of systems.

Valve testing requires extensive equipment setup and system reconfiguration. Exercising during cold shutdowns is costly and burdensome with no increase in safety and is not considered practical. (Ref. NUREG-1482, Rev. 2, Section 4.1.6).

ALTERNATE TESTING

The valves will be exercised open and closed during refueling outages.

RBCLC-ROJ-01

Component ID	Class	Cat.	System
CKV-70-93	2	C	RBCLC
CKV-70-95	2	C	RBCLC

FUNCTION

CKV-70-93

The Drywell Air and Recirculation Pump Coolers Supply Check Valve must close to provide primary containment isolation in the unlikely event the RBCLC piping inside containment ruptures coincident with a DBA-LOCA.

This valve opens to provide cooling water to the recirculation pump seal and motor coolers. This is not an active safety function.

CKV-70-95

This Air Cooler Supply check valve must close to provide primary containment isolation in the unlikely event the RBCLC piping inside containment ruptures coincident with a DBA-LOCA.

This valve opens to provide cooling water to the drywell air coolers. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Exercising these valves during normal plant operation requires interruption of the cooling water to the primary containment drywell air coolers and reactor recirculation pump motor coolers for an extended period of time. Loss of the drywell air coolers could result in a reactor scram due to high drywell temperatures and the resulting high drywell pressure. Loss of cooling water to the recirculation pump motor and pump seal coolers for more than a few minutes will cause damage to the recirculation pumps seals which are reactor coolant pressure boundary components. Also, during cold shutdowns one of the recirculation pumps is usually kept running. Exercising the valves requires intrusion into the system to verify reverse flow closure. Significant time is involved to set up test equipment to perform a back-leakage test which may delay plant startup from cold shutdown. Therefore, testing during normal plant operations or during cold shutdowns is deemed not practical. (NUREG-1482, Rev. 2, Section 4.1.6)

ALTERNATE TESTING

The valves will be exercised open and closed during refueling outages.

RR-ROJ-01

Component ID	Class	Cat.	System
CKV-32-100	1	C	RR
CKV-32-106	1	C	RR
CKV-32-112	1	C	RR
CKV-32-118	1	C	RR
CKV-32-125	1	C	RR
CKV-32-131	1	C	RR
CKV-32-138	1	C	RR
CKV-32-144	1	C	RR
CKV-32-151	1	C	RR
CKV-32-157	1	C	RR
CKV-32-164	1	C	RR
CKV-32-170	1	C	RR
CKV-32-177	1	C	RR
CKV-32-183	1	C	RR
CKV-32-204	1	C	RR
CKV-32-210	1	C	RR
CKV-32-215	1	C	RR
CKV-32-221	1	C	RR
CKV-32-226	1	C	RR
CKV-32-232	1	C	RR
CKV-32-237	1	C	RR
CKV-32-243	1	C	RR
CKV-32-248	1	C	RR
CKV-32-254	1	C	RR
CKV-32-64	1	C	RR
CKV-32-70	1	C	RR
CKV-32-76	1	C	RR
CKV-32-82	1	C	RR
CKV-32-88	1	C	RR
CKV-32-94	1	C	RR
CKV-44.1-07	1	C	RR
CKV-44.1-12	1	C	RR

FUNCTION

Excess Flow Check Valves

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These valves are located on instrument lines that provide information to station operations personnel, as well as automatic trip systems for normal and emergency operation of the station. Exercising the excess flow check valves during normal operation imposes an undue risk to plant operations personnel since the fluid medium is high pressure (normally greater than 800 psig), high temperature (approximately 200 - 300 oF) and highly contaminated reactor coolant or requires system intrusion to provide a test medium source. The instruments on the lines protected by these check valves are typically required to operate during cold shutdowns as well as during normal operation. Exercising the excess flow check valve requires removing the corresponding instrument from service. This could cause spurious instrument signal fluctuations to occur, resulting in the inadvertent automatic initiation or trip of systems.

Valve testing requires extensive equipment setup and system reconfiguration. Exercising during cold shutdowns is costly and burdensome with no increase in safety and is not considered practical. (Ref. NUREG-1482, Rev. 2, Section 4.1.6)

ALTERNATE TESTING

The valves will be exercised open and closed during refueling outages.

RWCU-ROJ-01

Component ID	Class	Cat.	System
IV-33-02R	1	A	RWCU
IV-33-04	1	A	RWCU

FUNCTION

These valves must close to provide reactor coolant pressure boundary and primary containment isolation. In addition, the valves close in the event of a Reactor Water Cleanup System (RWCU) line break and upon initiation of liquid poison.

These valves are normally open to provide a RWCU return flow path to the vessel. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

The RWCU system is inservice during normal plant operations to maintain water purity and provides a backup function during post accident cleanup. This system ensures that reactor chemistry is maintained within specified limits and process fluid radioactivity is minimized. These system functions are necessary to prevent the likelihood of exceeding 10CFR100 release limits and to maintain water purity to minimize the occurrence of stress corrosion cracking of the vessel and attached stainless steel piping systems.

Closing of the containment isolation valves to perform a full stroke test requires the removal of the RWCU system from service. Quarterly performance of this activity would also accelerate degradation of the RWCU pump seals due to stopping and starting the RWCU pumps with the reactor at operating pressure. This leads to increases in the frequency of RWCU pump seal failure. Replacing pump seals also requires system shutdown, causing water purity to degrade, and exposes NMP personnel to significant radiation dose.

Cold shutdown stroke testing is not practical since it is more critical during a forced shutdown to have RWCU in-service to mitigate the effects of a chemistry transient as a result of the shutdown. Failure of these valves in the closed position as a result of testing during a cold shutdown outage would result in loss of the RWCU system and could inhibit the ability to recover from the chemistry transient.

ALTERNATE TESTING

The valves will be exercised open and closed during refueling outages.

RXVI-ROJ-01

Component ID	Class	Cat.	System
CKV-36-120	1	C	RR
CKV-36-125	1	C	RR
CKV-36-130	1	C	RR
CKV-36-135	1	C	RR
CKV-36-140	1	C	RR
CKV-36-145	1	C	RR
CKV-36-160	1	C	RR
CKV-36-165	1	C	RR
CKV-36-170	1	C	RR
CKV-36-175	1	C	RR
CKV-36-48	1	C	RR
CKV-36-53	1	C	RR

FUNCTION

Excess Flow Check Valves

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These valves are located on instrument lines that provide information to station operations personnel, as well as automatic trip systems for normal and emergency operation of the station. Exercising the excess flow check valves during normal operation imposes an undue risk to plant operations personnel since the fluid medium is high pressure (normally greater than 800 psig), high temperature (approximately 200 - 300 oF) and highly contaminated reactor coolant or requires system intrusion to provide a test medium source. The instruments on the lines protected by these check valves are typically required to operate during cold shutdowns as well as during normal operation. Exercising the excess flow check valve requires removing the corresponding instrument from service. This could cause spurious instrument signal fluctuations to occur, resulting in the inadvertent automatic initiation or trip of systems.

Valve testing requires extensive equipment setup and system reconfiguration. Exercising during cold shutdowns is costly and burdensome with no increase in safety and is not considered practical. (Ref. NUREG-1482, Rev. 2, Section 4.1.6)

ALTERNATE TESTING

The valves will be exercised open and closed during refueling outages.

SDC-ROJ-01

Component ID	Class	Cat.	System
CKV-38-216	1	C	RR

FUNCTION

Shutdown Cooling Line Thermal Protection Containment Isolation Valve

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

This valve is not equipped with an obturator position indicator. Exercising of this valve must be verified from inside primary containment. Since the primary containment is inerted with nitrogen, access is not available on a quarterly or cold shutdown basis. It is not practical to de-inert containment during power operation and most cold shutdowns. De-inerting containment solely to allow inservice testing is not required. (Ref.: NUREG 1482 Rev. 2, Section 3.1.1.3)

ALTERNATE TESTING

The valve will be exercised open and closed during refueling outages.

Attachment 12 – Unit 1

Technical Position index

TECHNICAL POSITION NUMBER	REV #	TITLE

Note: Refer to ER-AA-321-1007, Inservice Testing (IST) Program Corporate Technical Positions, for a listing and subsequent discussion of Corporate Technical Positions. NMPNS adheres to the applicable Corporate Technical Positions addressed in the latest revision of ER-AA-321-1007.

Attachment 13 – Unit 1

Technical Positions

See ER-AA-321-1007, Inservice Testing (IST) Program Corporate Technical Positions

Attachment 14 – Unit 1

Inservice Testing Pump Table

NMP1
Pump Table

PUMPS - IST Program Pumps

Component	PID(Coord)	Code Class	Group	Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
				----------------Test Parameters-----------								
PMP-210.1-36	C-18047-C (F-2)	3	A	No	Yes	Yes	Yes	No	N1-ST-Q19	2Y		Comprehensive and PPVT
Control Room Chilled Water #12				No	Yes	Yes	Yes	No	N1-ST-Q19	Q		
Centrifugal												
PMP-210.1-37	C-18047-C (F-2)	3	A	No	Yes	Yes	Yes	No	N1-ST-Q19	2Y		Comprehensive and PPVT
Control Room Chilled Water #11				No	Yes	Yes	Yes	No	N1-ST-Q19	Q		
Centrifugal												
PMP-42-38	C-18019-C (E-5)	2	B	Yes	No	Yes	Yes	No	N1-ST-Q8B	2Y		Comprehensive and PPVT
LIQUID POISON #12				Yes	No	Yes	No	No	N1-ST-Q8B	Q		
Positive Displacement												
PMP-42-39	C-18019-C (E-4)	2	B	Yes	No	Yes	Yes	No	N1-ST-Q8A	2Y		Comprehensive and PPVT
LIQUID POISON # 11				Yes	No	Yes	No	No	N1-ST-Q8A	Q		
Positive Displacement												
PMP-54-01	C-18008-C (C-4)	3	A	No	Yes	Yes	Yes	No	N1-ST-Q12	2Y		Comprehensive and PPVT
SPENT FUEL POOL COOLING #11				No	Yes	Yes	Yes	No	N1-ST-Q12	Q		
Centrifugal												
PMP-54-02	C-18008-C (C-5)	3	A	No	Yes	Yes	Yes	No	N1-ST-Q12	2Y		Comprehensive and PPVT
SPENT FUEL POOL COOLING #12				No	Yes	Yes	Yes	No	N1-ST-Q12	Q		
Centrifugal												
PMP-57-11	C-18048-C (E-5)	3	A	No	Yes	Yes	Yes	No	N1-ST-Q15	2Y		Comprehensive and PPVT
CONDENSATE TRANSFER #12				No	Yes	Yes	Yes	No	N1-ST-Q15	Q		
Centrifugal												
PMP-57-12	C-18048-C (F-5)	3	A	No	Yes	Yes	Yes	No	N1-ST-Q15	2Y		Comprehensive and PPVT
CONDENSATE TRANSFER #11				No	Yes	Yes	Yes	No	N1-ST-Q15	Q		
Centrifugal												
PMP-70-01	C-18022-C (A-5)	3	A	No	Yes	Yes	Yes	No	N1-ST-V7	2Y		Comprehensive and PPVT
Reactor Building Closed Loop Cooling Water #11				No	Yes	Yes	Yes	No	N1-ST-V7	CS		
Centrifugal				No	No	No	Yes	No	N1-ST-Q14	Q	RBCLC-PR - 01	
PMP-70-02	C-18022-C (B-5)	3	A	No	Yes	Yes	Yes	No	N1-ST-V7	2Y		Comprehensive and PPVT
Reactor Building Closed Loop Cooling Water #12				No	Yes	Yes	Yes	No	N1-ST-V7	CS		
Centrifugal				No	No	No	Yes	No	N1-ST-Q14	Q	RBCLC-PR - 01	

NMP1
Pump Table

PUMPS - IST Program Pumps

Component	PID(Coord)	Code Class	Group	Test Parameters: Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
PMP-70-03 Reactor Building Closed Loop Cooling Water #13 Centrifugal	C-18022-C (C-5)	3	A	No	Yes	Yes	Yes	No	N1-ST-V7	2Y		Comprehensive and PPVT
				No	Yes	Yes	Yes	No	N1-ST-V7	CS		
				No	No	No	Yes	No	N1-ST-Q14	Q	RBCLC-PR - 01	
PMP-72-03 EMERGENCY SERVICE WATER #12 Vertical Line Shaft	C-18022-C (D-6)	3	B	No	Yes	Yes	Yes	No	N1-ST-Q13	2Y		Comprehensive and PPVT
				No	Yes	Yes	No	No	N1-ST-Q13	Q		
PMP-72-04 EMERGENCY SERVICE WATER #11 Vertical Line Shaft	C-18022-C (C-6)	3	B	No	Yes	Yes	Yes	No	N1-ST-Q13	2Y		Comprehensive and PPVT
				No	Yes	Yes	No	No	N1-ST-Q13	Q		
PMP-79-53 Emergency Diesel Generator #102 Cooling Water Vertical Line Shaft	C-18026-C (B-6)	3	B	No	Yes	Yes	Yes	No	N1-ST-Q25	2Y		Comprehensive and PPVT
				No	Yes	Yes	No	No	N1-ST-Q25	Q		
PMP-79-54 Emergency Diesel Generator #103 Cooling Water Vertical Line Shaft	C-18026-C (B-6)	3	B	No	Yes	Yes	Yes	No	N1-ST-Q25	2Y		Comprehensive and PPVT
				No	Yes	Yes	No	No	N1-ST-Q25	Q		
PMP-80-03 CONTAINMENT SPRAY PUMP #121 Vertical Line Shaft	C-18012-C (B-6)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q6B	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-Q6B	Q		
PMP-80-04 CONTAINMENT SPRAY PUMP #111 Vertical Line Shaft	C-18012-C (C-5)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q6A	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-Q6A	Q		
PMP-80-23 CONTAINMENT SPRAY PUMP #122 Vertical Line Shaft	C-18012-C (G-6)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q6D	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-Q6D	Q		
PMP-80-24 CONTAINMENT SPRAY PUMP #112 Vertical Line Shaft	C-18012-C (F-5)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q6C	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-Q6C	Q		
PMP-81-03 CORE SPRAY PUMP #121 Vertical Line Shaft	C-18007-C (G-5)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q1B	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-R9	2Y		

NMP1
Pump Table

PUMPS - IST Program Pumps

Component	PID(Coord)	Code Class	Group	Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
PMP-81-04 CORE SPRAY PUMP #122 Vertical Line Shaft	C-18007-C (G-5)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q1D	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-R9	2Y		
PMP-81-23 CORE SPRAY PUMP #111 Vertical Line Shaft	C-18007-C (B-5)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q1A	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-R9	2Y		
PMP-81-24 CORE SPRAY PUMP #112 Vertical Line Shaft	C-18007-C (B-5)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q1C	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-R9	2Y		
PMP-81-49 CORE SPRAY TOPPING PUMP #112 Centrifugal	C-18007-C (A-4)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q1C	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-R9	2Y		
PMP-81-50 CORE SPRAY TOPPING PUMP #111 Centrifugal	C-18007-C (A-4)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q1A	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-R9	2Y		
PMP-81-51 CORE SPRAY TOPPING PUMP #121 Centrifugal	C-18007-C (H-4)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q1B	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-R9	2Y		
PMP-81-52 CORE SPRAY TOPPING PUMP #122 Centrifugal	C-18007-C (H-4)	2	B	No	Yes	Yes	Yes	No	N1-ST-Q1D	2Y		Comprehensive Pump Test
				No	Yes	Yes	No	No	N1-ST-R9	2Y		
PMP-82-40 Emergency Diesel Generator #102 Fuel Oil Transfer Positive Displacement	C-18026-C SH1 (C-2)	N	B	No	No	Yes	Yes	No	N1-ST-Q16A	Q	DG-PRE - 01	Full Flow and PPVT Pump Test
PMP-82-41 Emergency Diesel Generator #103 Fuel Oil Transfer Positive Displacement	C-18026-C SH2 (B-2)	N	B	No	No	Yes	Yes	No	N1-ST-Q16B	Q	DG-PRE - 01	Full Flow and PPVT Pump Test
PMP-93-01 CONTAINMENT SPRAY RAW WATER PUMP #112 Vertical Line Shaft	C-18012-C SH1 (E-5)	3	B	No	Yes	Yes	Yes	No	N1-ST-Q6C	2Y		Comprehensive and PPVT
				No	Yes	Yes	No	No	N1-ST-Q6C	Q		

NMP1
Pump Table
PUMPS - IST Program Pumps

Component	PID(Coord)	Code Class	Group	Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
PMP-93-02 CONTAINMENT SPRAY RAW WATER PUMP #111 Vertical Line Shaft	C-18012-C SH1 (C-5)	3	B	No	Yes	Yes	Yes	No	N1-ST-Q6A	2Y		Comprehensive and PPVT
				No	Yes	Yes	No	No	N1-ST-Q6A	Q		
PMP-93-03 CONTAINMENT SPRAY RAW WATER PUMP #122 Vertical Line Shaft	C-18012-C SH1 (G-5)	3	B	No	Yes	Yes	Yes	No	N1-ST-Q6D	2Y		Comprehensive and PPVT
				No	Yes	Yes	No	No	N1-ST-Q6D	Q		
PMP-93-04 CONTAINMENT SPRAY RAW WATER PUMP #121 Vertical Line Shaft	C-18012-C SH1 (A-5)	3	B	No	Yes	Yes	Yes	No	N1-ST-Q6B	2Y		Comprehensive and PPVT
				No	Yes	Yes	No	No	N1-ST-Q6B	Q		

Attachment 15 – Unit 1

Inservice Testing Valve Table

Valve Table

ADS - Automatic Depressurization

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-66-07	2	N	C	A	4	CK	SE	C-18002-C SH1 (B-3)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-08	2	N	C	A	4	CK	SE	C-18002-C SH1 (B-3)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-09	2	N	C	A	4	CK	SE	C-18002-C SH1 (B-2)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-10	2	N	C	A	4	CK	SE	C-18002-C SH1 (B-2)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-11	2	N	C	A	4	CK	SE	C-18002-C SH1 (D-2)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-12	2	N	C	A	4	CK	SE	C-18002-C SH1 (D-2)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-13	2	N	C	A	4	CK	SE	C-18002-C SH1 (D-3)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-14	2	N	C	A	4	CK	SE	C-18002-C SH1 (D-3)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-15	2	N	C	A	4	CK	SE	C-18002-C SH1 (D-3)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-16	2	N	C	A	4	CK	SE	C-18002-C SH1 (D-3)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	

Valve Table

ADS - Automatic Depressurization

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-66-17	2	N	C	A	4	CK	SE	C-18002-C SH1 (B-3)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-18	2	N	C	A	4	CK	SE	C-18002-C SH1 (B-3)	C	OC	NA	CC	R	ADS-ROJ - 02	N1-ST-R20	
VACUUM BKR												CO	R	ADS-ROJ - 02	N1-ST-R20	
CKV-66-25	2	N	C	A	10	CK	SE	C-18002-C SH1 (B-3)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	
CKV-66-26	2	N	C	A	10	CK	SE	C-18002-C SH1 (B-3)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	
CKV-66-27	2	N	C	A	10	CK	SE	C-18002-C SH1 (B-2)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	
CKV-66-28	2	N	C	A	10	CK	SE	C-18002-C SH1 (B-2)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	
CKV-66-29	2	N	C	A	10	CK	SE	C-18002-C SH1 (D-2)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	
CKV-66-30	2	N	C	A	10	CK	SE	C-18002-C SH1 (D-2)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	
CKV-66-31	2	N	C	A	10	CK	SE	C-18002-C SH1 (D-3)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	
CKV-66-32	2	N	C	A	10	CK	SE	C-18002-C SH1 (D-3)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	
CKV-66-33	2	N	C	A	10	CK	SE	C-18002-C SH1 (D-4)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	
CKV-66-34	2	N	C	A	10	CK	SE	C-18002-C SH1 (D-4)	C	OC	NA	CC	CM		N1-ST-R20	
VACUUM BKR												CO	CM		N1-ST-R20	

Valve Table

ADS - Automatic Depressurization

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-66-35	2	N	C	A	10	CK	SE	C-18002-C SH1 (B-3)	C	OC	NA	CC	CM		N1-ST-R20	
												CO	CM		N1-ST-R20	
VACUUM BKR																
CKV-66-36	2	N	C	A	10	CK	SE	C-18002-C SH1 (B-3)	C	OC	NA	CC	CM		N1-ST-R20	
												CO	CM		N1-ST-R20	
VACUUM BKR																
PSV-01-102A	1	N	B	A	6	GL	SO	C-18002-C SH1 (B-3)	C	OC	C	FC	R	ADS-VR - 01	N1-EPM-GEN-124	
												FE	R	ADS-VR - 01	N1-EPM-GEN-124	
(PSV-A) ADS-3												PI	2Y		N1-EPM-GEN-124	
												STO	4Y	ADS-VR - 01	N1-MPM-001-245	
PSV-01-102B	1	N	B	A	6	GL	SO	C-18002-C SH1 (B-2)	C	OC	C	FC	R	ADS-VR - 01	N1-EPM-GEN-124	
												FE	R	ADS-VR - 01	N1-EPM-GEN-124	
(PSV-B) ADS-1												PI	2Y		N1-EPM-GEN-124	
												STO	4Y	ADS-VR - 01	N1-MPM-001-245	
PSV-01-102C	1	N	B	A	6	GL	SO	C-18002-C SH1 (C-2)	C	OC	C	FC	R	ADS-VR - 01	N1-EPM-GEN-124	
												FE	R	ADS-VR - 01	N1-EPM-GEN-124	
(PSV-C) ADS-2												PI	2Y		N1-EPM-GEN-124	
												STO	4Y	ADS-VR - 01	N1-MPM-001-245	
PSV-01-102D	1	N	B	A	6	GL	SO	C-18002-C SH1 (C-3)	C	OC	C	FC	R	ADS-VR - 01	N1-EPM-GEN-124	
												FE	R	ADS-VR - 01	N1-EPM-GEN-124	
(PSV-D) ADS-4												PI	2Y		N1-EPM-GEN-124	
												STO	4Y	ADS-VR - 01	N1-MPM-001-245	
PSV-01-102E	1	N	B	A	6	GL	SO	C-18002-C SH1 (B-3)	C	OC	C	FC	R	ADS-VR - 01	N1-EPM-GEN-124	
												FE	R	ADS-VR - 01	N1-EPM-GEN-124	
(PSV-E) ADS-5												PI	2Y		N1-EPM-GEN-124	
												STO	4Y	ADS-VR - 01	N1-MPM-001-245	
PSV-01-102F	1	N	B	A	6	GL	SO	C-18002-C SH1 (C-3)	C	OC	C	FC	R	ADS-VR - 01	N1-EPM-GEN-124	
												FE	R	ADS-VR - 01	N1-EPM-GEN-124	
(PSV-F) ADS-6												PI	2Y		N1-EPM-GEN-124	
												STO	4Y	ADS-VR - 01	N1-MPM-001-245	

Valve Table

BA/SW - Breathing Air & Service Water to Drywell

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-114-114 BA OUTBOARD IV	2	N	A	P	1	GL	MAN		LC	C	NA	LTJ	60		N1-ST-TYC-012	
IV-114-116 BA INBOARD IV	2	N	A	P	1	GL	MAN		C	C	NA	LTJ	60		N1-ST-TYC-012	

Valve Table

CNS - Condensate Transfer System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-50-52 DEMIN OUTLET	3	N	B	A	6	GA	MAN	C-18003-C (F-3)	O	C	NA	FE	R		N1-ST-R28	
BV-53-02 CST OUTLET	3	N	B	A	4	GA	MAN	C-18003-C (G-2)	O	C	NA	FE	R		N1-ST-R28	
BV-53-03 CST OUTLET	3	N	B	A	4	GA	MAN	C-18003-C (H-2)	O	C	NA	FE	R		N1-ST-R28	
BV-57.1-01 SFP SLUDGE	3	N	B	P	1.5	GL	AO	C-18048-C (E-6)	C	C	C	PI	2Y		N1-ST-R11	
BV-57.1-03 CU SLUDGE	3	N	B	P	1.5	GL	AO	C-18048-C (E-6)	C	C	C	PI	2Y		N1-ST-R11	
BV-57.1-104 SFPC FILTER SLUDGE PUMP	3	N	B	A	1.5	GL	MAN	C-18048-C (C-6)	O	C	NA	FE	R		N1-ST-R28	
BV-57-58 SFP SURGE TANK MAKE-UP	3	N	B	A	3	GL	AO	C-18008-C (D-2)	OC	O	O	FE FO	Q Q		N1-ST-Q12 N1-ST-Q12	
BV-59-03 COND MAKE-UP	3	N	B	A	12	GA	MAN	C-18003-C (F-2)	O	C	NA	FE	R		N1-ST-R28	
BV-59-05 COND MAKE-UP	3	N	B	A	8	PGV	MAN	C-18003-C (F-2)	O	C	NA	FE	R		N1-ST-R28	
BV-91-184 SEAL WTR TO CT BLDG	3	N	B	A	0.75	GL	MAN	C-18036-C (G-1)	O	C	NA	FE	R		N1-ST-R28	
BV-91-209 SEAL WTR TO TURB BLDG	3	N	B	A	1.5	GL	MAN	C-18036-C (F-3)	O	C	NA	FE	R		N1-ST-R28	
CKV-57-03 SFP MAKE-UP	N	Y	C	A	3	CK	SE	C-18008-C (C-2)	OC	O	NA	BDC CO	CM CM		N1-ST-Q12 N1-ST-Q12	
CKV-57-13 PUMP DISCHARGE	3	N	C	A	4	CK	SE	C-18048-C (E-5)	OC	OC	NA	CC CO	Q Q		N1-ST-Q15 N1-ST-Q15	CKV Program

Valve Table

CNS - Condensate Transfer System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-57-136 MIN FLOW	3	N	C	A	0.75	CK	SE	C-18048-C (F-5)	OC	O	NA	BDC CO	Q Q		N1-ST-Q15 N1-ST-Q15	
CKV-57-14 PUMP DISCHARGE	3	N	C	A	4	CK	SE	C-18048-C (F-5)	OC	OC	NA	CC CO	Q Q		N1-ST-Q15 N1-ST-Q15	CKV Program
CKV-57-142 MIN FLOW	3	N	C	A	0.75	CK	SE	C-18048-C (F-5)	OC	O	NA	BDC CO	Q Q		N1-ST-Q15 N1-ST-Q15	
IV-57-162 FILTER AID PUMP	3	N	B	A	0.5	GL	MAN	C-18048-C (A-5)	O	C	NA	FE	R		N1-ST-R28	
IV-57-176 INST FILL	3	N	B	A	1	GA	MAN	C-18008-C (E-1)	O	C	NA	FE	R		N1-ST-R28	
LCV-57-25 SFP MAKE-UP	3	N	B	A	3	DIV	AO	C-18008-C (C-2)	OC	O	O	FE FO	Q Q		N1-ST-Q12 N1-ST-Q12	
PSV-57-57 COND XFER PMPS DISCH HDR RV	3	N	C	A	3	RV	SE	C-18048-C (F-4)	C	OC	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251	
VLV-57.1-101 SFPC FILTER SLUDGE PUMP	3	N	B	A	2	GL	MAN	C-18048-C (C-6)	O	C	NA	FE	R		N1-ST-R28	
VLV-57-231	3	N	B	A	0.75	GL	MAN	C-18048-C (E-5)	O	C	NA	FE	R		N1-ST-R28	
VLV-57-32 DEMIN RESIN FLUSH INLET	3	N	B	A	3	GL	MAN	C-18048-C (A-6)	O	C	NA	FE	R		N1-ST-R28	
VLV-57-41	3	N	B	A	4	GA	MAN	C-18048-C (F-4)	O	C	NA	FE	R		N1-ST-R28	
VLV-91-313 SEAL WTR TO REAC BLDG	3	N	B	A	0.75	GL	MAN	C-18036-C (B-5)	O	C	NA	FE	R		N1-ST-R28	

Valve Table

CRAC - Control Room Chilled Water and HVAC

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-210.1-01 COOLER INLET	3	N	B	A	3	PGV	AO	C-18047-C (E-3)	OC	O	O	FE FO STO	Q Q Q		N1-ST-Q19 N1-ST-Q19 N1-ST-Q19	AOV Program
BV-210.1-02 COOLER INLET	3	N	B	A	3	PGV	AO	C-18047-C (E-3)	OC	O	O	FE FO STO	Q Q Q		N1-ST-Q19 N1-ST-Q19 N1-ST-Q19	AOV Program
CKV-210.1-132 PUMP DISCHARGE	3	N	C	A	2.5	CK	SE	C-18047-C (F-2)	OC	OC	NA	CC CO	Q Q		N1-ST-Q19 N1-ST-Q19	
CKV-210.1-133 PUMP DISCHARGE	3	N	C	A	2.5	CK	SE	C-18047-C (F-2)	OC	OC	NA	CC CO	Q Q		N1-ST-Q19 N1-ST-Q19	
PSV-210.1-87	3	N	C	A	0.7	RV	SE	C-18047-C (E-1)	C	OC	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251	
TCV-210.1-56	3	N	B	A	2.5	TWV	MO	C-18047-C (D-4)	OC	O	O	FE FO STO	Q Q Q		N1-ST-Q19 N1-ST-Q19 N1-ST-Q19	

Valve Table

CRD - Control Rod Drive

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-44-*(106) CHARGING WATER (Typical of 129)	2	N	C	A	0.5	SCK	SE	C-18016-C SH1 (C-3)	OC	C	NA	BDO CC	Q R	 CRD-ROJ - 02	Normal Operations N1-ST-R21	Notes 1 & 2
CKV-44-*(108) SCRAM DISCHARGE (Typical of 129)	2	N	C	A	0.5	PICV	SE	C-18016-C SH1 (A-3)	OC	O	NA	SKID-F	TS	CRD-ROJ - 01	N1-ST-R1	Notes 1 & 3
CKV-44-*(138) COOLING WATER INLET (Typical of 129)	1	N	C	A	0.5	CK	SE	C-18016-C SH1 (C-2)	OC	C	NA	SKID-R	TS		N1-ST-R1	Notes 1 & 4
CKV-44.3-12 OUTBOARD IV	1	N	A/C	A	3	CK	SE	C-18016-C SH1 (H-5)	OC	C	NA	BDO CC LTJ	CM CM 24		N1-ST-Q2 N1-ST-TYC-024 N1-ST-TYC-024	
CKV-44.3-13 INBOARD IV	1	N	A/C	A	3	CK	SE	C-18016-C SH1 (H-5)	OC	C	NA	BDO CC LTJ	CM CM 24		N1-ISP-201-009 N1-ST-TYC-024 N1-ST-TYC-024	
FCV-44-*(126) SCRAM INLET (Typical of 129)	1	N	B	A	0.75	GL	AO	C-18016-C SH1 (C-2)	C	O	O	FE FO SKID-O	TS TS TS	CRD-ROJ - 01	N1-ST-R1 N1-ST-R1 N1-ST-R1	Notes 1 & 3
FCV-44-*(127) SCRAM OUTLET (Typical of 129)	1	N	B	A	0.75	GL	AO	C-18016-C SH1 (A-2)	C	O	O	FE FO SKID-O	TS TS TS	CRD-ROJ - 01	N1-ST-R1 N1-ST-R1 N1-ST-R1	Notes 1 & 3
IV-44.2-15 SDV VENT INBOARD IV	2	N	A	A	2	GL	AO	C-18016-C SH2 (A-3)	O	C	C	FC FE LTJ PI STC	Q Q 60 2Y R	 CRD-VR - 01	N1-ST-Q4 N1-ST-Q4 N1-ST-TYC-007 N1-ST-R11 N1-ST-C14	AOV Program
IV-44.2-16 SDV VENT OUTBOARD IV	2	N	A	A	2	GL	AO	C-18016-C SH2 (A-3)	O	C	C	FC FE LTJ PI STC	Q Q 60 2Y R	 CRD-VR - 01	N1-ST-Q4 N1-ST-Q4 N1-ST-TYC-007 N1-ST-R11 N1-ST-C14	AOV Program
IV-44.2-17 SDV DRAIN OUTBOARD IV	2	N	A	A	2	GL	AO	C-18016-C SH2 (E-5)	O	C	C	FC FE LTJ PI STC	Q Q 60 2Y R	 CRD-VR - 01	N1-ST-Q4 N1-ST-Q4 N1-ST-TYC-007 N1-ST-R11 N1-ST-C14	AOV Program

Valve Table

CRD - Control Rod Drive

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-44.2-18	2	N	A	A	2	GL	AO	C-18016-C SH2 (F-5)	O	C	C	FC	Q		N1-ST-C14	AOV Program
												FC	Q		N1-ST-Q4	
SDV DRAIN INBOARD IV												FE	Q		N1-ST-Q4	
												LTJ	60		N1-ST-TYC-007	
												PI	2Y		N1-ST-R11	
												STC	R	CRD-VR - 01	N1-ST-C14	

Valve Table

CRS - Core Spray

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-40-03	1	N	A/C	A	12	CK	SE	C-18007-C SH1 (G-3)	C	OC	NA	CC	Q		N1-ST-Q1B	Note 5
OUBOARD IV PIV												CO	R	CRS-ROJ - 01	N1-ST-R9	CKV Program
												CP	Q	CRS-ROJ - 01	N1-ST-Q1B	
												LK	24 M	GV-RR - 3	N1-ST-V10B	
CKV-40-13	1	N	A/C	A	12	CK	SE	C-18007-C SH1 (B-3)	C	OC	NA	CC	Q		N1-ST-Q1A	Note 5
OUTBOARD IV PIV												CO	R	CRS-ROJ - 01	N1-ST-R9	CKV Program
												CP	Q	CRS-ROJ - 01	N1-ST-Q1A	
												LK	24 M	GV-RR - 3	N1-ST-V10A	
CKV-40-20	2	N	A/C	A	2	CK	SE	C-18007-C SH1 (B-2)	OC	C	NA	BDO	CS		N1-ST-V10A	Note 5
KEEPFILL OUTBOARD IV PIV												CC	CS	CRS-CSJ - 01	N1-ST-V10A	
												LK	24 M	GV-RR - 3	N1-ST-V10A	
CKV-40-21	1	N	A/C	A	2	CK	SE	C-18007-C SH1 (B-3)	OC	C	NA	BDO	CS	CRS-CSJ - 01	N1-ST-V10A	Note 5
KEEPFILL INBOARD IV PIV												CC	Q		N1-ST-Q1C	
												LK	24 M	GV-RR - 3	N1-ST-V10A	
CKV-40-22	1	N	A/C	A	2	CK	SE	C-18007-C SH1 (G-3)	OC	C	NA	BDO	CS	CRS-CSJ - 01	N1-ST-V10B	Note 5
KEEPFILL INBOARD IV PIV												CC	Q		N1-ST-Q1D	
												LK	24 M	GV-RR - 3	N1-ST-V10B	
CKV-40-23	2	N	A/C	A	2	CK	SE	C-18007-C SH1 (G-2)	OC	C	NA	BDO	CS		N1-ST-V10B	Note 5
KEEPFILL OUTBOARD IV PIV												CC	CS	CRS-CSJ - 01	N1-ST-V10B	
												LK	24 M	GV-RR - 3	N1-ST-V10B	
CKV-40-80	1	N	C	A	0.50	CK	SE	C-18007-C SH1 (D-3)	OC	OC	NA	CC	CM		Work Order from PMST	
PEN X-14 Overpressure												CO	CM		Work Order from PMST	
CKV-40-83	1	N	C	A	0.50	CK	SE	C-18007-C SH1 (E-3)	OC	OC	NA	CC	CM		Work Order from PMST	
PEN X-13A Overpressure												CO	CM		Work Order from PMST	
CKV-81-07	2	N	C	A	12	CK	SE	C-18007-C SH1 (H-4)	C	OC	NA	CC	CM		N1-ST-Q1B	
PUMP DISCHARGE												CO	CM		N1-ST-Q1B	
												CP	Q		N1-ST-Q1B	
CKV-81-08	2	N	C	A	12	CK	SE	C-18007-C SH1 (H-4)	C	OC	NA	CC	CM		N1-ST-Q1D	
PUMP DISCHARGE												CO	CM		N1-ST-R9	
												CP	Q		N1-ST-Q1D	

Valve Table

CRS - Core Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-81-169 VACUUM BREAKER	2	N	C	A	0.75	CK	SE	C-18007-C SH1 (G-3)	C	OC	NA	DI	CM		N1-MPM-GEN-242	
CKV-81-170 VACUUM BREAKER	2	N	C	A	0.75	CK	SE	C-18007-C SH1 (B-4)	C	OC	NA	DI	CM		N1-MPM-GEN-242	
CKV-81-183 CSTP 111 COOLING WATER CHECK VALVE	2	N	C	A	0.75	CK	SE	C-18007-C SH1 (H-1)	C	O	NA	SKID-F	Q		N1-ST-Q1A	
CKV-81-184 CSTP 112 COOLING WATER CHECK VALVE	2	N	C	A	0.75	CK	SE	C-18007-C SH1 (H-1)	C	O	NA	SKID-F	Q		N1-ST-Q1C	
CKV-81-185 CSTP 121 COOLING WATER CHECK VALVE	2	N	C	A	0.75	CK	SE	C-18007-C SH1 (H-1)	C	O	NA	SKID-F	Q		N1-ST-Q1B	
CKV-81-186 CSTP 122 COOLING WATER CHECK VALVE	2	N	C	A	0.75	CK	SE	C-18007-C SH1 (H-1)	C	O	NA	SKID-F	Q		N1-ST-Q1D	
CKV-81-27 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18007-C SH1 (A-4)	C	OC	NA	CC CO CP	CM CM Q		N1-ST-Q1A N1-ST-Q1A N1-ST-Q1A	
CKV-81-28 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18007-C SH1 (A-4)	C	OC	NA	CC CO CP	CM CM Q		N1-ST-Q1C N1-ST-R9 N1-ST-Q1C	
IV-40-01 INBOARD IV	1	N	A	A	12	GA	MO	C-18007-C SH1 (E-3)	C	OC	AI	DIAG FE LW RPI STO	MOV 6M AJ MOV 6M		S-EPM-GEN-063 N1-ST-Q1B N1-ST-C20 S-EPM-GEN-063 N1-ST-Q1B	Note 6
IV-40-02 OUTBOARD IV	1	N	B	A	12	GA	MO	C-18007-C SH1 (F-3)	O	O	AI	DIAG FE RPI STO	MOV Q MOV Q		S-EPM-GEN-063 N1-ST-Q1B S-EPM-GEN-063 N1-ST-Q1B	
IV-40-05 TEST LINE IV	1	N	A	A	6	GA	MO	C-18007-C SH1 (G-3)	C	OC	AI	DIAG FE LW RPI STC	MOV Q AJ MOV Q		S-EPM-GEN-063 N1-ST-Q1B N1-ST-C20 S-EPM-GEN-063 N1-ST-Q1B	Note 6

Valve Table

CRS - Core Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-40-06	1	N	A	A	6	GA	MO	C-18007-C	C	OC	AI	DIAG	MOV		S-EPM-GEN-063	Note 6
								SH1 (B-3)				FE	Q		N1-ST-Q1A	
TEST LINE												LW	AJ		N1-ST-C20	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q1A	
IV-40-09	1	N	A	A	12	GA	MO	C-18007-C	C	OC	AI	DIAG	MOV		S-EPM-GEN-063	Note 6
								SH1 (E-3)				FE	6M		N1-ST-Q1D	
INBOARD IV												LW	AJ		N1-ST-C20	
												RPI	MOV		S-EPM-GEN-063	
												STO	6M		N1-ST-Q1D	
IV-40-10	1	N	A	A	12	GA	MO	C-18007-C	C	OC	AI	DIAG	MOV		S-EPM-GEN-063	Note 6
								SH1 (D-3)				FE	6M		N1-ST-Q1C	
INBOARD IV												LW	AJ		N1-ST-C20	
												RPI	MOV		S-EPM-GEN-063	
												STO	6M		N1-ST-Q1C	
IV-40-11	1	N	A	A	12	GA	MO	C-18007-C	C	OC	AI	DIAG	MOV		S-EPM-GEN-063	Note 6
								SH1 (D-3)				FE	6M		N1-ST-Q1A	
INBOARD IV												LW	AJ		N1-ST-C20	
												RPI	MOV		S-EPM-GEN-063	
												STO	6M		N1-ST-Q1A	
IV-40-12	1	N	B	A	12	GA	MO	C-18007-C	O	O	AI	DIAG	MOV		S-EPM-GEN-063	
								SH1 (C-3)				FE	Q		N1-ST-Q1A	
OUTBOARD IV												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N1-ST-Q1A	
IV-40-30	1	N	A	A	1	GA	MO	C-18007-C	C	C	AI	DIAG	MOV		S-EPM-GEN-063	Note 6
								SH1 (D-2)				FE	Q		N1-ST-Q1A	
HI POINT VENT INBOARD IV												LW	AJ		N1-ST-R25	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q1A	
IV-40-31	1	N	A	A	1	GA	MO	C-18007-C	C	C	AI	DIAG	MOV		S-EPM-GEN-063	Note 6
								SH1 (E-2)				FE	Q		N1-ST-Q1B	
HI POINT VENT INBOARD IV												LW	AJ		N1-ST-R25	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q1B	
IV-40-32	2	N	A	A	1	GL	AO	C-18007-C	C	C	C	FC	Q		N1-ST-Q1A	Note 6
								SH1 (C-2)				FE	Q		N1-ST-Q1A	AOV Program
HI POINT VENT OUTBOARD IV												LW	AJ		N1-ST-R25	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q1A	

Valve Table

CRS - Core Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-40-33	2	N	A	A	1	GL	AO	C-18007-C SH1 (F-2)	C	C	C	FC	Q		N1-ST-Q1B	Note 6
HI POINT VENT OUTBOARD IV												FE	Q		N1-ST-Q1B	AOV Program
												LW	AJ		N1-ST-R25	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q1B	
IV-81-01	2	N	B	A	14	GA	MO	C-18007-C SH1 (F-4)	O	OC	AI	DIAG	MOV		S-EPM-GEN-063	
SUCTION IV												FE	Q		N1-ST-Q1B	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q1B	
IV-81-02	2	N	B	A	14	GA	MO	C-18007-C SH1 (F-4)	O	OC	AI	DIAG	MOV		S-EPM-GEN-063	
SUCTION IV												FE	Q		N1-ST-Q1D	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q1D	
IV-81-21	2	N	B	A	14	GA	MO	C-18007-C SH1 (C-4)	O	OC	AI	DIAG	MOV		S-EPM-GEN-063	
SUCTION IV												FE	Q		N1-ST-Q1A	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q1A	
IV-81-22	2	N	B	A	14	GA	MO	C-18007-C SH1 (C-4)	O	OC	AI	DIAG	MOV		S-EPM-GEN-063	
SUCTION IV												FE	Q		N1-ST-Q1C	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q1C	
PRV-81-77	2	N	C	A	0.75	RV	SE	C-18007-C SH1 (H-2)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
MOTOR COOLER												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-81-78	2	N	C	A	0.75	RV	SE	C-18007-C SH1 (H-2)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
MOTOR COOLER												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-81-79	2	N	C	A	0.75	RV	SE	C-18007-C SH1 (H-2)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
MOTOR COOLER												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-81-80	2	N	C	A	0.75	RV	SE	C-18007-C SH1 (H-2)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
MOTOR COOLER												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Valve Table

CRS - Core Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PSV-81-241	2	N	A/C	A	2	RV	SE	C-18007-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH1 (A-4)				LL	10Y-S		N1-MSP-GEN-251	
MIN FLOW IV												LTJ	60		N1-ISP-081-502	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-81-242	2	N	A/C	A	2	RV	SE	C-18007-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH1 (B-4)				LL	10Y-S		N1-MSP-GEN-251	
MIN FLOW IV												LTJ	60		N1-ISP-081-502	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-81-243	2	N	A/C	A	2	RV	SE	C-18007-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH1 (H-3)				LL	10Y-S		N1-MSP-GEN-251	
MIN FLOW IV												LTJ	60		N1-ISP-081-502	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-81-244	2	N	A/C	A	2	RV	SE	C-18007-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH1 (H-3)				LL	10Y-S		N1-MSP-GEN-251	
MIN FLOW IV												LTJ	60		N1-ISP-081-502	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Valve Table

CTN - Combustible Gas Control

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-201.2-136 PUMP BACK VENT	3	Y	B	P	3	PGV	AO	C-18014-C SH1 (H-3)	C	C	C	PI	2Y		N1-ST-R11	
BV-201.9-19 VAPORIZER INLET	3	Y	B	P	1	GA	AO	C-18014-C SH3 (E-3)	O	O	O	PI	2Y		N1-ST-R11	
BV-201.9-46 DW N2 SUPPLY	3	Y	B	A	1.5	GA	AO	C-18014-C SH1 (E-3)	C	OC	C	FC FE PI STC STO	Q Q 2Y Q Q		N1-ST-Q5 N1-ST-Q5 N1-ST-R11 N1-ST-Q5 N1-ST-Q5	
BV-201.9-47 TORUS N2 SUPPLY	3	Y	B	A	1.5	GA	AO	C-18014-C SH1 (F-4)	C	OC	C	FC FE PI STC STO	Q Q 2Y Q Q		N1-ST-Q5 N1-ST-Q5 N1-ST-R11 N1-ST-Q5 N1-ST-Q5	
BV-201-18 RBEVS BV	N	Y	B	P	12	BTF	AO	C-18014-C SH1 (H-2)	C	C	C	PI	2Y		N1-ST-Q20	AOV Program
CKV-201.9-94 CAD N2 SUPPLY	3	Y	C	A	1	CK	SE	C-18014-C SH3 (F-5)	OC	O	NA	BDC CO	Q Q		N1-ST-Q17 N1-ST-Q17	
IV-201.1-09 POST LOCA VENT INBOARD IV	2	N	A	A	1	GL	AO	C-18014-C SH1 (F-2)	C	OC	C	FC FE LTJ PI STC STO	Q Q 60 2Y Q Q		N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-015 N1-ST-R11 N1-ST-Q5 N1-ST-Q5	
IV-201.1-11 POST LOCA VENT OUTBOARD IV	2	N	A	A	1	GL	AO	C-18014-C SH1 (F-2)	C	OC	C	FC FE LTJ PI STC STO	Q Q 60 2Y Q Q		N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-015 N1-ST-R11 N1-ST-Q5 N1-ST-Q5	
IV-201.1-14 POST LOCA VENT INBOARD IV	2	N	A	A	1	GL	AO	C-18014-C SH1 (D-2)	C	OC	C	FC FE LTJ PI STC STO	Q Q 60 2Y Q Q		N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-015 N1-ST-R11 N1-ST-Q5 N1-ST-Q5	

Valve Table

CTN - Combustible Gas Control

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-201.1-16	2	N	A	A	1	GL	AO	C-18014-C	C	OC	C	FC	Q		N1-ST-Q5	
								SH1 (C-2)				FE	Q		N1-ST-Q5	
POST LOCA VENT OUTBOARD IV												LTJ	60		N1-ST-TYC-015	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
												STO	Q		N1-ST-Q5	
IV-201.2-03	2	N	A	A	4	GL	AO	C-18014-C	C	OC	C	FC	Q		N1-ST-Q5	
								SH1 (F-2)				FE	Q		N1-ST-Q5	
DW N2 FILL & BLEED OUTBOARD IV												LTJ	60		N1-ST-TYC-016	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
IV-201.2-06	2	N	A	A	3	GL	AO	C-18014-C	C	OC	C	FC	Q		N1-ST-Q5	
								SH1 (F-4)				FE	Q		N1-ST-Q5	
TORUS N2 FILL & BLEED OUTBOARD IV												LTJ	60		N1-ST-TYC-016	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
IV-201.2-32	2	N	A	A	4	GL	AO	C-18014-C	C	OC	C	FC	Q		N1-ST-Q5	
								SH1 (F-2)				FE	Q		N1-ST-Q5	
DW N2 FILL & BLEED INBOARD IV												LTJ	60		N1-ST-TYC-016	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
IV-201.2-33	2	N	A	A	3	GL	AO	C-18014-C	C	OC	C	FC	Q		N1-ST-Q5	
								SH1 (F-5)				FE	Q		N1-ST-Q5	
TORUS N2 FILL & BLEED INBOARD IV												LTJ	60		N1-ST-TYC-016	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
IV-201-07	2	N	A	A	20	BTF	MO	C-18014-C	C	C	AI	DIAG	MOV		S-EPM-GEN-063	
								SH1 (A-6)				FE	Q		N1-ST-Q5	
TORUS V&P OUTBOARD IV												LTJ	30		N1-ST-TYC-014	
												RPI	MOV		S-EPM-GEN-063	
IV-201-08	2	N	A	A	20	BTF	AO	C-18014-C	C	C	C	FC	Q		N1-ST-Q5	AOV Program
								SH1 (B-6)				FE	Q		N1-ST-Q5	
TORUS V&P INBOARD IV												LTJ	30		N1-ST-TYC-014	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
IV-201-09	2	N	A	A	24	BTF	MO	C-18014-C	C	C	AI	DIAG	MOV		S-EPM-GEN-063	
								SH1 (B-5)				FE	Q		N1-ST-Q5	
DW V&P OUTBOARD IV												LTJ	30		N1-ST-TYC-014	
												RPI	MOV		S-EPM-GEN-063	

Valve Table

CTN - Combustible Gas Control

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-201-10	2	N	A	A	24	BTF	AO	C-18014-C	C	C	C	FC	Q		N1-ST-Q5	AOV Program
								SH1 (B-5)				FE	Q		N1-ST-Q5	
DW V&P INBOARD IV												LTJ	30		N1-ST-TYC-014	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
IV-201-16	2	N	A	A	20	BTF	AO	C-18014-C	C	C	C	FC	Q		N1-ST-Q5	AOV Program
								SH1 (G-5)				FE	Q		N1-ST-Q5	
TORUS V&P INBOARD IV												LTJ	30		N1-ST-TYC-014	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
IV-201-17	2	N	A	A	20	BTF	MO	C-18014-C	C	C	AI	DIAG	MOV		S-EPM-GEN-063	
								SH1 (H-5)				FE	2Y		N1-ST-Q5	
TORUS V&P OUTBOARD IV												LTJ	30		N1-ST-TYC-014	
												RPI	MOV		S-EPM-GEN-063	
IV-201-31	2	N	A	A	24	BTF	MO	C-18014-C	C	C	AI	DIAG	MOV		S-EPM-GEN-063	
								SH1 (F-2)				FE	Q		N1-ST-Q5	
DW V&P OUTBOARD IV												LTJ	30		N1-ST-TYC-014	
												RPI	MOV		S-EPM-GEN-063	
IV-201-32	2	N	A	A	24	BTF	AO	C-18014-C	C	C	C	FC	Q		N1-ST-Q5	AOV Program
								SH1 (F-2)				FE	Q		N1-ST-Q5	
DW V&P INBOARD IV												LTJ	30		N1-ST-TYC-014	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
PSV-201.8-13	3	Y	C	A	1	RV	SE	C-18014-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH4 (F-4)				LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.8-14	3	Y	C	A	1	RV	SE	C-18014-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH4 (G-4)				LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.8-96	3	Y	C	A	1	RV	SE	C-18014-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH4 (B-2)				LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.9-10	3	Y	C	A	1	RV	SE	C-18014-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH3 (D-2)				LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Valve Table

CTN - Combustible Gas Control

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PSV-201.9-11	3	Y	C	A	1	RV	SE	C-18014-C SH3 (C-2)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.9-14	3	Y	C	A	0.5	RV	SE	C-18014-C SH3 (D-2)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.9-17	3	Y	C	A	0.5	RV	SE	C-18014-C SH3 (D-3)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.9-24	3	Y	C	A	0.5	RV	SE	C-18014-C SH3 (F-3)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.9-25	3	Y	C	A	0.5	RV	SE	C-18014-C SH3 (E-3)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.9-33	3	Y	C	A	0.5	RV	SE	C-18014-C SH3 (E-4)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.9-40	3	Y	C	A	0.5	RV	SE	C-18014-C SH3 (C-4)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.9-69	3	Y	C	A	1	RV	SE	C-18014-C SH3 (G-3)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-201.9-70	3	Y	C	A	1	RV	SE	C-18014-C SH3 (G-2)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
CTN RELIEF VALVE												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Valve Table

CTN(H2O2) - Hydrogen-Oxygen Monitoring

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-201.2-67	2	N	A/C	A	0.75	CK	SE	C-18014-C	OC	C	NA	BDO	CM		N1-ST-Q18	
								SH2 (E-5)				CC	CM		N1-ST-Q18	
H2-O2 RETURN INBOARD IV												LTJ	60		N1-ST-TYC-018	
CKV-201.2-68	2	N	A/C	A	0.75	CK	SE	C-18014-C	OC	C	NA	BDO	CM		N1-ST-Q18	
								SH2 (F-5)				CC	CM		N1-ST-Q18	
H2-O2 RETURN OUTBOARD IV												LTJ	60		N1-ST-TYC-018	
CKV-201.2-70	2	N	A/C	A	0.75	CK	SE	C-18014-C	OC	C	NA	BDO	CM		N1-ST-Q18	
								SH2 (F-5)				CC	CM		N1-ISP-LRT-TYC	
H2-O2 RETURN INBOARD IV												LTJ	60		N1-ST-TYC-018	
CKV-201.2-71	2	N	A/C	A	0.75	CK	SE	C-18014-C	OC	C	NA	BDO	CM		N1-ST-Q18	
								SH2 (F-5)				CC	CM		N1-ISP-LRT-TYC	
H2-O2 RETURN OUTBOARD IV												LTJ	60		N1-ST-TYC-018	
IV-201.2-109	2	N	A	A	0.75	GL	AO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	Note 7
								SH2 (B-5)				FE	Q		N1-ST-Q5	AOV Program
H2-O2 #11 TORUS RETURN INBOARD IV												LTJ	60		N1-ST-TYC-020	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 01	N1-ST-Q5	
IV-201.2-110	2	N	A	A	0.75	GL	AO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	Note 7
								SH2 (C-4)				FE	Q		N1-ST-Q5	AOV Program
H2-O2 #11 TORUS SAMPLE INBOARD IV												LTJ	60		N1-ST-TYC-020	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 01	N1-ST-Q5	
IV-201.2-111	2	N	A	A	0.75	GL	AO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	Note 7
								SH2 (C-5)				FE	Q		N1-ST-Q5	AOV Program
H2-O2 #11 TORUS SAMPLE OUTBOARD IV												LTJ	60		N1-ST-TYC-020	
												PI	2Y		N1-ISP-LRT-TYC	
												STC	Q	CTNH2O2-VR - 01	N1-ST-Q5	
IV-201.2-112	2	N	A	A	0.75	GL	AO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	Note 7
								SH2 (B-5)				FE	Q		N1-ST-Q5	AOV Program
H2-O2 #11 TORUS RETURN OUTBOARD IV												LTJ	60		N1-ST-TYC-020	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 01	N1-ST-Q5	

Valve Table

CTN(H2O2) - Hydrogen-Oxygen Monitoring

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-201.2-23	2	N	A	A	0.5	GL	SO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	
								SH2 (E-5)				FE	Q		N1-ST-Q5	
H2-O2 #12 TORUS SAMPLE INBOARD IV												LTJ	60		N1-ST-TYC-017	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 02	N1-ST-Q5	
IV-201.2-24	2	N	A	A	0.5	GL	SO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	
								SH2 (E-5)				FE	Q		N1-ST-Q5	
H2-O2 #12 TORUS SAMPLE OUTBOARD IV												LTJ	60		N1-ST-TYC-017	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 02	N1-ST-Q5	
IV-201.2-29	2	N	A	A	0.5	GL	SO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	
								SH2 (E-3)				FE	Q		N1-ST-Q5	
H2-O2 #12 DRYWELL SAMPLE INBOARD IV												LTJ	60		N1-ST-TYC-017	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 02	N1-ST-Q5	
IV-201.2-30	2	N	A	A	0.5	GL	SO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	
								SH2 (E-3)				FE	Q		N1-ST-Q5	
H2-O2 #12 DRYWELL SAMPLE OUTBOARD IV												LTJ	60		N1-ST-TYC-017	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 02	N1-ST-Q5	
IV-201.7-01	2	N	A	A	1	GL	AO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	Note 7
								SH2 (C-2)				FE	Q		N1-ST-Q5	AOV Program
H2-O2 #11 SAMPLE STREAM B INBOARD IV												LTJ	60		N1-ST-TYC-021	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 01	N1-ST-Q5	
IV-201.7-02	2	N	A	A	1	GL	AO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	Note 7
								SH2 (C-2)				FE	Q		N1-ST-Q5	AOV Program
H2-O2 #11 SAMPLE STREAM B OUTBOARD IV												LTJ	60		N1-ST-TYC-021	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 01	N1-ST-Q5	
IV-201.7-08	2	N	A	A	1	GL	AO	C-18014-C	O	C	C	FC	Q		N1-ST-Q5	Note 7
								SH2 (E-2)				FE	Q		N1-ST-Q5	AOV Program
DW CAM SAMPLE INBOARD IV												LTJ	30		N1-ST-TYC-022	
												PI	2Y		N1-ST-R11	
												STC	Q	CTNH2O2-VR - 01	N1-ST-Q5	

Valve Table

CTN(H2O2) - Hydrogen-Oxygen Monitoring

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-201.7-09 DW CAM SAMPLE OUTBOARD IV	2	N	A	A	1	GL	AO	C-18014-C SH2 (E-2)	O	C	C	FC FE LTJ PI STC	Q Q 60 2Y Q	 CTNH2O2-V R - 01	N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-022 N1-ST-R11 N1-ST-Q5	Note 7 AOV Program
IV-201.7-10 H2-O2 #11 DW RETURN INBOARD IV	2	N	A	A	1	GL	AO	C-18014-C SH2 (E-3)	O	C	C	FC FE LTJ PI STC	Q Q 60 2Y Q	 CTNH2O2-V R - 01	N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-023 N1-ST-R11 N1-ST-Q5	Note 7 AOV Program
IV-201.7-11 H2-O2 #11 DW RETURN OUTBOARD IV	2	N	A	A	1	GL	AO	C-18014-C SH2 (E-3)	O	C	C	FC FE LTJ PI STC	Q Q 60 2Y Q	 CTNH2O2-V R - 01	N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-023 N1-ST-R11 N1-ST-Q5	Note 7 AOV Program
VLV-201.8-66 N2 SUP TO STACK DILUTION	3	Y	B	A	0.75	GL	MAN	C-18014-C SH4 (C-4)	C	C	NA	FE	R		N1-ST-R28	

Valve Table

CTN-SP - Containment Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-80-40 INTER-TIE	2	N	B	A	6	GA	AO	C-18012-C SH2 (B-2)	O	OC	O	FE FO PI STC STO	Q Q 2Y Q Q		N1-ST-Q6A N1-ST-Q6A N1-ST-R11 N1-ST-Q6A N1-ST-Q6A	
BV-80-41 INTER-TIE	2	N	B	A	6	GA	AO	C-18012-C SH2 (B-1)	C	OC	C	FC FE PI STC STO	Q Q 2Y Q Q		N1-ST-Q6B N1-ST-Q6B N1-ST-R11 N1-ST-Q6B N1-ST-Q6B	
BV-80-44 INTER-TIE	2	N	B	A	6	GA	AO	C-18012-C SH2 (G-2)	C	OC	C	FC FE PI STC STO	Q Q 2Y Q Q		N1-ST-Q6C N1-ST-Q6C N1-ST-R11 N1-ST-Q6C N1-ST-Q6C	
BV-80-45 INTER-TIE	2	N	B	A	6	GA	AO	C-18012-C SH2 (G-1)	O	OC	O	FE FO PI STC STO	Q Q 2Y Q Q		N1-ST-Q6D N1-ST-Q6D N1-ST-R11 N1-ST-Q6D N1-ST-Q6D	
BV-93-25 DISCHARGE BV	3	N	B	P	12	GA	MO	C-18012-C SH1 (C-3)	O	O	AI	PI	2Y		N1-ST-R11	
BV-93-26 DISCHARGE BV	3	N	B	P	12	GA	MO	C-18012-C SH1 (B-3)	O	O	AI	PI	2Y		N1-ST-R11	
BV-93-27 DISCHARGE BV	3	N	B	P	12	GA	MO	C-18012-C SH1 (F-3)	O	O	AI	PI	2Y		N1-ST-R11	
BV-93-28 DISCHARGE BV	3	N	B	P	12	GA	MO	C-18012-C SH1 (D-3)	O	O	AI	PI	2Y		N1-ST-R11	
CKV-80-05 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18012-C SH2 (A-6)	C	OC	NA	CC CO CP	CM CM Q		N1-ST-Q6B N1-ST-Q6B N1-ST-Q6B	
CKV-80-06 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18012-C SH2 (B-5)	C	OC	NA	CC CO CP	CM CM Q		N1-ST-Q6A N1-ST-Q6A N1-ST-Q6A	

Valve Table

CTN-SP - Containment Spray

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-80-17 DW INLET INBOARD IV	2	N	C	A	12	CK	SE	C-18012-C SH2 (D-2)	OC	OC	NA	CP DI	R CM		N1-ST-C4 N1-MPM-GEN-242	
CKV-80-18 DW INLET INBOARD IV	2	N	C	A	12	CK	SE	C-18012-C SH2 (D-3)	OC	OC	NA	CP DI	R CM		N1-ST-C4 N1-MPM-GEN-242	
CKV-80-19 TORUS INLET INBOARD IV	2	N	C	A	3	CK	SE	C-18012-C SH2 (F-3)	OC	OC	NA	DI	CM		N1-MPM-GEN-242	
CKV-80-25 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18012-C SH2 (H-6)	C	OC	NA	CC CO CP	CM CM Q		N1-ST-Q6D N1-ST-Q6D N1-ST-Q6D	
CKV-80-26 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18012-C SH2 (G-5)	C	OC	NA	CC CO CP	CM CM Q		N1-ST-Q6C N1-ST-Q6C N1-ST-Q6C	
CKV-80-37 DW INLET INBOARD IV	2	N	C	A	12	CK	SE	C-18012-C SH2 (E-2)	OC	OC	NA	CP DI	R CM		N1-ST-C4 N1-MPM-GEN-242	
CKV-80-38 DW INLET INBOARD IV	2	N	C	A	12	CK	SE	C-18012-C SH2 (E-3)	OC	OC	NA	CP DI	R CM		N1-ST-C4 N1-MPM-GEN-242	
CKV-80-39 TORUS INLET INBOARD IV	2	N	C	A	3	CK	SE	C-18012-C SH2 (C-3)	OC	OC	NA	DI	CM		N1-MPM-GEN-242	
CKV-80-65 TORUS INLET INBOARD IV	2	N	C	A	3	CK	SE	C-18012-C SH2 (D-3)	OC	OC	NA	CP DI	R CM		N1-ST-C4 N1-MPM-GEN-242	
CKV-80-66 TORUS INLET OUTBOARD IV	2	N	C	A	3	CK	SE	C-18012-C SH2 (C-2)	OC	OC	NA	DI	CM		N1-MPM-GEN-242	
CKV-80-67 TORUS INLET INBOARD IV	2	N	C	A	3	CK	SE	C-18012-C SH2 (E-3)	OC	OC	NA	CP DI	R CM		N1-ST-C4 N1-MPM-GEN-242	
CKV-80-68 TORUS INLET OUTBOARD IV	2	N	C	A	3	CK	SE	C-18012-C SH2 (F-2)	OC	OC	NA	DI	CM		N1-MPM-GEN-242	
CKV-93-09 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18012-C SH1 (A-4)	OC	O	NA	BDC CO	CM Q		WO N1-ST-Q6B	

Valve Table

CTN-SP - Containment Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-93-10 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18012-C SH1 (B-4)	OC	O	NA	BDC CO	CM Q		WO N1-ST-Q6A	
CKV-93-11 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18012-C SH1 (G-4)	OC	O	NA	BDC CO	CM Q		WO N1-ST-Q6D	
CKV-93-12 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18012-C SH1 (E-4)	OC	O	NA	BDC CO	CM Q		WO N1-ST-Q6C	
CKV-93-57 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18012-C SH1 (B-3)	OC	O	NA	BDC CO	CM Q		N1-ST-Q6A N1-ST-Q6A	
CKV-93-58 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18012-C SH1 (C-1)	C	C	NA	BDO CC LJ	R Q AJ	CTNSP-ROJ - 01	N1-ST-Q28 N1-ST-Q28 N1-TSP-201-001	Note 8 CKV Program
CKV-93-59 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18012-C SH1 (E-3)	OC	O	NA	BDC CO	CM Q		N1-ST-Q6C N1-ST-Q6C	
CKV-93-60 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18012-C SH1 (E-2)	C	C	NA	BDO CC LJ	R Q AJ	CTNSP-ROJ - 01	N1-ST-Q28 N1-ST-Q28 N1-TSP-201-001	Note 8 CKV Program
CKV-93-61 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18012-C SH1 (E-2)	OC	O	NA	BDC CO	CM Q		N1-ST-Q6B N1-ST-Q6B	
CKV-93-62 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18012-C SH1 (A-2)	C	C	NA	BDO CC LJ	R Q AJ	CTNSP-ROJ - 01	N1-ST-Q28 N1-ST-Q28 N1-TSP-201-001	Note 8 CKV Program
CKV-93-63 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18012-C SH1 (F-3)	OC	O	NA	BDC CO	CM Q		N1-ST-Q6D N1-ST-Q6D	
CKV-93-64 PUMP DISCHARGE	2	N	C	A	12	CK	SE	C-18012-C SH1 (F-1)	C	C	NA	BDO CC LJ	R Q AJ	CTNSP-ROJ - 01	N1-ST-Q28 N1-ST-Q28 N1-TSP-201-001	Note 8 CKV Program
FCV-80-118 TEST LINE	2	N	B	A	6	GL	MO	C-18012-C SH2 (F-4)	C	OC	AI	DIAG FE RPI	MOV 2Y MOV		S-EPM-GEN-063 N1-ST-Q5 S-EPM-GEN-063	

Valve Table

CTN-SP - Containment Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
FCV-93-71 RAW INTER-TIE	2	N	B	P	12	PGV	MO	C-18012-C SH1 (C-1)	C	C	AI	LJ PI	AJ 2Y		N1-TSP-201-001 N1-ST-R11	Note 8
FCV-93-72 RAW INTER-TIE	2	N	B	P	12	PGV	MO	C-18012-C SH1 (E-2)	C	C	AI	LJ PI	AJ 2Y		N1-TSP-201-001 N1-ST-R11	Note 8
FCV-93-73 RAW INTER-TIE	2	N	B	P	12	PGV	MO	C-18012-C SH1 (A-2)	C	C	AI	LJ PI	AJ 2Y		N1-TSP-201-001 N1-ST-R11	Note 8
FCV-93-74 RAW INTER-TIE	2	N	B	P	12	PGV	MO	C-18012-C SH1 (F-1)	C	C	AI	LJ PI	AJ 2Y		N1-TSP-201-001 N1-ST-R11	Note 8
IV-80-01 SUCTION IV	2	N	B	A	12	GA	MO	C-18012-C SH2 (C-5)	O	OC	AI	DIAG FE RPI STC	MOV Q MOV Q		S-EPM-GEN-063 N1-ST-Q6A S-EPM-GEN-063 N1-ST-Q6A	
IV-80-02 SUCTION IV	2	N	B	A	12	GA	MO	C-18012-C SH2 (D-6)	O	OC	AI	DIAG FE RPI STC	MOV Q MOV Q		S-EPM-GEN-063 N1-ST-Q6B S-EPM-GEN-063 N1-ST-Q6B	
IV-80-114 RW DISCHARGE	2	N	B	A	4	PGV	MO	C-18012-C SH2 (H-2)	C	C	AI	FE PI STC	Q 2Y Q		N1-ST-Q5 N1-ST-R11 N1-ST-Q5	
IV-80-115 RW DISCHARGE	2	N	B	A	4	PGV	MO	C-18012-C SH2 (H-2)	C	C	AI	FE PI STC	Q 2Y Q		N1-ST-Q5 N1-ST-R11 N1-ST-Q5	
IV-80-15 INLET OUTBOARD IV	2	N	B	A	12	GA	AO	C-18012-C SH2 (C-2)	O	OC	O	FE FO PI STC STO	Q Q 2Y Q Q		N1-ST-Q6B N1-ST-Q6B N1-ST-R11 N1-ST-Q6B N1-ST-Q6B	
IV-80-16 INLET OUTBOARD IV	2	N	B	A	12	GA	AO	C-18012-C SH2 (C-3)	O	OC	O	FE FO PI STC STO	Q Q 2Y Q Q		N1-ST-Q6A N1-ST-Q6A N1-ST-R11 N1-ST-Q6A N1-ST-Q6A	
IV-80-21 SUCTION IV	2	N	B	A	12	GA	MO	C-18012-C SH2 (F-5)	O	OC	AI	DIAG FE RPI STC	MOV Q MOV Q		S-EPM-GEN-063 N1-ST-Q6C S-EPM-GEN-063 N1-ST-Q6C	

Valve Table

CTN-SP - Containment Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-80-22	2	N	B	A	12	GA	MO	C-18012-C	O	OC	AI	DIAG	MOV		S-EPM-GEN-063	
								SH2 (E-6)				FE	Q		N1-ST-Q6D	
SUCTION IV												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q6D	
IV-80-35	2	N	B	A	12	GA	AO	C-18012-C	O	OC	O	FE	Q		N1-ST-Q6D	
								SH2 (F-2)				FO	Q		N1-ST-Q6D	
INLET OUTBOARD IV												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q6D	
												STO	Q		N1-ST-Q6D	
IV-80-36	2	N	B	A	12	GA	AO	C-18012-C	O	OC	O	FE	Q		N1-ST-Q6C	
								SH2 (F-3)				FO	Q		N1-ST-Q6C	
INLET OUTBOARD IV												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q6C	
												STO	Q		N1-ST-Q6C	
PSV-80-102A	2	N	C	A	0.5	RV	SE	C-18012-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH1 (H-3)				LL	10Y-S		N1-MSP-GEN-251	
PUMP COOLER A												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-80-102B	2	N	C	A	0.5	RV	SE	C-18012-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH1 (H-3)				LL	10Y-S		N1-MSP-GEN-251	
PUMP COOLER B												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-80-102C	2	N	C	A	0.5	RV	SE	C-18012-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH1 (H-3)				LL	10Y-S		N1-MSP-GEN-251	
PUMP COOLER C												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-80-102D	2	N	C	A	0.5	RV	SE	C-18012-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								SH1 (H-3)				LL	10Y-S		N1-MSP-GEN-251	
PUMP COOLER D												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Valve Table

CU - Reactor Water Cleanup System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-37-08R RX DRAIN	1	N	B	P	2	GL	MO	C-18009-C SH1 (B-2)	C	C	AI	PI	2Y		N1-ST-R11	
BV-37-09R RX DRAIN	1	N	B	P	2	GL	MO	C-18009-C SH1 (B-2)	C	C	AI	PI	2Y		N1-ST-R11	
CKV-33-03 RETURN OUTBOARD IV	1	N	A/C	A	6	CK	SE	C-18009-C SH1 (C-1)	OC	C	NA	BDO	CM		N1-ISP-201-009	
												CC	CM		N1-ST-R29 or	
												LTJ	30		N1-ST-TYC-003	
IV-33-01R RETURN INBOARD IV	1	N	A	A	6	GA	MO	C-18009-C SH1 (C-1)	O	C	AI	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y	RWCU-ROJ - 01	N1-ST-V17R	
												LTJ	60		N1-ST-TYC-003	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N1-ST-V17R	
IV-33-02R SUPPLY INBOARD IV	1	N	A	A	6	GA	MO	C-18009-C SH1 (A-2)	O	C	AI	DIAG	MOV		S-EPM-GEN-063	
												FE	R	RWCU-ROJ - 01	N1-ST-V17R	
												LTJ	60		N1-ST-TYC-003	
												RPI	MOV		S-EPM-GEN-063	
												STC	R		N1-ST-V17R	
IV-33-04 SUPPLY OUTBOARD IV	1	N	A	A	6	GA	MO	C-18009-C SH1 (A-2)	O	C	AI	DIAG	MOV		S-EPM-GEN-063	
												FE	R	RWCU-ROJ - 01	N1-ST-V17R	
												LTJ	60		N1-ST-TYC-003	
												RPI	MOV		S-EPM-GEN-063	
												STC	R		N1-ST-V17R	

Valve Table

DG - Diesel Generator Air Start, Fuel/Lube Oil Systems

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-96-107 DG 103 AIR START RELAY	N	Y	B	A	1.5	GA	AO	C-18026-C SH2 (F-3)	C	O	C	FE SKID-O	Q Q		N1-ST-Q16B N1-ST-Q16B	Note 9
BV-96-85 DG 102 AIR START RELAY	N	Y	B	A	1.5	GA	AO	C-18026-C SH1 (F-3)	C	O	C	FE SKID-O	Q Q		N1-ST-Q16A N1-ST-Q16A	Note 9
CKV-79.1-19 DG 102 L.O. COOLER DISCHARGE	N	Y	C	A	0.75	CK	SE	C-18026-C SH1 (E-4)	OC	OC	NA	SKID-F SKID-R	Q Q		N1-ST-Q16A N1-ST-Q16A	
CKV-79.1-38 DG 103 L.O. COOLER DISCHARGE	N	Y	C	A	0.75	CK	SE	C-18026-C SH2 (E-4)	OC	OC	NA	SKID-F SKID-R	Q Q		N1-ST-Q16B N1-ST-Q16B	
CKV-79-59 DG 102 COOLING WATER PUMP DISCHARGE	3	N	C	A	4	CK	SE	C-18026-C SH1 (B-5)	OC	O	NA	CO DI	Q CM		N1-ST-Q25 N1-MPM-GEN-242	CKV Program
CKV-79-60 DG 103 COOLING WATER PUMP DISCHARGE	3	N	C	A	4	CK	SE	C-18026-C SH2 (B-5)	OC	O	NA	CO DI	Q CM		N1-ST-Q25 N1-MPM-GEN-242	CKV Program
CKV-82-64 DG 103 FUEL STORAGE TANK VENT	N	Y	C	A	0.75	CK	SE	C-18026-C SH2 (B-3)	OC	O	NA	SKID-F	Q		N1-ST-Q16B	Note 9
CKV-82-73 DG 102 FUEL PUMP DISCHARGE	N	Y	C	A	0.5	CK	SE	C-18026-C SH1 (B-1)	OC	OC	NA	SKID-F SKID-R	Q Q		N1-ST-Q16A N1-ST-Q16A	
CKV-82-78 DG 103 FUEL PUMP DISCHARGE	N	Y	C	A	0.5	CK	SE	C-18026-C SH2 (B-1)	OC	OC	NA	SKID-F SKID-R	Q Q		N1-ST-Q16B N1-ST-Q16B	
CKV-82-79 DG 103 FUEL PUMP RECIRC	N	Y	C	A	0.75	CK	SE	C-18026-C SH2 (C-1)	OC	O	NA	SKID-F	Q		N1-ST-M4A	
CKV-82-80 DG 102 FUEL PUMP RECIRC	N	Y	C	A	0.5	CK	SE	C-18026-C SH1 (B-1)	OC	O	NA	SKID-F	Q		N1-ST-M4B	
CKV-82-85 DG 102 STORAGE TANK FILL	N	Y	C	A	0.75	CK	SE	C-18026-C SH1 (B-3)	OC	O	NA	SKID-F	Q		N1-ST-Q16A	Note 9
CKV-82-86 DG 103 STORAGE TANK FOOT	N	Y	C	A	1.5	CK	SE	C-18026-C SH1 (C-3)	OC	OC	NA	SKID-F SKID-R	Q Q		N1-ST-Q16A N1-ST-Q16A	Note 9

Valve Table

DG - Diesel Generator Air Start, Fuel/Lube Oil Systems

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-82-87	N	Y	C	A	1.5	CK	SE	C-18026-C SH2 (A-3)	OC	OC	NA	CC	Q		N1-ST-Q16B	Note 9
												CO	Q		N1-ST-Q16B	
DG 103 STORAGE TANK FOOT												SKID-R	Q		N1-ST-Q16B	
CKV-96-11	N	Y	C	A	0.75	SCK	SE	C-18026-C SH1 (E-1)	OC	C	NA	CC	Q		N1-ST-Q16A	
102-1 COMPRESSOR DISCHARGE																
CKV-96-12	N	Y	C	A	0.75	SCK	SE	C-18026-C SH1 (E-2)	OC	C	NA	CC	Q		N1-ST-Q16A	
102-2 COMPRESSOR DISCHARGE																
CKV-96-121	N	Y	C	A	0.375	CK	SE	C-18026-C SH1 (F-3)	OC	OC	NA	SKID-F	Q		N1-ST-Q16A	Note 9
												SKID-R	Q		N1-ST-Q16A	
DG 102 AIR START MOTOR CHECK																
CKV-96-122	N	Y	C	A	0.375	CK	SE	C-18026-C SH2 (F-3)	OC	OC	NA	SKID-F	Q		N1-ST-Q16B	Note 9
												SKID-R	Q		N1-ST-Q16B	
DG 103 AIR START MOTOR CHECK																
CKV-96-38	N	Y	C	A	0.75	SCK	SE	C-18026-C SH2 (E-1)	OC	C	NA	CC	Q		N1-ST-Q16B	
103-1 COMPRESSOR DISCHARGE																
CKV-96-39	N	Y	C	A	0.75	SCK	SE	C-18026-C SH2 (E-2)	OC	C	NA	CC	Q		N1-ST-Q16B	
103-2 COMPRESSOR DISCHARGE																
PSV-96-15	N	Y	C	A	0.5	RV	SE	C-18026-C SH1 (F-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-04												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-16	N	Y	C	A	0.5	RV	SE	C-18026-C SH1 (G-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-05												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-17	N	Y	C	A	0.5	RV	SE	C-18026-C SH1 (G-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-06												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-18	N	Y	C	A	0.5	RV	SE	C-18026-C SH1 (H-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-07												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Valve Table

DG - Diesel Generator Air Start, Fuel/Lube Oil Systems

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PSV-96-19	N	Y	C	A	0.5	RV	SE	C-18026-C SH1 (H-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-08												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-20	N	Y	C	A	0.5	RV	SE	C-18026-C SH1 (G-3)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
DG 102 AIR HEADER												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-44	N	Y	C	A	0.5	RV	SE	C-18026-C SH2 (F-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-31												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-45	N	Y	C	A	0.5	RV	SE	C-18026-C SH2 (G-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-32												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-46	N	Y	C	A	0.5	RV	SE	C-18026-C SH2 (G-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-33												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-47	N	Y	C	A	0.5	RV	SE	C-18026-C SH2 (H-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-34												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-48	N	Y	C	A	0.5	RV	SE	C-18026-C SH2 (H-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
TANK 96-35												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-96-49	N	Y	C	A	0.5	RV	SE	C-18026-C SH2 (G-3)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
												LL	10Y-S		N1-MSP-GEN-251	
DG 103 AIR HEADER												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
SOV-96-108	N	Y	B	A	0.375	TWV	SO	C-18026-C SH2 (F-3)	C	O	C	FE	Q		N1-ST-Q16B	Note 9
												SKID-O	Q		N1-ST-Q16B	
DG 103 PINION DRIVES																
SOV-96-86	N	Y	B	A	0.375	TWV	SO	C-18026-C SH1 (F-3)	C	O	C	FE	Q		N1-ST-Q16A	Note 9
												SKID-O	Q		N1-ST-Q16A	
DG 102 PINION DRIVES																
VLV-82-33	N	Y	B	A	1.5	GA	MAN	C-18026-C SH1 (C-3)	LC	O	NA	FE	R		N1-ST-R2	Note 10
1-1/2" GATE VALVE - TIE VALVE (PUMP SUCTION)																

Valve Table

DG - Diesel Generator Air Start, Fuel/Lube Oil Systems

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
VLV-82-34 1-1/2" GATE VALVE - TIE VALVE (PUMP SUCTION)	N	Y	B	A	1.5	GA	MAN	C-18026-C SH2 (A-3)	LC	O	NA	FE	R		N1-ST-R2	Note 10

Valve Table

EC - Emergency Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-05-05	2	N	B	A	1.5	GL	MO	C-18017-C (E-2)	C	OC	AI	DIAG FE RPI	MOV 2Y MOV		S-EPM-GEN-063 N1-ST-Q5 S-EPM-GEN-063	
BV-05-07 VENT	2	N	B	A	1.5	GL	MO	C-18017-C (E-3)	C	OC	AI	DIAG FE RPI	MOV 2Y MOV		S-EPM-GEN-063 N1-ST-Q5 S-EPM-GEN-063	
BV-60-03 MAKE-UP	3	N	B	A	4	GL	AO	C-18017-C (G-1)	C	OC	C	FC FE PI STC STO	Q Q 2Y Q Q		N1-ST-Q4 N1-ST-Q4 N1-ST-R11 N1-ST-Q4 N1-ST-Q4	
BV-60-04 MAKE-UP	3	N	B	A	4	GL	AO	C-18017-C (B-1)	C	OC	C	FC FE PI STC STO	Q Q 2Y Q Q		N1-ST-Q4 N1-ST-Q4 N1-ST-R11 N1-ST-Q4 N1-ST-Q4	
CKV-36-57 STM FLOW	1	N	C	A	0.75	EFV	SE	C-18017-C (A-6)	O	C	NA	BDO CC	R R	 EC-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-36-62 STM FLOW	1	N	C	A	0.75	EFV	SE	C-18017-C (A-6)	O	C	NA	BDO CC	R R	 EC-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-36-67 STM FLOW	1	N	C	A	0.75	EFV	SE	C-18017-C (A-6)	O	C	NA	BDO CC	R R	 EC-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-36-72 STM FLOW	1	N	C	A	0.75	EFV	SE	C-18017-C (A-6)	O	C	NA	BDO CC	R R	 EC-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-39-03 INBOARD IV	1	N	A/C	A	10	CK	SE	C-18017-C (D-6)	C	OC	NA	CC CO LTJ	CM CM 30		N1-MSP-039-001 N1-MSP-039-001 N1-ST-TYC-005	
CKV-39-04 INBOARD IV	1	N	A/C	A	10	CK	SE	C-18017-C (E-6)	C	OC	NA	CC CO LTJ	CM CM 30		N1-MSP-039-001 N1-MSP-039-001 N1-ST-TYC-005	
CKV-39-166 KEEPFULL	2	N	C	A	0.5	CK	SE	C-18017-C (C-6)	OC	C	NA	BDO CC	Q Q		N1-ST-Q5 N1-ST-Q5	
CKV-39-170 KEEPFULL	2	N	C	A	0.5	CK	SE	C-18017-C (F-6)	OC	C	NA	BDO CC	Q Q		N1-ST-Q5 N1-ST-Q5	

Valve Table

EC - Emergency Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-60-05	3	N	C	A	4	CK	SE	C-18017-C	OC	O	NA	BDC	CM		N1-ST-Q4	
								(B-1)				CO	CM		N1-ST-Q4	
MAKE-UP TANK INLET																
CKV-60-06	3	N	C	A	4	CK	SE	C-18017-C	OC	O	NA	BDC	CM		N1-ST-Q4	
								(G-1)				CO	CM		N1-ST-Q4	
MAKE-UP TANK INLET																
IV-05-01R	2	Y	B	A	1	GL	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(D-2)				FE	Q		N1-ST-Q4	
#11 INDIVIDUAL VENT												LK	2Y		N1-ST-TYC-025	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	
IV-05-02R	2	N	A	A	1	GL	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(D-1)				FE	Q		N1-ST-Q4	
COMMON VENT												LJ	2Y		N1-ST-TYC-025	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	
IV-05-03R	2	N	A	A	1	GL	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(D-1)				FE	Q		N1-ST-Q4	
COMMON VENT												LJ	2Y		N1-ST-TYC-025	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	
IV-05-04R	2	N	B	A	1	GL	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(E-2)				FE	Q		N1-ST-Q4	
#12 INDIVIDUAL VENT												LK	2Y		N1-ST-TYC-025	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	
IV-05-11	2	Y	B	A	1	GL	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(D-2)				FE	Q		N1-ST-Q4	
#11 INDIVIDUAL VENT												LK	2Y		N1-ST-TYC-025	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	
IV-05-12	2	Y	B	A	1	GL	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(E-2)				FE	Q		N1-ST-Q4	
#12 INDIVIDUAL VENT												LK	2Y		N1-ST-TYC-025	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	

Valve Table

EC - Emergency Cooling

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-39-05	1	N	A	A	10	GL	AO	C-18017-C	C	OC	O	FE	R	EC-ROJ - 02	N1-ST-V8	AOV Program
								(C-6)				FO	R	EC-ROJ - 02	N1-ST-V8	
OUTBOARD IV												LTJ	60		N1-ST-TYC-005	
												PI	2Y		N1-ST-R11	
												STC	R	EC-ROJ - 02	N1-ST-V8	
												STO	R	EC-ROJ - 02	N1-ST-V8	
IV-39-06	1	N	A	A	10	GL	AO	C-18017-C	C	OC	O	FE	R	EC-ROJ - 02	N1-ST-V8	AOV Program
								(F-6)				FO	R	EC-ROJ - 02	N1-ST-V8	
OUTBOARD IV												LTJ	60		N1-ST-TYC-005	
												PI	2Y		N1-ST-R11	
												STC	R	EC-ROJ - 02	N1-ST-V8	
												STO	R	EC-ROJ - 02	N1-ST-V8	
IV-39-07R	1	N	A	A	10	GA	MO	C-18017-C	O	OC	AI	DIAG	MOV		S-EPM-GEN-063	
								(D-4)				FE	2Y		N1-ST-Q4	
INBOARD IV												LTJ	30		N1-ST-TYC-005	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N1-ST-Q4	
IV-39-08R	1	N	A	A	10	GA	MO	C-18017-C	O	OC	AI	DIAG	MOV		S-EPM-GEN-063	
								(E-4)				FE	2Y		N1-ST-Q4	
INBOARD IV												LTJ	60		N1-ST-TYC-005	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N1-ST-Q4	
IV-39-09R	1	N	A	A	10	GA	MO	C-18017-C	O	OC	AI	DIAG	MOV		S-EPM-GEN-063	
								(D-4)				FE	2Y		N1-ST-Q4	
OUTBOARD IV												LTJ	60		N1-ST-TYC-005	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N1-ST-Q4	
IV-39-10R	1	N	A	A	10	GA	MO	C-18017-C	O	OC	AI	DIAG	MOV		S-EPM-GEN-063	
								(E-4)				FE	2Y		N1-ST-Q4	
OUTBOARD IV												LTJ	60		N1-ST-TYC-005	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N1-ST-Q4	
IV-39-11R	2	N	A	A	1	GA	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(B-4)				FE	Q		N1-ST-Q4	
DRAIN												LJ	2Y		N1-ST-TYC-026	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	
IV-39-12R	2	N	A	A	1	GA	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(B-4)				FE	Q		N1-ST-Q4	
DRAIN												LJ	2Y		N1-ST-TYC-026	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	

Valve Table

EC - Emergency Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-39-13R	2	N	A	A	1	GA	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(G-4)				FE	Q		N1-ST-Q4	
DRAIN												LJ	2Y		N1-ST-TYC-026	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	
IV-39-14R	2	N	A	A	1	GA	AO	C-18017-C	O	C	C	FC	Q		N1-ST-Q4	
								(G-4)				FE	Q		N1-ST-Q4	
DRAIN												LJ	2Y		N1-ST-TYC-026	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	
LCV-60-17	3	N	B	A	4	GL	AO	C-18017-C	OC	O	O	FE	Q		N1-ST-M2	
								(B-2)				FO	Q		N1-ST-M2	
LEVEL CONTROL												PI	2Y		N1-ST-R11	
LCV-60-18	3	N	B	A	4	GL	AO	C-18017-C	OC	O	O	FE	Q		N1-ST-M2	
								(G-2)				FO	Q		N1-ST-M2	
LEVEL CONTROL												PI	2Y		N1-ST-R11	
PSV-28.2-02	2	N	C	A	0.5	RV	SE	C-18017-C	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
								(B-6)				LL	10Y-S		N1-MSP-GEN-251	
CRD-KEEPFULL												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-28.2-08	2	N	C	A	0.5	RV	SE	C-18017-C	C	O	NA	LA	10Y-S		N1-MSP-GEN-251	
								(G-6)				LL	10Y-S		N1-MSP-GEN-251	
CRD-KEEPFULL												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Valve Table

ESW - Emergency Service Water

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-72-123 RX BLDG	3	N	B	A	4	GA	MAN	C-18022-C SH1 (A-2)	O	C	NA	FE	R		N1-ST-R28	
BV-72-70 RX BLDG	3	N	B	A	4	GA	MAN	C-18022-C SH1 (B-2)	O	C	NA	FE	R		N1-ST-R28	
CKV-72-11 ESW PUMP #12 DISCHARGE	3	N	C	A	14	CK	SE	C-18022-C SH1 (D-5)	OC	OC	NA	CC	Q	ESW-CSJ - 01	N1-ST-Q13	CKV Program
												CO	Q	ESW-CSJ - 01	N1-ST-Q13	
CKV-72-12 ESW PUMP #11 DISCHARGE	3	N	C	A	14	CK	SE	C-18022-C SH1 (C-5)	OC	OC	NA	CC	Q	ESW-CSJ - 01	N1-ST-Q13	CKV Program
												CO	Q	ESW-CSJ - 01	N1-ST-Q13	
CKV-72-21 SW HEADER CHECK	3	N	C	A	20	CK	SE	C-18022-C SH1 (D-2)	OC	C	NA	BDO	CS		N1-ST-V14	CKV Program
												CC	CS	ESW-CSJ - 01	N1-ST-V14	
CKV-72-22 SW HEADER CHECK	3	N	C	A	20	CK	SE	C-18022-C SH1 (D-3)	OC	C	NA	BDO	CS		N1-ST-V14	CKV Program
												CC	CS	ESW-CSJ - 01	N1-ST-V14	
IV-72-479 SW TO DW OUTBOARD IV	2	N	A	P	1	GL	MAN	C-18006-C SH3 (F-1)	LC	C	NA	LTJ	60		N1-ST-TYC-009	
IV-72-480 SW TO DW INBOARD IV	2	N	A	P	1	GL	MAN	C-18006-C SH3 (F-2)	LC	C	NA	LTJ	60		N1-ST-TYC-009	

Valve Table

FP - Spent Fuel Pool Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-49-53 COND LETDOWN	3	N	B	P	8	TWV	AO	C-18008-C (H-2)	C	C	C	PI	2Y		N1-ST-R11	
BV-54-12 FILTER INLET	3	N	B	A	6	BTF	AO	C-18008-C (E-5)	OC	OC	C	FC FE PI STC STO	Q Q 2Y Q Q		N1-ST-Q12 N1-ST-Q12 N1-ST-R11 N1-ST-Q12 N1-ST-Q12	
BV-54-13 FILTER INLET	3	N	B	A	6	BTF	AO	C-18008-C (E-4)	OC	OC	C	FC FE PI STC STO	Q Q 2Y Q Q		N1-ST-Q12 N1-ST-Q12 N1-ST-R11 N1-ST-Q12 N1-ST-Q12	
BV-54-16 COOLER RETURN	3	N	B	P	6	PGV	AO	C-18008-C (H-1)	O	O	O	PI	2Y		N1-ST-R11	
BV-54-17 SFP SUCTION	3	N	B	P	10	PGV	AO	C-18008-C (B-4)	O	O	O	PI	2Y		N1-ST-R11	
BV-54-18 PIT SUCTION	3	N	B	P	10	PGV	AO	C-18008-C (A-4)	C	C	C	PI	2Y		N1-ST-R11	
BV-54-34 SLUDGE	3	N	B	P	8	PGV	AO	C-18008-C (F-4)	C	C	C	PI	2Y		N1-ST-R11	
BV-54-35 SLUDGE	3	N	B	P	8	PGV	AO	C-18008-C (E-6)	C	C	C	PI	2Y		N1-ST-R11	
BV-54-37 PRE-COAT	3	N	B	P	3	BTF	AO	C-18008-C (F-4)	C	C	C	PI	2Y		N1-ST-R11	
BV-54-38 PRE-COAT	3	N	B	P	3	BTF	AO	C-18008-C (E-5)	C	C	C	PI	2Y		N1-ST-R11	
BV-54-39 FILTER VENT	3	N	B	P	3	BTF	AO	C-18008-C (F-4)	C	C	C	PI	2Y		N1-ST-R11	
BV-54-40 FILTER VENT	3	N	B	P	3	BTF	AO	C-18008-C (F-5)	C	C	C	PI	2Y		N1-ST-R11	

Valve Table

FP - Spent Fuel Pool Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-85-160 RW LETDOWN	3	N	B	P	6	GL	AO	C-18008-C (H-2)	C	C	C	PI	2Y		N1-ST-R11	
CKV-54-129 SIPHON BKR	3	Y	C	A	0.75	CK	SE	C-18008-C (B-1)	OC	O	NA	BDC CO	CM CM		N1-ST-Q23 N1-ST-Q23	
CKV-54-131 SIPHON BKR	3	N	C	A	2	CK	SE	C-18008-C (D-1)	OC	O	NA	DI	CM		N1-ST-Q12	
CKV-54-133 SIPHON BKR	3	N	C	A	2	CK	SE	C-18008-C (D-1)	OC	O	NA	DI	CM		N1-ST-Q12	
CKV-54-146 SIPHON BKR	3	Y	C	A	0.75	CK	SE	C-18008-C (D-1)	OC	O	NA	BDC CO	CM CM		N1-ST-Q23 N1-ST-Q23	
CKV-54-45 COOLER OUTLET	3	N	C	A	6	CK	SE	C-18008-C (H-5)	OC	O	NA	BDC CO	Q Q		N1-ST-Q12 N1-ST-Q12	CKV Program
CKV-54-46 COOLER OUTLET	3	N	C	A	6	CK	SE	C-18008-C (H-4)	OC	O	NA	BDC CO	Q Q		N1-ST-Q12 N1-ST-Q12	CKV Program
CKV-54-71 SPF INLET	3	N	C	A	6	CK	SE	C-18008-C (D-1)	OC	O	NA	BDC CO	CM CM		N1-ST-Q12 N1-ST-Q12	
CKV-54-72 SPF INLET	3	N	C	A	6	CK	SE	C-18008-C (C-1)	OC	O	NA	BDC CO	CM CM		N1-ST-Q12 N1-ST-Q12	
FCV-54-14 COOLER INLET	3	N	B	A	6	BTF	AO(MAN)	C-18008-C (F-5)	OC	O	NA	FE	Q		N1-ST-Q12	
FCV-54-15 COOLER INLET	3	N	B	A	6	BTF	AO(MAN)	C-18008-C (F-4)	OC	O	NA	FE	Q		N1-ST-Q12	

Valve Table

FW/HPCI - Feedwater

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-31-01R	1	N	A/C	A	18	CK	SE	C-18005-C SH2 (B-3)	OC	C	NA	BDO	R		Normal Ops	
OUTBOARD IV												CC	R	FW-ROJ - 01	N1-ST-TYC-002	
												LTJ	24		N1-ST-TYC-002	
CKV-31-02R	1	N	A/C	A	18	CK	SE	C-18005-C SH2 (B-3)	OC	C	NA	BDO	R		Normal Ops	
OUTBOARD IV												CC	R	FW-ROJ - 01	N1-ST-TYC-002	
												LTJ	24		N1-ST-TYC-002	
IV-31-07	1	N	A	A	18	GA	MO	C-18005-C SH2 (B-3)	O	C	AI	DIAG	MOV		S-EPM-GEN-063	
INBOARD IV												FE	2Y		N1-ST-V8	
												LTJ	30		N1-ST-TYC-002	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N1-ST-V8	
IV-31-08	1	N	A	A	18	GA	MO	C-18005-C SH2 (B-3)	O	C	AI	DIAG	MOV		S-EPM-GEN-063	
INBOARD IV												FE	2Y		N1-ST-V8	
												LTJ	30		N1-ST-TYC-002	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N1-ST-V8	

Valve Table

IA - Instrument Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-94-164	N	Y	B	A	3	BAL	AO	C-18011-C SH2 (F-2)	C	O	O	FE	Q		N1-ST-Q21	
AUTO BYPASS												FO	Q		N1-ST-Q21	
												PI	2Y		N1-ST-R11	
												STO	Q		N1-ST-Q21	
BV-94-201	N	Y	B	A	2	BAL	AO	C-18011-C SH2 (G-3)	OC	C	C	SKID-C	Q		N1-ST-Q21	
DRYER 94-169 EXHAUST																
BV-94-202	N	Y	B	A	2	BAL	AO	C-18011-C SH2 (F-3)	OC	C	C	SKID-C	Q		N1-ST-Q21	
DRYER 94-168 EXHAUST																
BV-94-206	N	Y	B	A	2	BAL	AO	C-18011-C SH2 (F-1)	C	C	O	SKID-O	Q		N1-ST-Q21	AOV Program
DRYER #11 BYPASS																
BV-94-208	N	Y	B	A	2	BAL	AO	C-18011-C SH2 (F-2)	OC	C	C	SKID-C	Q		N1-ST-Q21	
DRYER 94-168 EXHAUST																
BV-94-209	N	Y	B	A	2	BAL	AO	C-18011-C SH2 (G-2)	OC	C	C	SKID-C	Q		N1-ST-Q21	
DRYER 94-169 EXHAUST																
BV-94-91	N	Y	B	A	4	PGV	AO	C-18011-C SH2 (E-2)	O	C	C	FC	Q		N1-ST-Q21	
RECEIVER #11 / RECEIVER #12 INTER-TIE												FE	Q		N1-ST-Q21	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q21	
CKV-94-181	N	Y	C	A		CK	SE	C-18011-C SH1 (A-6)	OC	O	NA	SKID-F	Q		N1-ST-Q21	
#11 INTER-COOLER DRAIN CHECK																
CKV-94-191	N	Y	C	A	0.75	CK	SE	C-18011-C SH1 (A-6)	OC	O	NA	SKID-F	Q		N1-ST-Q21	
#12 INTER-COOLER DRAIN CHECK																
CKV-94-51	N	Y	C	A	3	CK	SE	C-18011-C SH2 (E-1)	OC	O	NA	CO	Q	IA-VRE - 01	N1-ST-Q21	CKV Program
#11 RECEIVER OUTLET																
PSV-94-05C	N	Y	C	A	0.75	RV	SE	C-18011-C SH2 (D-2)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
#11 AFTER-COOLER												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PSV-94-06C	N	Y	C	A	0.75	RV	SE	C-18011-C SH2 (D-4)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
#12 AFTER-COOLER												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Valve Table

IA - Instrument Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PSV-94-45 #11 INTER-COOLER	N	Y	C	A	0.75	RV	SE	C-18011-C SH2 (B-1)	C	OC	NA	LA LL RT VT	10Y 10Y 10Y 10Y		N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251	
PSV-94-47 #12 INTER-COOLER	N	Y	C	A	0.75	RV	SE	C-18011-C SH2 (B-3)	C	OC	NA	LA LL RT VT	10Y 10Y 10Y 10Y		N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251	
SOV-94-09 COMPRESSOR #11 COOLER INLET	3	Y	B	A	0.75	GA	SO	C-18011-C SH2 (C-1)	OC	O	O	SKID-O	Q		N1-ST-Q21	
SOV-94-10 COMPRESSOR #12 COOLER INLET	3	Y	B	A	0.75	GA	SO	C-18011-C SH2 (B-3)	OC	O	O	SKID-O	Q		N1-ST-Q21	

Valve Table

LP - Liquid Poison

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-42.1-02 INJECTION INBOARD IV	1	N	A/C	A	2	CK	SE	C-18019-C (A-4)	OC	OC	NA	CC CO LTJ	R R 24		N1-ST-TYC-006 N1-ST-C1 N1-ST-TYC-006	
CKV-42.1-03 INJECTION OUTBOARD IV	1	N	A/C	A	2	CK	SE	C-18019-C (B-4)	OC	OC	NA	CC CO LTJ	R R 24		N1-ST-TYC-006 N1-ST-C1 N1-ST-TYC-006	
CKV-42-19 PUMP #11 DISCHARGE	2	N	C	A	1.5	CK	SE	C-18019-C (E-4)	OC	OC	NA	CC CO	Q Q		N1-ST-Q8B N1-ST-Q8A	
CKV-42-20 PUMP #12 DISCHARGE	2	N	C	A	1.5	CK	SE	C-18019-C (E-5)	OC	OC	NA	CC CO	Q Q		N1-ST-Q8A N1-ST-Q8B	
EV-42-34 #12 SQUIB	2	N	D	A	1.5	EXV	EX	C-18019-C (C-5)	C	O	NA	EX	TS		N1-ESP-042-360	
EV-42-35 #11 SQUIB	2	N	D	A	1.5	EXV	EX	C-18019-C (C-4)	C	O	NA	EX	TS		N1-ESP-042-360	
PSV-42-36 PUMP #12	2	N	C	A	1	RV	SE	C-18019-C (E-4)	C	OC	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251	
PSV-42-37 PUMP #11	2	N	C	A	1	RV	SE	C-18019-C (E-3)	C	OC	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251	

Valve Table

MS - Main Steam System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-37-01 RX HEAD VENT	1	N	B	A	2	GA	MO	C-18002-C SH1 (D-2)	C	OC	AI	DIAG FE RPI	MOV 2Y MOV		S-EPM-GEN-063 N1-ST-V8 S-EPM-GEN-063	
BV-37-02 RX HEAD VENT	1	N	B	P	2	GA	MO	C-18002-C SH1 (D-2)	C	C	AI	PI	2Y		N1-ST-R11	
BV-37-06 RX HEAD VENT	1	N	B	A	2	GA	MO	C-18002-C SH1 (D-2)	C	OC	AI	DIAG FE RPI	MOV 2Y MOV		S-EPM-GEN-063 N1-ST-V8 S-EPM-GEN-063	
CKV-01-76 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18002-C SH1 (A-6)	O	C	NA	BDO CC	R R	 MS-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-01-77 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18002-C SH1 (A-6)	O	C	NA	BDO CC	R R	 MS-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-01-78 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18002-C SH1 (A-6)	O	C	NA	BDO CC	R R	 MS-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-01-79 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18002-C SH1 (A-6)	O	C	NA	BDO CC	R R	 MS-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
IV-01-01 INBOARD IV	1	N	A	A	24	GL	MO	C-18002-C SH1 (B-4)	O	C	AI	DIAG FE LTJ RPI	MOV 2Y 30 MOV		S-EPM-GEN-063 N1-ST-V8 N1-ST-TYC-001 S-EPM-GEN-063	
IV-01-02 INBOARD IV	1	N	A	A	24	GL	MO	C-18002-C SH1 (D-4)	O	C	AI	DIAG FE LTJ RPI	MOV 2Y 30 MOV		S-EPM-GEN-063 N1-ST-V8 N1-ST-TYC-001 S-EPM-GEN-063	
IV-01-03 OUTBOARD IV	1	N	A	A	24	GL	AO	C-18002-C SH1 (A-4)	O	C	C	FC FE LTJ PI STC	CS CS 30 2Y CS	MS-CSJ - 01 MS-CSJ - 01 MS-CSJ - 01	N1-ST-V8 N1-ST-V8 N1-ST-TYC-001 N1-ST-R11 N1-ST-V8	Note 12
IV-01-04 OUTBOARD IV	1	N	A	A	24	GL	AO	C-18002-C SH1 (E-4)	O	C	C	FC FE LTJ PI STC	CS CS 30 2Y CS	MS-CSJ - 01 MS-CSJ - 01 MS-CSJ - 01	N1-ST-V8 N1-ST-V8 N1-ST-TYC-001 N1-ST-R11 N1-ST-V8	Note 12

Valve Table

MS - Main Steam System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PSV-01-119A	1	N	C	A	6	RV	SE	C-18002-C	C	OC	NA	LA	6Y-S	MS-VR - 01	N1-MSP-001-249	
								SH1 (C-1)				LL	6Y-S	MS-VR - 01	N1-MSP-001-249	
RX SAFETY A												RT	6Y-S	MS-VR - 01	N1-MSP-001-249	
												VT	6Y-S	MS-VR - 01	N1-MSP-001-249	
PSV-01-119B	1	N	C	A	6	RV	SE	C-18002-C	C	OC	NA	LA	6Y-S	MS-VR - 01	N1-MSP-001-249	
								SH1 (C-1)				LL	6Y-S	MS-VR - 01	N1-MSP-001-249	
RX SAFETY B												RT	6Y-S	MS-VR - 01	N1-MSP-001-249	
												VT	6Y-S	MS-VR - 01	N1-MSP-001-249	
PSV-01-119C	1	N	C	A	6	RV	SE	C-18002-C	C	OC	NA	LA	6Y-S	MS-VR - 01	N1-MSP-001-249	
								SH1 (C-1)				LL	6Y-S	MS-VR - 01	N1-MSP-001-249	
RX SAFETY C												RT	6Y-S	MS-VR - 01	N1-MSP-001-249	
												VT	6Y-S	MS-VR - 01	N1-MSP-001-249	
PSV-01-119D	1	N	C	A	6	RV	SE	C-18002-C	C	OC	NA	LA	6Y-S	MS-VR - 01	N1-MSP-001-249	
								SH1 (C-1)				LL	6Y-S	MS-VR - 01	N1-MSP-001-249	
RX SAFETY D												RT	6Y-S	MS-VR - 01	N1-MSP-001-249	
												VT	6Y-S	MS-VR - 01	N1-MSP-001-249	
PSV-01-119F	1	N	C	A	6	RV	SE	C-18002-C	C	OC	NA	LA	6Y-S	MS-VR - 01	N1-MSP-001-249	
								SH1 (C-1)				LL	6Y-S	MS-VR - 01	N1-MSP-001-249	
RX SAFETY F												RT	6Y-S	MS-VR - 01	N1-MSP-001-249	
												VT	6Y-S	MS-VR - 01	N1-MSP-001-249	
PSV-01-119G	1	N	C	A	6	RV	SE	C-18002-C	C	OC	NA	LA	6Y-S	MS-VR - 01	N1-MSP-001-249	
								SH1 (C-1)				LL	6Y-S	MS-VR - 01	N1-MSP-001-249	
RX SAFETY G												RT	6Y-S	MS-VR - 01	N1-MSP-001-249	
												VT	6Y-S	MS-VR - 01	N1-MSP-001-249	
PSV-01-119H	1	N	C	A	6	RV	SE	C-18002-C	C	OC	NA	LA	6Y-S	MS-VR - 01	N1-MSP-001-249	
								SH1 (C-1)				LL	6Y-S	MS-VR - 01	N1-MSP-001-249	
RX SAFETY H												RT	6Y-S	MS-VR - 01	N1-MSP-001-249	
												VT	6Y-S	MS-VR - 01	N1-MSP-001-249	
PSV-01-119J	1	N	C	A	6	RV	SE	C-18002-C	C	OC	NA	LA	6Y-S	MS-VR - 01	N1-MSP-001-249	
								SH1 (C-1)				LL	6Y-S	MS-VR - 01	N1-MSP-001-249	
RX SAFETY J												RT	6Y-S	MS-VR - 01	N1-MSP-001-249	
												VT	6Y-S	MS-VR - 01	N1-MSP-001-249	
PSV-01-119M	1	N	C	A	6	RV	SE	C-18002-C	C	OC	NA	LA	6Y-S	MS-VR - 01	N1-MSP-001-249	
								SH1 (C-1)				LL	6Y-S	MS-VR - 01	N1-MSP-001-249	
RX SAFETY M												RT	6Y-S	MS-VR - 01	N1-MSP-001-249	
												VT	6Y-S	MS-VR - 01	N1-MSP-001-249	

Valve Table

NEU - Transversing Incore Probe (TIP)

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-201.2-39 TIP N2 SUPPLY OUTBOARD IV	2	N	A/C	A	0.75	CK	SE	C-18014-C SH2 (E-1)	OC	C	NA	BDO LTJ	CM 60		N1-OP-39 N1-ST-TYC-019	
CKV-201.2-40 TIP N2 SUPPLY INBOARD IV	2	N	A/C	A	0.75	CK	SE	C-18014-C SH2 (E-1)	OC	C	NA	BDO LTJ	CM 60		N1-OP-39 N1-ST-TYC-019	
EV-36-151 TIP SHEAR	2	N	D	A	0.5	EXV	EX		O	C	NA	EX	2Y-S		N1-ISP-092-402	
EV-36-152 TIP SHEAR	2	N	D	A	0.5	EXV	EX		O	C	NA	EX	2Y-S		N1-ISP-092-402	
EV-36-153 TIP SHEAR	2	N	D	A	0.5	EXV	EX		O	C	NA	EX	2Y-S		N1-ISP-092-402	
EV-36-154 TIP SHEAR	2	N	D	A	0.5	EXV	EX		O	C	NA	EX	2Y-S		N1-ISP-092-402	
SOV-36-147 TIP BALL INBOARD IV	2	N	A	A	0.5	BAL	SO		C	C	C	FC FE LTJ PI STC	Q Q 24 2Y Q		N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-004 N1-ST-R11 N1-ST-Q5	
SOV-36-148 TIP BALL INBOARD IV	2	N	A	A	0.5	BAL	SO		C	C	C	FC FE LTJ PI STC	Q Q 24 2Y Q		N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-004 N1-ST-R11 N1-ST-Q5	
SOV-36-149 TIP BALL INBOARD IV	2	N	A	A	0.5	BAL	SO		C	C	C	FC FE LTJ PI STC	Q Q 24 2Y Q		N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-004 N1-ST-R11 N1-ST-Q5	
SOV-36-150 TIP BALL INBOARD IV	2	N	A	A	0.5	BAL	SO		C	C	C	FC FE LTJ PI STC	Q Q 24 2Y Q		N1-ST-Q5 N1-ST-Q5 N1-ST-TYC-004 N1-ST-R11 N1-ST-Q5	

Valve Table

PCS - Primary Containment Vacuum Relief

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-68-01	2	N	AC	A	30	VRV	SE	C-18006-C	C	OC	NA	LL	2Y		N1-ST-R10	
								SH2 (D-3)				RT	2Y		N1-ST-SA6	
TORUS TO DW VACUUM BKR												VP	2Y		N1-ST-SA6	
												VR	2Y		N1-ST-SA6	
BV-68-02	2	N	AC	A	30	VRV	SE	C-18006-C	C	OC	NA	LL	2Y		N1-ST-R10	
								SH2 (E-3)				RT	2Y		N1-ST-SA6	
TORUS TO DW VACUUM BKR												VP	2Y		N1-ST-SA6	
												VR	2Y		N1-ST-SA6	
BV-68-03	2	N	AC	A	30	VRV	SE	C-18006-C	C	OC	NA	LL	2Y		N1-ST-R10	
								SH2 (E-3)				RT	2Y		N1-ST-SA6	
TORUS TO DW VACUUM BKR												VP	2Y		N1-ST-SA6	
												VR	2Y		N1-ST-SA6	
BV-68-04	2	N	AC	A	30	VRV	SE	C-18006-C	C	OC	NA	LL	2Y		N1-ST-R10	
								SH2 (E-3)				RT	2Y		N1-ST-SA6	
TORUS TO DW VACUUM BKR												VP	2Y		N1-ST-SA6	
												VR	2Y		N1-ST-SA6	
IV-68-05	2	N	A/C	A	30	VRV	SE	C-18006-C	C	OC	NA	LL	2Y		N1-ST-TYC-008	
								SH2 (F-2)				LTJ	24		N1-ST-TYC-008	
RB TO TORUS OUTBOARD IV												RT	R		N1-ST-SA6	
												VP	R		N1-ST-SA6	
												VR	R		N1-ST-SA6	
IV-68-06	2	N	A/C	A	30	VRV	SE	C-18006-C	C	OC	NA	LL	2Y		N1-ST-TYC-008	
								SH2 (F-2)				LTJ	24		N1-ST-TYC-008	
RB TO TORUS OUTBOARD IV												RT	R		N1-ST-SA6	
												VP	R		N1-ST-SA6	
												VR	R		N1-ST-SA6	
IV-68-07	2	N	A/C	A	30	VRV	SE	C-18006-C	C	OC	NA	LL	2Y		N1-ST-TYC-008	
								SH2 (F-2)				LTJ	24		N1-ST-TYC-008	
RB TO TORUS OUTBOARD IV												RT	R		N1-ST-SA6	
												VP	R		N1-ST-SA6	
												VR	R		N1-ST-SA6	
IV-68-08	2	N	A	A	30	BTF	AO	C-18006-C	C	OC	O	FE	Q		N1-ST-Q5	
								SH2 (F-2)				FO	Q		N1-ST-Q5	
RB TO TORUS INBOARD IV												LTJ	24		N1-ST-TYC-008	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
												STO	Q		N1-ST-Q5	

Valve Table

PCS - Primary Containment Vacuum Relief

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-68-09	2	N	A	A	30	BTF	AO	C-18006-C SH2 (F-2)	C	OC	O	FE	Q		N1-ST-Q5	
RB TO TORUS INBOARD IV												FO	Q		N1-ST-Q5	
												LTJ	24		N1-ST-TYC-008	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
												STO	Q		N1-ST-Q5	
IV-68-10	2	N	A	A	30	BTF	AO	C-18006-C SH2 (F-2)	C	OC	O	FE	Q		N1-ST-Q5	
RB TO TORUS INBOARD IV												FO	Q		N1-ST-Q5	
												LTJ	24		N1-ST-TYC-008	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
												STO	Q		N1-ST-Q5	

Valve Table

RBCLC - Reactor Building Closed Loop Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-70-53 RBCLC to SDC ISOLATION	3	N	B	P	14	GA	AO	C-18022-C SH2 (H-4)	C	C	C	PI	2Y		N1-ST-R11	
BV-70-66 PASS SAMPLE COLLER RETURN	3	N	B	A	0.75	BAL	MAN	C-18041-C SH7 (E-6)	O	C	NA	FE	R		N1-ST-R28	
BV-70-67 PASS SAMPLE COOLER SUPPLY	3	N	B	A	0.75	BAL	MAN	C-18041-C SH7 (F-6)	O	C	NA	FE	R		N1-ST-R28	
BV-70-68 RBCLC TO SF HX #11	3	N	B	A	6	GL	AO	C-18008-C (H-3)	OC	O	O	FE FO PI STO	Q Q 2Y Q		N1-ST-Q12 N1-ST-Q12 N1-ST-R11 N1-ST-Q12	
BV-70-69 RBCLC TO SF HX #11	3	N	B	A	6	GL	AO	C-18008-C (H-5)	OC	O	O	FE FO PI STO	Q Q 2Y Q		N1-ST-Q12 N1-ST-Q12 N1-ST-R11 N1-ST-Q12	
CKV-70-04 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18022-C SH2 (A-6)	OC	OC	NA	CC CO	CS CS	 RBCLC-CSJ - 01	N1-ST-V7 N1-ST-V7	CKV Program
CKV-70-05 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18022-C SH2 (B-6)	OC	OC	NA	CC CO	CS CS	 RBCLC-CSJ - 01	N1-ST-V7 N1-ST-V7	CKV Program
CKV-70-06 PUMP DISCHARGE	3	N	C	A	12	CK	SE	C-18022-C SH2 (C-6)	OC	OC	NA	CC CO	CS CS	 RBCLC-CSJ - 01	N1-ST-V7 N1-ST-V7	CKV Program
CKV-70-257 EMERG. MAKE-UP	3	Y	C	A	6	CK	SE	C-18022-C SH3 (D-2)	OC	C	NA	CC DI	CM CM		N1-ST-C27 N1-MPM-GEN-242	
CKV-70-442 NORMAL MAKE-UP	3	N	C	A	1.5	CK	SE	C-18022-C SH3 (D-2)	OC	C	NA	CC DI	CM CM		N1-ST-C27 N1-MPM-GEN-242	
CKV-70-449 LOOP SEAL CHECK	3	N	C	A	1.5	CK	SE	C-18022-C SH3 (D-1)	C	OC		DI	CM		N1-MPM-GEN-242	
CKV-70-93 RRP SUPPLY	2	N	C	A	4	CK	SE	C-18022-C SH2 (C-4)	OC	C	NA	BDO CC	R R	 RBCLC-ROJ - 01	N1-ST-R18 N1-ST-R18	CKV Program

Valve Table

RBCLC - Reactor Building Closed Loop Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-70-95	2	N	C	A	8	CK	SE	C-18022-C SH2 (E-4)	O	C	NA	BDO	R		N1-ST-R18	CKV Program
AIR COOLER SUPPLY												CC	R	RBCLC-ROJ - 01	N1-ST-R18	
FCV-70-650	3	N	B	A	4	PGV	MO	C-18047-C (G-1)	OC	O	O	DIAG	MOV		S-EPM-GEN-063	
CHILLER INLET												FE	2Y		N1-ST-Q19	
												RPI	MOV		S-EPM-GEN-063	
FCV-70-651	3	N	B	A	4	PGV	MO	C-18047-C (E-1)	OC	O	O	DIAG	MOV		S-EPM-GEN-063	
CHILLER INLET												FE	2Y		N1-ST-Q19	
												RPI	MOV		S-EPM-GEN-063	
IV-70-92	2	N	B	A	4	GA	MO	C-18022-C SH2 (B-4)	O	C	AI	DIAG	MOV		S-EPM-GEN-063	
RRP RETURN												FE	CS		N1-ST-V7	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N1-ST-V7	
IV-70-94	2	N	B	A	8	GA	MO	C-18022-C SH2 (C-4)	O	C	AI	DIAG	MOV		S-EPM-GEN-063	
AIR COOLER RETURN												FE	CS		N1-ST-V7	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N1-ST-V7	
PRV-70-364	2	N	C	A	0.75	RV	SE	C-18022-C SH2 (D-3)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
DRYWELL CLR RV												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-70-365	2	N	C	A	0.75	RV	SE	C-18022-C SH2 (D-3)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
DRYWELL CLR RV												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-70-366	2	N	C	A	0.75	RV	SE	C-18022-C SH2 (D-3)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
DRYWELL CLR RV												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-70-367	2	N	C	A	0.75	RV	SE	C-18022-C SH2 (D-2)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
DRYWELL CLR RV												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-70-368	2	N	C	A	0.75	RV	SE	C-18022-C SH2 (D-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
DRYWELL CLR RV												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-70-369	2	N	C	A	0.75	RV	SE	C-18022-C SH2 (D-1)	C	OC	NA	LA	10Y-S		N1-MSP-GEN-251	
DRYWELL CLR RV												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Valve Table

RBCLC - Reactor Building Closed Loop Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PSV-70-347 SDC HX RV	3	N	C	A	3	RV	SE	C-18018-C SH1 (D-1)	C	OC	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251	
PSV-70-348 SDC HX RV	3	N	C	A	3	RV	SE	C-18018-C SH1 (D-3)	C	OC	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251	
PSV-70-349 SDC HX RV	3	N	C	A	3	RV	SE	C-18018-C SH1 (D-5)	C	OC	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251 N1-MSP-GEN-251	
VLV-70-47 RW RETURN	3	N	B	A	6	GA	MAN	C-18022-C SH2 (A-4)	O	C	NA	FE	R		N1-ST-R28	
VLV-70-48 RW SUPPLY	3	N	B	A	6	GA	MAN	C-18022-C SH2 (A-4)	O	C	NA	FE	R		N1-ST-R28	
VLV-70-631 OXYGEN INJECTION MANUAL ISOLATION	3	N	B	A	0.50	GA	MAN	C-18022-C SH2 (D-6)	O	C	NA	FE	R		N1-ST-R28	

Valve Table

RBV - Reactor Building Ventilation

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
BV-202-15 SUPPLY FAN INLET	N	Y	B	A	54	BTF	AO	C-18013-C (B-3)	OC	C	C	PI STC	2 YR Q		N1-ST-R11 N1-ST-Q20	
BV-202-31 EXHAUST FAN INLET	N	Y	B	A	54	BTF	AO	C-18013-C (F-2)	OC	C	C	PI STC	2 YR Q		N1-ST-R11 N1-ST-Q20	

Valve Table

RR - Reactor Recirculation

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-32-100 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-106 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-112 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-118 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-125 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-131 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-138 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-144 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-151 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-157 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-164 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-170 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-5)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11
CKV-32-177 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18020-C (A-5)	O	C	NA	BDO CC	R R	 RR-ROJ - 01	N1-ISP-201-009 N1-ISP-201-009	Note 11

Valve Table

RR - Reactor Recirculation

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-32-183	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-204	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-210	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-215	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-221	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-226	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-232	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-237	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-243	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-248	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-254	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-5)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-64	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-6)				CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-70	1	N	C	A	0.75	EFV	SE	C-18020-C	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve								(A-6)				CC	R	RR-ROJ - 01	N1-ISP-201-009	

Valve Table

RR - Reactor Recirculation

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-32-76	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve												CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-82	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve												CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-88	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve												CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-32-94	1	N	C	A	0.75	EFV	SE	C-18020-C (A-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve												CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-44.1-07	1	N	C	A	0.75	EFV	SE	C-18015-C (E-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve												CC	R	RR-ROJ - 01	N1-ISP-201-009	
CKV-44.1-12	1	N	C	A	0.75	EFV	SE	C-18015-C (E-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve												CC	R	RR-ROJ - 01	N1-ISP-201-009	

Valve Table

RXVI - Reactor Vessel Instrumentation

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-36-120 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-125 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-130 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-135 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-140 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-145 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-160 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-165 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-170 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-175 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-48 Excess Flow Check Valve	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	
CKV-36-509 BACKFILL	N	Y	A/C	A	0.25	CK	SE	C-18016-C SH3 (E-2)	OC	C	NA	BDO	R	CRD-ROJ - 03	N1-ISP-036-500	Note 13
												CC	R	CRD-ROJ - 03	N1-ISP-036-500	
												LK	R		N1-ISP-036-500	

Valve Table

RXVI - Reactor Vessel Instrumentation

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-36-510	N	Y	A/C	A	0.25	CK	SE	C-18016-C SH3 (F-2)	OC	C	NA	BDO	R	CRD-ROJ - 03	N1-ISP-036-500	Note 13
BACKFILL												CC	R	CRD-ROJ - 03	N1-ISP-036-500	
												LK	R		N1-ISP-036-500	
CKV-36-511	N	Y	A/C	A	0.25	CK	SE	C-18016-C SH3 (E-3)	OC	C	NA	BDO	R	CRD-ROJ - 03	N1-ISP-036-500	Note 13
BACKFILL												CC	R	CRD-ROJ - 03	N1-ISP-036-500	
												LK	R		N1-ISP-036-500	
CKV-36-512	N	Y	A/C	A	0.25	CK	SE	C-18016-C SH3 (F-3)	OC	C	NA	BDO	R	CRD-ROJ - 03	N1-ISP-036-500	Note 13
BACKFILL												CC	R	CRD-ROJ - 03	N1-ISP-036-500	
												LK	R		N1-ISP-036-500	
CKV-36-513	N	Y	A/C	A	0.25	CK	SE	C-18016-C SH3 (E-5)	OC	C	NA	BDO	R	CRD-ROJ - 03	N1-ISP-036-500	Note 13
BACKFILL												CC	R	CRD-ROJ - 03	N1-ISP-036-500	
												LK	R		N1-ISP-036-500	
CKV-36-514	N	Y	A/C	A	0.25	CK	SE	C-18016-C SH3 (F-5)	OC	C	NA	BDO	R	CRD-ROJ - 03	N1-ISP-036-500	Note 13
BACKFILL												CC	R	CRD-ROJ - 03	N1-ISP-036-500	
												LK	R		N1-ISP-036-500	
CKV-36-53	1	N	C	A	0.75	EFV	SE	C-18015-C (D-6)	O	C	NA	BDO	R		N1-ISP-201-009	Note 11
Excess Flow Check Valve												CC	R	RXVI-ROJ - 01	N1-ISP-201-009	

Valve Table

SDC - Shutdown Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CKV-38-12 OUTBOARD IV	1	N	A/C	A	14	CK	SE	C-18018-C SH1 (A-3)	OC	C	NA	BDO CC LW	R R 30		N1-OP-4 N1-ST-C13 N1-ST-C13	
CKV-38-165 OUTBOARD SDC WATER SEAL CHECK PIV	2	N	A/C	A	0.75	CK	SE	C-18018-C SH2 (C-3)	OC	OC	NA	CC CO LK	Q Q 24 M	 GV-RR - 3	N1-ST-Q1B N1-ST-Q1B N1-ST-V10A	
CKV-38-166 OUTBOARD SDC WATER SEAL CHECK PIV	2	N	A/C	A	0.75	CK	SE	C-18018-C SH2 (C-4)	OC	OC	NA	CC CO LK	Q Q 24 M	 GV-RR - 3	N1-ST-Q1B N1-ST-Q1B N1-ST-V10A	
CKV-38-167 OUTBOARD SDC WATER SEAL CHECK PIV	2	N	A/C	A	0.75	CK	SE	C-18018-C SH2 (C-1)	OC	OC	NA	CC CO LK	Q Q 24 M	 GV-RR - 3	N1-ST-Q1A N1-ST-Q1A N1-ST-V10A	
CKV-38-168 OUTBOARD SDC WATER SEAL CHECK PIV	2	N	A/C	A	0.75	CK	SE	C-18018-C SH2 (C-2)	OC	OC	NA	CC CO LK	Q Q 24 M	 GV-RR - 3	N1-ST-Q1A N1-ST-Q1A N1-ST-V10A	
CKV-38-169 INBOARD SDC WATER SEAL CHECK PIV	1	N	A/C	A	0.75	CK	SE	C-18007-C SH2 (D-3)	OC	OC	NA	CC CO LK	Q Q 24 M	 GV-RR - 3	N1-ST-Q1B N1-ST-Q1B N1-ST-V10A	
CKV-38-170 INBOARD SDC WATER SEAL CHECK PIV	1	N	A/C	A	0.75	CK	SE	C-18007-C SH2 (D-4)	OC	OC	NA	CC CO LK	Q Q 24 M	 GV-RR - 3	N1-ST-Q1B N1-ST-Q1B N1-ST-V10A	
CKV-38-171 INBOARD SDC WATER SEAL CHECK PIV	1	N	A/C	A	0.75	CK	SE	C-18007-C SH2 (D-1)	OC	OC	NA	CC CO LK	Q Q 24 M	 GV-RR - 3	N1-ST-Q1A N1-ST-Q1A N1-ST-V10A	
CKV-38-172 INBOARD SDC WATER SEAL CHECK PIV	1	N	A/C	A	0.75	CK	SE	C-18007-C SH2 (D-2)	OC	OC	NA	CC CO LK	Q Q 24 M	 GV-RR - 3	N1-ST-Q1A N1-ST-Q1A N1-ST-V10A	
CKV-38-216 INBOARD IV	1	N	C	A	0.75	CK	SE	C-18018-C SH1 (H-4)	OC	OC	NA	CC CO	R R	SDC-ROJ - 01 SDC-ROJ - 01	N1-ST-C13 N1-ST-C13	Note 15
IV-38-01 INBOARD IV	1	N	A	P	14	GA	MO	C-18018-C SH1 (H-3)	C	C	AI	LW PI STC	AJ 2Y 2Y		N1-ST-C13 N1-ST-R11 N1-ST-V8	Notes 14
IV-38-02 OUTBOARD IV	1	N	A	P	14	GA	MO	C-18018-C SH1 (H-3)	C	C	AI	LW PI STC	AJ 2Y 2Y		N1-ST-C13 N1-ST-R11 N1-ST-V8	Notes 14

Valve Table

SDC - Shutdown Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-38-13 INBOARD IV	1	N	A	P	14	GA	MO	C-18018-C SH1 (A-3)	C	C	AI	LW PI STC	AJ 2Y 2Y		N1-ST-C13 N1-ST-R11 N1-ST-V8	Note 14

Valve Table

SS - Sampling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
DISK-110-640	1	N	D	A	1	RD	SE	C-18020-C	C	O	NA	LJ-B	30		N1-ST-TYC-011	
								(H-1)				RD	5Y		Work Order from PMST	
RUPTURE DISK																
IV-110-127	1	N	A	A	1	GL	MO	C-18020-C	C	C	AI	DIAG	MOV		S-EPM-GEN-063	
								(G-1)				FE	2Y		N1-ST-Q4	
INBOARD IV												LTJ	60		N1-ST-TYC-011	
												RPI	MOV		S-EPM-GEN-063	
IV-110-128	1	N	A	A	1	GL	MO	C-18020-C	C	C	AI	DIAG	MOV		S-EPM-GEN-063	
								(G-1)				FE	2Y		N1-ST-Q4	
OUTBOARD IV												LTJ	30		N1-ST-TYC-011	
												RPI	MOV		S-EPM-GEN-063	
IV-122-03	1	N	A	A	1	GL	AO	C-18041-C	C	C	C	FC	Q		N1-ST-Q4	AOV Program
								SH7 (A-3)				FE	Q		N1-ST-Q4	
OUTBOARD IV												LTJ	60		N1-ST-TYC-013	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q4	

Valve Table

WDS - Waste Disposal

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IV-83.1-09	2	N	A	A	3	GA	MO	C-18045-C SH7 (B-1)	O	C	AI	DIAG	MOV		S-EPM-GEN-063	
DWEDT INBOARD IV												FE	Q		N1-ST-Q5	
												LTJ	60		N1-ST-TYC-009	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q5	
IV-83.1-10	2	N	A	A	3	GL	AO	C-18045-C SH7 (E-1)	O	C	C	FC	Q		N1-ST-Q5	AOV Program
DWEDT OUTBOARD IV												FE	Q		N1-ST-Q5	
												LTJ	60		N1-ST-TYC-009	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
IV-83.1-11	2	N	A	A	4	GA	MO	C-18045-C SH9 (E-1)	O	C	AI	DIAG	MOV		S-EPM-GEN-063	
DWFDT INBOARD IV												FE	Q		N1-ST-Q5	
												LTJ	60		N1-ST-TYC-009	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N1-ST-Q5	
IV-83.1-12	2	N	A	A	4	GL	AO	C-18045-C SH9 (E-1)	O	C	C	FC	Q		N1-ST-Q5	AOV Program
DWFDT OUTBOARD IV												FE	Q		N1-ST-Q5	
												LTJ	60		N1-ST-TYC-009	
												PI	2Y		N1-ST-R11	
												STC	Q		N1-ST-Q5	
PRV-83.1-32	N	Y	C	A	0.75	RV	SE	C-18045-C SH7 (D-1)	C	O	NA	LA	10Y-S		N1-MSP-GEN-251	
PRESSURE RELIEF VALVE FOR DRYWELL EQUIPMENT DRAIN SUMP PUMP DISCHARGE												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-83.1-33	N	Y	C	A	0.75	RV	SE	C-18045-C SH9 (D-1)	C	O	NA	LA	10Y-S		N1-MSP-GEN-251	
PRESSURE RELIEF VALVE FOR DRYWELL FLOOR DRAIN SUMP PUMP DISCHARGE												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	
PRV-83.1-35	2	N	C	A	0.75	RV	SE	C-18045-C SH9 (E-1)	C	O	NA	LA	10Y-S		N1-MSP-GEN-251	
PRESSURE RELIEF VALVE FOR PENETRATION X-25												LJ	AJ		N1-ST-TYC-010	
												LL	10Y-S		N1-MSP-GEN-251	
												RT	10Y-S		N1-MSP-GEN-251	
												VT	10Y-S		N1-MSP-GEN-251	

Attachment 16 – Unit 1

Check Valve Condition Monitoring Plan Index

CVCM PLAN NUMBER	**REV #**	**TITLE**
ADS-001	0	ERV 10 Inch Vacuum Breaker CVCM Program
CNS-001	0	Condensate Transfer Makeup to SFP CVCM Program
CRD-001	0	CRD Outboard Containment Isolation Check Valve
CRD-002	0	CRD Inboard CIV Check Valve CVCM Program
CRS-001	0	CS Topping Pump Discharge Check Valves CVCM Program
CRS-002	0	CS Vacuum Breaker Check Valves CVCM Program
CRS-003	0	Not Used
CRS-004	0	Core Spray PEN X-13a and PEN X-14 Over-Pressure Check Valves
CTN-001	0	H2-O2 Sampling CIV Check Valves CVCM Program
CTN-SP-001	0	Containment Spray Pump Discharge Check Valve CVCM Program
CTN-SP-002	0	Containment Spray CIV Check Valves CVCM Program
CTN-SP-003	0	Containment Spray Raw Water Pump Discharge Check Valves
CTN-SP-004	0	Containment Spray Heat Exchanger Raw Water Supply Check Valves CVCM Program
CTN-SP-005	0	Containment Spray to Torus Check Valves
CU-001	0	RWCU CIV Check Valve CVCM Program
EC-001	0	EC CIV Check Valves CVCM Program
EC-002	0	Condensate Transfer Makeup to EC Check Valves CVCM Program
EDG-001	0	Diesel Generator Cooling Water 4” CVCM
FP-001	0	Fuel Pool Siphon Breaker Check Valves CVCM Program
FP-002	0	Fuel Pool Cooling Return Header Check Valves CVCM Program
FP-003	0	Reactor Head Cavity Vacuum Breaker Check Valves CVCM Program
LP-001	0	Liquid Poison CIV Check Valves CVCM Program
NEU-001	0	TIP N2 Supply CIV Check Valves CVCM Program
RBCLC-001	0	CLC to RBCLC Emergency Makeup Check Valve CVCM Program
RBCLC-002	0	CLC to RBCLC Normal Makeup Check Valve CVCM Program
RBCLC-003	0	RBCLC Loop Seal Vacuum Breaker Check Valve CVCM Program
SDC-001	0	Shutdown Cooling CIV Check Valve CVCM Program

Attachment 1 – Unit 2

System Name / Code / P&ID

SYSTEM NAME	CODE	P&ID(s)
Breathing Air	AAS	ISPT-020E
Alternate Drywell Cooling	ADH	ISPT-115A
Reactor Building Closed Loop Cooling	CCP	ISPT-013A,B,C,D,E
Containment Atmosphere Monitoring	CMS	ISPT-082A,B
Primary Containment Purge	CPS	ISPT-061A,B
High Pressure Core Spray	CSH	ISPT-033A,B
Low Pressure Core Spray	CSL	ISPT-032A
Drywell Equipment Drains	DER	ISPT-067A
Drywell Floor Drains	DFR	ISPT-063E
Diesel Generator Starting Air	EGA	ISPT-104A
Diesel Generator Fuel Oil	EGF	ISPT-104B,C
Diesel Generator Lubricating Oil	EGO	ISPT-104F
Diesel Generator Jacket Cooling Water	EGS	ISPT-104D,E
Fire Protection Water	FPW	ISPT-043G
Feedwater	FWS	ISPT-006B
Nitrogen / Containment Inerting	GSN	ISPT-105B
Standby Gas Treatment	GTS	ISPT-061A,B,C
Hydrogen Recombiner	HCS	ISPT-062B
Control Building Chilled Water	HVK	ISPT-053A
Instrument Air	IAS	ISPT-019D,E,F,G,J,L,M
Reactor Core Isolation Cooling	ICS	ISPT-035A,B,C,D
Reactor Vessel Instrumentation	ISC	ISPT-028A,B,C
Containment Leakage Monitoring	LMS	ISPT-081A
Main Steam System	MSS	ISPT-001A,B,C,D,E,F,J
Neutron Monitoring System	NMS	ISPT-EM38A,C,E
Reactor Coolant System	RCS	ISPT-029A,B,C
Control Rod Drive Hydraulics	RDS	ISPT-030B,C
Residual Heat Removal	RHS	ISPT-031A,B,C,D,E,F,G
Service Air System	SAS	ISPT-019D,E,F,G,J,L,M
Spent Fuel Pool Cooling	SFC	ISPT-038A,B,C,D
Standby Liquid Injection	SLS	ISPT-036A
Main Steam Line SRV Vacuum Breakers	SVV	ISPT-001D
Service Water System	SWP	ISPT-011A,B,C,D,E,F,G ISPT-011H,J,L,M,P,Q

Attachment 2 – Unit 2

Pump Relief Request Index

Pump Relief Request Index

RELIEF REQUEST NUMBER	RELIEF REQUEST TITLE	APPROVAL DATE
None		

Attachment 3 – Unit 2

Pump Relief Requests

NONE

Attachment 4 – Unit 2

Valve Relief Request Index

Valve Relief Request Index

RELIEF REQUEST NUMBER	RELIEF REQUEST TITLE	APPROVAL DATE
GV-RR-03	Elapsed Time Between Successive Openings of PIVs (This Relief Request is contained in the Unit 1 Section)	11/13/2018
GV-RR-08	Excess Flow Check Valve Testing Frequency	9/17/2001*
MSS-RR-01	Reactor Pressure Vessel Safety Relief Valve Testing	11/13/2018

*GV-RR-08 was approved for the duration of the term of the original NMP2 operating license (until 10/31/2026)

Attachment 5 – Unit 2

Valve Relief Requests

10 CFR 50.55a Request Number: GV-RR-08 (Unit 2)

Proposed Alternative

In Accordance with 10 CFR 50.55a(a)(3)(i)

-- Alternative Provides Acceptable Level of Quality and Safety --

ASME Code Component(s) Affected

Component ID	Class	Cat.	System	Label
2CSH*EFV3	2	C	CSH	Instrument Line to 2CSH*PDT109
2CSL*EFV1	2	C	CSL	Instrument Line to 2CSL*PDT132 & 2RHS*PDT18A
2ICS*EFV1	2	C	ICS	Instrument Line to 2ICS*PDT167; *PDS167; *PT167X
2ICS*EFV2	2	C	ICS	Instrument Line to 2ICS*PDT167; *PT167Y
2ICS*EFV3	2	C	ICS	Instrument Line to 2ICS*PDT168; *PT168X
2ICS*EFV4	2	C	ICS	Instrument Line to 2ICS*PDT168; *PT168Y
2ICS*EFV5	2	C	ICS	Instrument Line to 2ICS*PT142, *PT143
2ISC*EFV1	2	C	ISC	Instrument Line To 2ISC*PDT110; LT105
2ISC*EFV10	2	C	ISC	Instrument Line To 2ISC*LT8C; LT8D; LT9B; LT9D; LT11B; LT112; PDI31B
2ISC*EFV11	2	C	ISC	Instrument Line to 2ISC*FT47K; *FT48B
2ISC*EFV13	2	C	ISC	Instrument Line to 2ISC*FT47H
2ISC*EFV14	2	C	ISC	Instrument Line to 2ISC*PDI103; 2ISC-FT47s in RCS Loop A
2ISC*EFV15	2	C	ISC	Instrument Line to 2ISC*LT10C; LT10A; LT11C
2ISC*EFV17	2	C	ISC	Instrument Line to 2ISC*PDI31A; LT11D; LT101; LT9A; LT9C; LT8A; LT8B
2ISC*EFV18	2	C	ISC	Instrument Line to 2ISC-FT47J; FT48A
2ISC*EFV2	2	C	ISC	Instrument Line to 2ISC*PT113; PT115; PT4B;PI3B; PT2C; PT2D; PT6B
2ISC*EFV20	2	C	ISC	Instrument Line to 2ISC-FT47E
2ISC*EFV21	2	C	ISC	Instrument Line to 2ISC-PDT114; 2CSH*PDT109; 2RDS-PDT114; PDT117
2ISC*EFV22	2	C	ISC	Instrument Line to 2ISC-PDT114; FT47B; 2WCS-FT134; 2ISC-FT47s, RCS Loop B
2ISC*EFV23	2	C	ISC	Instrument Line to 2ISC-FT48C
2ISC*EFV24	2	C	ISC	Instrument Line to 2ISC-FT48D
2ISC*EFV25	2	C	ISC	Instrument Line to 2ISC-FT47L
2ISC*EFV26	2	C	ISC	Instrument Line to 2ISC-FT47C
2ISC*EFV27	2	C	ISC	Instrument Line to 2ISC-FT47A
2ISC*EFV28	2	C	ISC	Instrument Line to 2ISC-FT47R
2ISC*EFV29	2	C	ISC	Instrument Line to 2ISC-FT47G
2ISC*EFV3	2	C	ISC	Instrument Line to 2ISC*LT7C; PDT14C; PT4C; PT122
2ISC*EFV30	2	C	ISC	Instrument Line to 2ISC-FT47N
2ISC*EFV31	2	C	ISC	Instrument Line to 2ISC-FT48A
2ISC*EFV32	2	C	ISC	Instrument Line to 2ISC-FT47T
2ISC*EFV33	2	C	ISC	Instrument Line to 2ISC-FT47V; 2ISC-FT48C
2ISC*EFV34	2	C	ISC	Instrument Line to 2ISC-FT47B
2ISC*EFV35	2	C	ISC	Instrument Line to 2ISC-FT47D
2ISC*EFV36	2	C	ISC	Instrument Line to 2ISC-FT47F

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ASME Code Component(s) Affected (cont.):

Component ID	Class	Cat.	System	Label
2ISC*EFV37	2	C	ISC	Instrument Line to 2ISC-FT47S
2ISC*EFV38	2	C	ISC	Instrument Line to 2ISC-FT47M
2ISC*EFV39	2	C	ISC	Instrument Line to 2ISC-FT47P
2ISC*EFV4	2	C	ISC	Instrument Line to 2ISC*LT7C; PDT14C; LT12B; LT7B; PDT14B; LT105; PDT110
2ISC*EFV40	2	C	ISC	Instrument Line to 2ISC-FT48B
2ISC*EFV41	2	C	ISC	Instrument Line to 2ISC-FT47U
2ISC*EFV42	2	C	ISC	Instrument Line to 2ISC-FT47W; 2ISC-FT48D
2ISC*EFV5	2	C	ISC	Instrument Line to 2ISC*PT102; PT5A; PT2B; PT2A; PI3A; PT4D; PT5D; PT6A
2ISC*EFV6	2	C	ISC	Instrument Line to 2ISC*PT4A; PT109; PT108; PDT14A; LT7A; LT115
2ISC*EFV7	2	C	ISC	Instrument Line to 2ISC*LT7D; LT12A; PDT14A; LT7A; LT115
2ISC*EFV8	2	C	ISC	Instrument Line to 2ISC*LT11A; LT10B; LT10D
2MSS*EFV1A	2	C	MSS	Instrument Line to 2MSS*FT14A; FT15A
2MSS*EFV1B	2	C	MSS	Instrument Line to 2MSS*FT14B; FT15B
2MSS*EFV1C	2	C	MSS	Instrument Line to 2MSS*FT14C; FT15C
2MSS*EFV1D	2	C	MSS	Instrument Line to 2MSS*FT14D; FT15D
2MSS*EFV2A	2	C	MSS	Instrument Line to 2MSS*FT11A; FT12A; FT13A
2MSS*EFV2B	2	C	MSS	Instrument Line to 2MSS*FT11B; FT12B; FT13B
2MSS*EFV2C	2	C	MSS	Instrument Line to 2MSS*FT11C; FT12C; FT13C
2MSS*EFV2D	2	C	MSS	Instrument Line to 2MSS*FT11D; FT12D; FT13D
2MSS*EFV3A	2	C	MSS	Instrument Line to 2MSS*FT11A; FT12A; FT13A
2MSS*EFV3B	2	C	MSS	Instrument Line to 2MSS*FT11B; FT12B; FT13B
2MSS*EFV3C	2	C	MSS	Instrument Line to 2MSS*FT11C; FT12C; FT13C
2MSS*EFV3D	2	C	MSS	Instrument Line to 2MSS*FT11D; FT12D; FT13D
2MSS*EFV4A	2	C	MSS	Instrument Line to 2MSS*FT14A; FT15A
2MSS*EFV4B	2	C	MSS	Instrument Line to 2MSS*FT14B; FT15B
2MSS*EFV4C	2	C	MSS	Instrument Line to 2MSS*FT14C; FT15C
2MSS*EFV4D	2	C	MSS	Instrument Line to 2MSS*FT14D; FT15D
2RCS*EFV45A	2	C	RCS	Instrument Line to 2RCS*FT7A; FT9A
2RCS*EFV45B	2	C	RCS	Instrument Line to 2RCS*FT7B; FT9B
2RCS*EFV46A	2	C	RCS	Instrument Line to 2RCS*FT7A; FT9A
2RCS*EFV46B	2	C	RCS	Instrument Line to 2RCS*FT7B; FT9B
2RCS*EFV47A	2	C	RCS	Instrument Line to 2RCS*FT6A; FT8A
2RCS*EFV47B	2	C	RCS	Instrument Line to 2RCS*FT6B; FT8B
2RCS*EFV48A	2	C	RCS	Instrument Line to 2RCS*FT6A; FT8A
2RCS*EFV48B	2	C	RCS	Instrument Line to 2RCS*FT6B; FT8B
2RCS*EFV52A	2	C	RCS	Instrument Line to 2RCS*PDT15A
2RCS*EFV52B	2	C	RCS	Instrument Line to 2RCS*PDT15B
2RCS*EFV53A	2	C	RCS	Instrument Line to 2RCS*PDT15A
2RCS*EFV53B	2	C	RCS	Instrument Line to 2RCS*PDT15B
2RCS*EFV62A	2	C	RCS	Instrument Line to 2RCS*PI44A

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ASME Code Component(s) Affected (cont.):

Component ID	Class	Cat.	System	Label
2RCS*EFV62B	2	C	RCS	Instrument Line to 2RCS*PI44B
2RCS*EFV63A	2	C	RCS	Instrument Line to 2RCS*PI42A
2RCS*EFV63B	2	C	RCS	Instrument Line to 2RCS*PI42B
2RHS*EFV5	2	C	RHS	Instrument Line to 2RHS*PDT18B
2RHS*EFV6	2	C	RHS	Instrument Line to 2RHS*PDT18B
2RHS*EFV7	2	C	RHS	Instrument Line to 2RHS*PDT18A
2WCS*EFV221	2	C	WCS	Instrument Line to 2WCS-FT134
2WCS*EFV222	2	C	WCS	Instrument Line to 2WCS*FT67X; PDS115
2WCS*EFV223	2	C	WCS	Instrument Line to 2WCS*FT67Y
2WCS*EFV224	2	C	WCS	Instrument Line to 2WCS*FT67Y
2WCS*EFV300	2	C	WCS	Instrument Line to 2WCS*FT67X; PDS115

Applicable Code Edition and Addenda

ASME Section XI 1989 Edition, ASME/ANSI OM-1987 w/ OMa-1988 Addenda

Applicable Code Requirement

Check valves shall be full-stroke exercised nominally every 3 months in accordance with OM-10, paragraph 4.3.2.1, except as provided in paragraph 4.3.2.2. Full stroke exercising may be limited to refueling outages in accordance with 4.3.2.2(e).

Valves with remote position indicators shall be observed locally at least once every two years to verify that valve operation is accurately indicated in accordance with OM-10, paragraph 4.1.

Reason for Request

Pursuant to 10CFR50.55a(a)(3)(i), authorization is requested to implement an alternative to the requirements of OM-10, paragraphs 4.1 and 4.3.2.2(e), which specify that position indication of valves be observed at least once every two years; and full-stroke exercising of check valves be conducted during each refueling outage, respectively. The proposed alternative is to conduct exercising and valve position verification tests on a sampling basis; that is, an approximately equal number of EFCVs every refueling outage and each EFCV at least once every ten years. The bases for the proposed alternative testing are consistent with approved generic Improved Technical Specification change TSTF-334 and GE Nuclear Energy topical report NEDO-32977-A, dated June 2000.

EFCVs are installed on reactor instrumentation lines penetrating containment to minimize leakage in the unlikely event of an instrument line break downstream of the EFCV outside containment. Installation of EFCVs conforms to Regulatory Guide 1.11. These valves cannot be exercised closed during normal power operation since closing these valves would isolate instrumentation required for power operation. These valves are verified to close by testing performed during each refueling outage.

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An EFCV is basically a spring-loaded ball check valve with a notched disc. Since the system is normally in a static condition, the valve ball is held open by the spring. A sudden increase in flow (i.e., line break) will result in differential pressure across the valve disc, and result in forces that overcome the spring force and close the valve.

The valve is designed to allow leakage past the seat in the closed position to equalize pressure across the valve when the excess flow condition is corrected, thus allowing the spring to reopen the valve. Functional testing of valve closure is accomplished by venting the instrument side of the valve while the process side is under pressure and observing the position indicator, and by verifying that the leakage rate slows. Following system restoration, the valve reopens and verification of open position indication is performed.

The test methods described above are identical for the proposed alternative testing. EFCVs have been extremely reliable throughout the industry (reference GE Nuclear Energy topical report NEDO-32977-A, "Excess Flow Check Valve Testing Relaxation," June 2000). Consistent with the data presented in the topical report, 602 as-found surveillance tests conducted over a total aggregate time of 1075 valve years resulted in two as-found failures of EFCVs to check at Nine Mile Point Unit 2 (NMP2). Based on NMP2's experience to date, the calculated upper limit failure rate for these valves is 6.7E-07/hr. The failure rate demonstrates the high reliability of these valves and that NMP2's experience is comparable to that of the 12 BWR plants upon which the topical report was based. The total plant release frequency for a random break of any of the 87 NMP2 reactor instrumentation lines and a concurrent failure of the line's EFCV to close to isolate the break has been calculated in accordance with the method described in NEDO-32977-A. The increase in release frequency due to the relaxed frequency of EFCV testing is considered to be insignificant. In addition, the consequences of an unisolable rupture of a reactor instrumentation line have been evaluated in NMP2 Updated Safety Analysis Report (USAR) Section 15.6.2 without crediting the EFCV function, and the calculated offsite exposures are substantially below the guidelines of 10 CFR 100. Therefore, considering the historically high reliability of the EFCVs and their low risk significance and radiological consequences should they fail, the alternative testing of a representative sample, rather than each EFCV, during each refueling outage provides an acceptable level of quality and safety, in accordance with 10CFR50.55a(a)(3)(i).

Proposed Alternative and Basis for Use

EFCV reverse flow exercising and position indication verification will be conducted by testing a representative sample of EFCVs every refueling outage, such that each EFCV will be tested at least once every 10 years.

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Duration of Proposed Alternative

This alternative was authorized by the NRC on September 17, 2001 (reference TAC No. MB1491). This alternative is authorized for use for the duration of the term of the original operating license (October 31, 2026). Therefore, it does not need to be renewed for the 3rd Interval. This approved alternative works in conjunction with Technical Specification Amendment No. 96, approved July 12, 2001 (reference TAC No. MB0301). All EFCVs were tested in RFO-06 and in RFO-07; the 10 year interval for EFCVs subject to GV-RR-08 begins in RFO-08.

Precedents

This alternative was authorized by the NRC on September 17, 2001 (reference TAC No. MB1491).

Authorization

This Relief Request was previously approved for the duration of the term of the Nine Mile Point, Unit 2 operating License (until October 31, 2026) and further NRC review is not required. (Reference: TAC NOS. MD9202 and MD9203).

Proposed Alternative in Accordance with 10 CFR 50.55a(z)(1)
MSS-VR-01 – Reactor Pressure Vessel Safety Relief Valve Testing

1. ASME Code Component(s) Affected

The following main steam safety relief valves (MSSRVs) are affected:

Component	Description	Class	Category
2MSS*PSV120	MAIN STEAM SRV	1	C
2MSS*PSV121	MAIN STEAM SRV (ADS)*	1	C
2MSS*PSV122	MAIN STEAM SRV	1	C
2MSS*PSV123	MAIN STEAM SRV	1	C
2MSS*PSV124	MAIN STEAM SRV	1	C
2MSS*PSV125	MAIN STEAM SRV	1	C
2MSS*PSV126	MAIN STEAM SRV (ADS)	1	C
2MSS*PSV127	MAIN STEAM SRV (ADS)	1	C
2MSS*PSV128	MAIN STEAM SRV	1	C
2MSS*PSV129	MAIN STEAM SRV (ADS)	1	C
2MSS*PSV130	MAIN STEAM SRV (ADS)	1	C
2MSS*PSV131	MAIN STEAM SRV	1	C
2MSS*PSV132	MAIN STEAM SRV	1	C
2MSS*PSV133	MAIN STEAM SRV	1	C
2MSS*PSV134	MAIN STEAM SRV (ADS)	1	C
2MSS*PSV135	MAIN STEAM SRV	1	C
2MSS*PSV136	MAIN STEAM SRV	1	C
2MSS*PSV137	MAIN STEAM SRV (ADS)	1	C

*ADS = Automatic Depressurization System

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

Mandatory Appendix I, Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants, paragraph I-1320, Test Frequencies, Class 1 Pressure Relief Valves, (a)*5-Yr Test Interval*, states, "Class 1 pressure relief valves shall be tested at least once every 5 yr,

3. Applicable Code Requirement (cont.)

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 the relief valve requirements of the ASME OM Code listed above. The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety.

Appendix I, Section I-1320(a) of the ASME OM-2012 Code states, in part, that Class 1 pressure relief valves shall be tested at least once every 5 years, starting with initial electric power generation. This section also states a minimum of 20% of the pressure relief valves are tested within any 24-month interval and that the test interval for any individual valve shall not exceed 5 years. The required tests ensure that the Safety Relief Valves (SRVs), which are located on each of the Main Steam (MS) lines between the reactor vessel and the first isolation valve within the drywell, will open at the pressures assumed in the safety analysis.

The SRVs are Dikkers / Model G471-6/125.04 (18 SRVs installed) in four (4) steam lines. The SRVs are designed to actuate by either of two modes - the safety mode or the ADS mode. In the safety mode, the valve will open when reactor pressure exceeds a specific spring set-pressure. In the ADS mode, the valve will automatically open upon receipt of an overpressure signal (seven of the eighteen valves support this ADS function). The proposed changes do not impact either the safety mode of operation or the ADS mode of operation.

The SRVs have shown acceptable test history at NMPNS Unit 2 (NMP2) as described in Section 5 below. However, given the current 24-month operating cycle at NMP2, Exelon Generation Company, LLC (Exelon) would be required to remove and test approximately half of the SRVs every refueling outage in order to ensure that all valves are removed and tested in compliance with the ASME OM-2012 Code requirements for testing Class 1 pressure relief valves within a 5-year interval. With a 5-year interval, NMP2 would be required to remove all 18 SRVs over 2 refuel cycles (i.e., 4 years). However, consistent with the previously approved alternative MSS-VR-01, Revision 1 (ML15345A006), approval of extending the test interval to 6.5 years will reduce the number of SRVs removed during an individual outage, such that the full scope of 18 SRVs are replaced over 3 refuel cycles (i.e., 6 years, plus 6 months grace). This is consistent with the test interval and grace period described in ASME Code Case OMN-17, *Alternate Rules Class 1 Pressure/Safety Valves*, and continues to provide an acceptable level of quality and safety while restoring the operational and maintenance flexibility that was lost when the 24-month fuel cycle produced the unintended consequence of additional testing burden. Without Code relief, the incremental outage work due to the inclusion of the additional 2 - 3 SRVs per outage would be contrary to the principle of maintaining radiation dose As Low As Reasonably Achievable (ALARA). The removal and replacement of the additional 2 - 3 SRVs per outage without Code relief results in an additional exposure of approximately 2 - 4 Rem each outage. Additionally, the grace period allows for flexibility in the scheduling of as-left and as-found set-pressure testing,

4. Reason for Request (cont.)

which is based on a test-to-test frequency.

In accordance with 10 CFR 50.55a(z)(1), Exelon requests approval of an alternative to the 5-year test interval requirements of ASME OM Code, Appendix I, Section I-1320(a) for the SRVs at NMP2. Exelon requests that the test interval be increased from 5 years to 6.5 years. All other requirements of the applicable ASME OM Code would be met.

5. Proposed Alternative and Basis for Use

As an alternative to the Code required 5-year test interval per Appendix I, paragraph I-1320(a), Exelon proposes that the subject Class 1 pressure relief valves be tested at least once every three (3) refueling cycles (approximately 6 years/72 months) with a minimum of 20% of the valves tested within any 24-month interval. This 20% would consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve would not exceed 72 months except that a 6-month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods and certification of the valve prior to installation.

As-found testing using steam and subsequent valve maintenance are currently performed at an off-site test facility. Subsequent to completion of as-found testing, each SRV in the removed complement is disassembled to perform inspections and a complete valve overhaul. Any SRV that failed the as-found set-pressure test is inspected to determine the cause of the test failure. Valve overhaul is performed to ensure that parts are free of defects resulting from time related degradation or service induced wear. All identified adverse conditions are corrected, the disc and seats are lapped, and the valve is reassembled. Each SRV is then recertified for service through inspection and testing consistent with ASME OM Code requirements, including set-pressure, seat tightness, stroke time and disc lift verifications, solenoid coil pick up/drop out, and air actuator integrity tests.

After recertification testing, the SRVs are stored at the test facility for future use. The storage area is inspected and maintained to the requirements of ANSI/ASME N45.2.2,*Packing, Handling, Shipping, Storage and Handling of Items for Nuclear Power Plants*, which will minimize the potential for any valve degradation.

The SRV as-found set-pressure test data in Tables 1 and 2 demonstrates that the maintenance practices previously employed by NMP2 were effective. In the Spring 2010, prior to the RFO12 refueling outage, testing of the SRVs began at an offsite testing facility. These results are reflected in Table 2.

Only one as-found set-pressure test failure (2002) has been experienced during the time period encompassed by the data in Table 1. Note that testing performed on SRVs removed during these RFOs utilized nitrogen, with a correlated set-pressure. The data in Table 1 also illustrates that SRVs that have exceeded 6 years between tests still demonstrated acceptable as-found set-pressure test results. Additionally, there were a total of four (4) as-found set-pressure failures experienced in 2010 (Table 2), which were determined not to be a result of set-pressure drift or a hardware degradation issue. The cause, which was determined to be common among the four (4) SRVs, was minor inaccuracies associated with the correlation used to establish the as-left set-

5. Proposed Alternative and Basis for Use (cont.)

pressure using nitrogen, and the as-found set-pressure using saturated steam.

6. Duration of Proposed Alternative

This request, upon approval, will be applied to the NMP2 Fourth 10-Year Interval, which is scheduled to begin January 1, 2019, and conclude on December 31, 2028.

7. Precedence

1. This relief request was previously authorized for use during the third 10-year interval at NMP2, as documented in letter from NRC (T. L. Tate) to Exelon Generation Company, LLC (B. Hanson), "Nine Mile Point Nuclear Station, Unit 2 – Safety Evaluation by the Office of the Nuclear Reactor Regulation for Relief Request MSS-VR-01, Revision 1 (CAC No. MF5773)," dated January 29, 2016 (ML15345A006).

2. This relief request was previously authorized for use via MSS-VR-01 during the third 10-year interval for NMP2, as documented in letter from NRC (M. G. Kowal) to Nine Mile Point Nuclear Station, LLC (K. J. Polson), "Nine Mile Point Nuclear Station – Safety Evaluation of Relief Requests for the Unit No. 1 Fourth 10-Year and Unit No. 2 Third 10-Year Pump and Valve Inservice Testing Program (TAC Nos. MD9202 and MD9203),"dated December 29, 2008 (ML083500039).

3. Peach Bottom Atomic Power Station, Units 2 and 3–Safety Evaluation of Relief Request 01A-VRR-3 Regarding the Fourth 10-Year Interval of the Inservice Testing Program (TAC Nos. MF2509 and MF2510), dated April 30, 2014 (ML14094A051).

4. This alternative was authorized for use at NMP2 for the remainder of the second 10-year interval via letter from NRC (M. Banerjee) to Niagara Mohawk Power Corporation (J. H. Mueller), "Nine Mile Point Nuclear Station, Unit 2 – Alternative [GV-RR-07] to American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Regarding Inservice Testing of Main Steam Safety/Relief Valves (TAC No. MB0290),"dated April 17, 2001 (ML010880286).

8. References

1. ASME OM Code Case OMN-17, *Alternate Rules Class 1 Pressure/Safety Valves*

2. ANSI/ASME N45.2.2, *Packing, Handling, Shipping, Storage and Handling of Items for Nuclear Power Plants*

Table 1
Main Steam SRVs Test Results for NMP2 Refueling Outages RFO7 (2000) through RFO11 (2008) (1)

SRV Tested	Serial No.	Set-Pressure (psig)	As-Found Set-Pressure Test Results (psig)	Correlated Set-Pressure (psig)	Correlated Max Set-Pressure +3% (psig)	Correlated Min Set-Pressure -3% (psig)	Accept/ Reject	Time from Last Test (Years)
Refueling Outage 11, April 2008								
2MSS*PSV126	160965	1195	1212	1215	1248	1181	Accept	6.77
2MSS*PSV127	160956	1205	1220	1224.9	1258.7	1190.9	Accept	6.79
2MSS*PSV128	160972	1165	1162	1184	1217	1151	Accept	8.42
2MSS*PSV131	160961	1175	1200	1194	1227	1161	Accept	6.77
2MSS*PSV132	160915	1185	1182	1205	1238	1171.4	Accept	6.77
2MSS*PSV135	160964	1195	1197	1215	1248	1181	Accept	10.1
Refueling Outage 10, April 2006								
2MSS*PSV120	160935	1185	1203	1205	1238	1171	Accept	6.44
2MSS*PSV121	160966	1195	1224	1215	1248	1181	Accept	6.40
2MSS*PSV122	160951	1185	1222	1204	1238	1171	Accept	8.11
2MSS*PSV125	160968	1185	1194	1205	1238	1171	Accept	8.12
2MSS*PSV129	160971	1205	1225	1225	1258	1191	Accept	6.42
2MSS*PSV133	160958	1165	1176	1184	1217	1151	Accept	4.78
Refueling Outage 9, April 2004								
2MSS*PSV123	160960	1175	1191	1195.2	1228	1162	Accept	7.19
2MSS*PSV124	160974	1175	1193	1195.2	1228	1162	Accept	4.43
2MSS*PSV130	160936	1195	1193	1215.5	1249	1181	Accept	7.21
2MSS*PSV134	160954	1205	1225	1225	1259	1191.6	Accept	7.92
2MSS*PSV136	160973	1175	1189	1195.2	1228	1162	Accept	6.11
2MSS*PSV137	160905	1205	1239	1225.7	1259.7	1191.6	Accept	6.12
Refueling Outage 8, March 2002								
2MSS*PSV121	160939	1195	1219	1214	1248	1180	Accept	4.09
2MSS*PSV126	160967	1195	1189	1214	1247	1180	Accept	5.88
2MSS*PSV127	160955	1205	1201	1224	1258	1190	Accept	5.90
2MSS*PSV128	160903	1165	1176	1184	1216	1151	Accept	4.08
2MSS*PSV129	160904	1205	1220	1224	1258	1190	Accept	4.08
2MSS*PSV132	160953	1185	1181	1204	1237	1171	Accept	5.16
2MSS*PSV134	160970	1205	1192	1224	1258	1190	Accept	5.18
2MSS*PSV135(2)	160976	1195	1170	1214	1247	1180	Reject	5.16
2MSS*PSV131(2)	160962	1175	1186	1194	1227	1161	Accept	5.17
2MSS*PSV133(2)	160959	1165	1169	1184	1216	1151	Accept	5.18

Table 1 (Cont.)
Main Steam SRVs Test Results for NMP2 Refueling
Outages RFO7 (2000) through RFO11 (2008) (1)

SRV Tested	Serial No.	Set-Pressure (psig)	As-Found Set-Pressure Test Results (psig)	Correlated Set-Pressure (psig)	Correlated Max Set-Pressure +3% (psig)	Correlated Min Set-Pressure -3% (psig)	Accept/ Reject	Time from Last Test (Years)
Refueling Outage 7, March 2000								
2MSS*PSV120	160915	1185	1219	1204	1238	1171	Accept	3.90
2MSS*PSV121	160965	1195	1231	1215	1248	1181	Accept	3.90
2MSS*PSV122	160950	1185	1222	1204	1238	1171	Accept	3.94
2MSS*PSV123	160963	1175	1208	1194	1227	1161	Accept	3.92
2MSS*PSV124	160906	1175	1189	1194	1227	1161	Accept	3.92
2MSS*PSV125	160952	1185	1220	1204	1238	1171	Accept	3.90
2MSS*PSV128	160958	1165	1193	1184	1217	1151	Accept	3.94
2MSS*PSV129	160956	1205	1214	1225	1258	1191	Accept	3.16
2MSS*PSV135	160975	1195	1244	1215	1248	1181	Accept	3.88
2MSS*PSV136	160961	1175	1221	1194	1227	1161	Accept	3.93
2MSS*PSV137	160954	1205	1222	1225	1259	1191	Accept	3.88

Notes: (1) Testing was performed at the NMP2 onsite test facility using nitrogen as the test medium.

(2) SRV 2MSS*PSV135 (SN 160976) failed the as-found set-pressure test (relieved early) during Refueling Outage 8. Two additional valves (2MSS*PSV131 (SN 160962) and 2MSS*PSV133 (SN 160959)) were tested per Code requirements, and both passed. The cause for this failure was determined to be set-pressure drift. Minor adjustments were made to restore the set-pressure to the acceptance range. No additional causes for the set-pressure drift were found during valve maintenance. The valve was refurbished and re-certified.

Table 2
Main Steam SRVs Test Results for NMP2 Refueling
Outage RFO12 (2010) (1)

SRV Tested	**Serial No.**	**Set-Pressure (psig)**	**As-Found Set-Pressure Test Results (psig)**	**Max Set-Pressure +3%(psig)**	**Min Set-Pressure -3% (psig)**	**Accept/ Reject**	**Time from Last Test (Years)**
Refueling Outage 12, April 2010(1)							
2MSS*PSV120	160953	1185	1229	1220.5	1149.4	Reject	7.38
2MSS*PSV121	160967	1195	1226	1230.9	1159	Accept	7.29
2MSS*PSV122	160952	1185	1217	1220.5	1149.4	Accept	9.76
2MSS*PSV123	160914	1175	1193	1210	1139.7	Accept	13.03
2MSS*PSV124	160906	1175	1212	1210	1139.7	Reject	9.70
2MSS*PSV125	160950	1185	1220	1220.5	1149.4	Accept	9.75
2MSS*PSV126	160939	1195	1229	1230.9	1159	Accept	7.44
2MSS*PSV127	160905	1205	1234	1241	1174.4	Accept	5.30
2MSS*PSV128	160903	1165	1196	1199.9	1130	Accept	7.46
2MSS*PSV129	160904	1205	1234	1241	1174.4	Accept	7.46
2MSS*PSV130	160976	1195	1226	1230.9	1159	Accept	7.4
2MSS*PSV131	160974	1175	1192	1210	1139.7	Accept	5.29
2MSS*PSV132	160969	1185	1197	1220.5	1149.4	Accept	3.31
2MSS*PSV133	160959	1165	1214	1199.9	1130	Reject	7.44
2MSS*PSV134	160955	1205	1211	1241	1174.4	Accept	7.39
2MSS*PSV135	160936	1195	1222	1230.9	1159	Accept	5.30
2MSS*PSV136	160962	1175	1204	1210	1139.7	Accept	7.46
2MSS*PSV137	160970	1205	1245	1241	1174.4	Reject	7.36

Notes: (1) All 18 SRVs were removed and replaced with pre-tested valves in Refueling Outage 12 (2010). The testing was performed at an offsite test facility using saturated steam as the test medium.

Table 3
Main Steam SRVs Test Results for NMP2 Refueling
Outages RFO13 (2012), RFO14 (2014), and RFO15 (2016)

SRV Tested	Serial No.	Set-Pressure (psig)	As-Found Set-pressure Test Results (psig)	Max Set-Pressure +3% (psig)	Min Set-Pressure -3% (psig)	Accept/ Reject	Time from Last Test (Years)
Refueling Outage 15, March 2016							
2MSS*PSV120	160968	1185	1150	1220.55	1149.45	Accept	6
2MSS*PSV121	160966	1195	1222	1230.85	1159.15	Accept	6
2MSS*PSV124	160973	1175	1174	1210.25	1139.75	Accept	6
2MSS*PSV125	160951	1185	1175	1220.55	1149.45	Accept	6
2MSS*PSV127	160971	1205	1188	1241.15	1168.85	Accept	6
2MSS*PSV128	160958	1165	1167	1199.95	1130.05	Accept	6
Refueling Outage 14, March 2014							
2MSS*PSV122	160935	1185	1181	1220.55	1149.45	Accept	4
2MSS*PSV123	160963	1175	1170	1210.25	1139.75	Accept	4
2MSS*PSV126	160964	1195	1164	1230.85	1159.15	Accept	4
2MSS*PSV134	160954	1205	1201	1241.15	1168.85	Accept	4
2MSS*PSV135	160975	1195	1199	1230.85	1159.15	Accept	4
2MSS*PSV137	160957	1205	1190	1241.15	1168.85	Accept	4
Refueling Outage 13, April 2012							
2MSS*PSV129	160956	1205	1207	1241.15	1168.85	Accept	2
2MSS*PSV130	160965	1195	1196	1230.85	1159.15	Accept	2
2MSS*PSV131	160961	1175	1166	1210.25	1139.75	Accept	2
2MSS*PSV132	160915	1185	1182	1220.55	1149.45	Accept	2
2MSS*PSV133	160972	1165	1139	1199.95	1130.05	Accept	2
2MSS*PSV136	160960	1175	1168	1210.25	1139.75	Accept	2

Attachment 6 – Unit 2

Relief Request RAI and SER

Attachment 7 – Unit 2

Code Case Index

CODE CASE NUMBER	TITLE
OMN-20	Inservice Test Frequency

Attachment 8 – Unit 2

Cold Shutdown Justification Index

CSJ NUMBER	**REV #**	**TITLE**
CSH-CSJ-01	0	2CSH*MOV107
GSN-CSJ-01	0	2GSN*V70A/B and 2GSN*V75A/B
IAS-CSJ-01	0	2IAS*V1605, 2IAS*V1606, 2IAS*V1607, and 2IAS*V1608
IAS-CSJ-02	0	2IAS*SOV166 and 2IAS*SOV184
IAS-CSJ-03	0	2IAS*SOV164, 2IAS*SOVX181, 2IAS*SOVY181, 2IAS*SOV165, 2IAS*SOVX186, 2IAS*SOVY186, 2IAS*SOV167, 2IAS*SOV185, 2IAS*SOV168, and 2IAS*SOV180
ICS-CSJ-01	0	2ICS*V156
ICS-CSJ-02	0	2ICS*MOV126
MSS-CSJ-01	0	2MSS*AOV6A, 2MSS*AOV6B, 2MSS*AOV6C, 2MSS*AOV6D 2MSS*AOV7A, 2MSS*AOV7B, 2MSS*AOV7C, and 2MSS*AOV7D
RCS-CSJ-01	0	2RCS*SOV65A, 2RCS*SOV65B, 2RCS*SOV66A, 2RCS*SOV66B, 2RCS*SOV67A, 2RCS*SOV67B, 2RCS*SOV68A, 2RCS*SOV68B, 2RCS*SOV79A, 2RCS*SOV79B, 2RCS*SOV80A, 2RCS*SOV80B, 2RCS*SOV81A, 2RCS*SOV81B, 2RCS*SOV82A, and 2RCS*SOV82B,
RHS-CSJ-01	0	2RHS*V143
RHS-CSJ-02	0	2RHS*MOV24A
SWP-CSJ-01	0	2SWP*V1027 and 2SWP*V202A
SWP-CSJ-02	0	2SWP*MOV50A and 2SWP*MOV50B

Attachment 9 – Unit 2

Cold Shutdown Justifications

CSH-CSJ-01

Component ID	Class	Cat.	System
2CSH*MOV107	2	A	CSH

FUNCTION

This valve must open to inject high pressure core spray into the reactor vessel.

This valve must close to provide primary containment and reactor coolant pressure boundary isolation.

TEST REQUIREMENT

OM Code paragraph III-3721 requires 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.

BASIS FOR JUSTIFICATION

This Motor Operated Valve (MOV) and check valves 2CSH*V108 and 2CSH*V9 prevent over pressurization of the CSH pump suction piping. There is no provision to detect leakage past the check valves during plant operation and opening CSH*MOV107 could over-pressurize the CSH pump suction piping if leakage occurred past both check valves. In addition, CSH*MOV107 is in a non-redundant line, and failure of the valve in a non-conservative position during testing would result in a loss of system function. Deferring the testing until cold shutdown is consistent with the guidance in NUREG 1482, paragraph 3.1.1, Deferring Valve Testing to Each Cold Shutdown or Refueling Outage.

Based on the above, on line exercising of 2CSH*MOV107 is considered impractical due to the potential of loss of system function.

This on-line deferral justification is based on plant safety concerns. Therefore, a PRA evaluation justifying the potential increase in core damage frequency (CDF) and large early release (LER) associated with a longer exercise interval is small is not required.

ALTERNATE TEST

Exercise testing of valves listed under CSH-CSJ-01 will be performed in accordance with III-3610, which states that *If full stroke exercising of an MOV is not practical during plant operation or cold shutdown, full stroke exercising shall be performed during the plant's refueling outage.* Therefore, full stroke exercising 2CSH*MOV107 will be performed during cold shutdowns.

GSN-CSJ-01

Component ID	Class	Cat.	System
2GSN*V70A	3	A/C	GSN
2GSN*V70B	3	A/C	GSN
2GSN*V75A	3	C	GSN
2GSN*V75B	3	C	GSN

FUNCTION

Valves 2GSN*V70A & 2GSN*V70B open to permit filling the ADS nitrogen receivers, 2IAS*TK4 and *TK5. The valves close to maintain receiver pressure.

Valves 2GSN*V75A & 2GSN*V75B open to allow emergency N2 flow from the tube trailer through emergency supply connections. The valves close on reverse flow when the emergency nitrogen supply is secured. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

The GSN system supplies nitrogen to ADS accumulators to ensure their operability during and after a design basis accident. System leak tight integrity is an essential requirement for system operability. This system is leak-rate tested in accordance with USAR 6.3.4.2.2 at least every refueling outage. Performing the quarterly exercise tests takes approximately 4 hours and requires breaking the system integrity by removing flanges and opening instrument lines. Valve exercising requires several manual valve manipulations, and the supply line piping must be opened. As the result of an excessive nitrogen leakage event following this surveillance test, NMP has determined that the risk and potential consequences associated with the challenges to system integrity as a result of exercising these valves quarterly is not practical.

ALTERNATE TEST

The subject valves shall be exercised during cold shutdown when ADS and GSN system operability is not required.

IAS-CSJ-01

Component ID	Class	Cat.	System
2IAS*V1605	3	A/C	IAS
2IAS*V1606	3	A/C	IAS
2IAS*V1607	3	A/C	IAS
2IAS*V1608	3	A/C	IAS

FUNCTION

These Outboard MSIV accumulator air inlet check valves must close to maintain accumulator pressure.

These valves open to allow the accumulator to be recharged. This is not an active safety function because both sources of air are non-safety related.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

To verify reverse flow closure requires isolating the associated instrument air header and venting the upstream side of the check valve while pressure is applied to the downstream (accumulator) side of the valve. The check valves on the accumulators for the outboard MSIVs are inside the steam tunnel. Access to this area is restricted during power operation due to high radiation levels in the steam tunnel. This testing also requires isolating the air/nitrogen supply to the inboard MSIVs, which could eventually cause the valves to close. This test requires the plant to be in a cold shutdown condition when the steam tunnel is accessible, and the plant will not be adversely affected by a potential MSIV closure.

ALTERNATE TEST

Reverse flow closure testing of the outboard MSIV accumulator check valves will be performed during cold shutdown when the steam tunnel is accessible, and the plant will not be adversely affected by a potential MSIV closure.

IAS-CSJ-02

Component ID	Class	Cat.	System
2IAS*SOV166	2	A	IAS
2IAS*SOV184	2	A	IAS

FUNCTION

These valves must open to provide instrument nitrogen supply to Non-ADS SRVs, as well as to the inboard MSIVs (2MSS*AOV6A, 6B, 6C and 6D).

These valves must close to provide Primary Containment Isolation

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves to be exercised nominally every 3 months during power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, IST-3550, ISTC-3570 and ISTC-5221 and ISTC-5222. OM Code paragraph ISTC-5151 requires that Active Solenoid valves have their stroke times measured when exercised in accordance with ISTC-3500.

BASIS FOR JUSTIFICATION

Testing these valves on line (Modes 1, 2, or 3) requires declaring the valves inoperable due to loss of Instrumentation Nitrogen Supply to SRV C Solenoid Accumulators, as well as to all four Inboard main steam isolation valves (MSIVs). (Ref. PID-19L). Closure of one or both of these Containment Isolation valves require entry into TS 3.6.1.3 resulting in an 8-hour shutdown action statement. Entering an 8-hour LCO is considered an undue hardship to the station per NUREG 1482 Rev 2 section 3.1.1.

Based on the above, on line testing of 2IAS*SOV166 and 2IAS*SOV184 is considered impractical due to the potential of loss of system function to the MSIVs, if the SOV failed to reopen during exercise testing and due to the short term LCO condition.

ALTERNATE TEST

Exercise testing of valves listed under IAS-CSJ-02 will be tested in accordance with ISTC-3521(c), which states that if exercising is not practicable during operations at power, it may be limited to full-stroke exercising during cold shutdowns.

IAS-CSJ-03

Component ID	Class	Cat.	System	Note
2IAS*SOV164 (Outboard Isolation)	2	A	IAS	1
2IAS*SOVX181 (2IAS*TK4 Outlet Control)	3	B	IAS	1
2IAS*SOVY181 (2IAS*TK4 Outlet Control Bypass)	3	B	IAS	1
2IAS*SOV165 (Outboard Isolation)	2	A	IAS	2
2IAS*SOVX186 (2IAS*TK5 Outlet Control)	3	B	IAS	2
2IAS*SOVY186 (2IAS*TK5 Outlet Control Bypass)	3	B	IAS	2
2IAS*SOV167 (Outboard Isolation)	2	A	IAS	3
2IAS*SOV185 (Inboard Isolation)	2	A	IAS	3
2IAS*SOV168 (Outboard Isolation)	2	A	IAS	3
2IAS*SOV180 (Inboard Isolation)	2	A	IAS	3

FUNCTION

Open: These valves must open to provide instrument air or nitrogen supply to various air operated components.

Close: These valves must close to provide Primary Containment Isolation

TEST REQUIREMENT

OM Code paragraph ISTC -3510 requires Active Category A and B valves to be exercised nominally every 3 months during power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, IST-3550, ISTC-3570 and ISTC-5221 and ISTC-5222. OM Code paragraph ISTC-5151 requires that Active Solenoid valves have their stroke times measured when exercised in accordance with ISTC-3500.

BASIS FOR JUSTIFICATION

Note 1: Testing this valve on line (Modes 1, 2, or 3) requires declaring ADS valves 2MSS*PSV121, 126, 127 inoperable due to loss of Instrumentation Air/Nitrogen Supply to ADS Header “A” accumulators.

BASIS FOR JUSTIFICATION (Cont.)

Note 2: Testing this valve on line (Modes 1, 2, or 3) requires declaring ADS valves 2MSS*PSV129, 130, 134 and 137 inoperable due to loss of Instrumentation Air/Nitrogen Supply to ADS Header B Accumulators.

Note 3: Testing these valves on line (Modes 1, 2, or 3) requires declaring the valves inoperable due to loss of Instrumentation Nitrogen Supply to various air operated components

Closure of any of these Containment Isolation valves or supply valves require entry into TS 3.6.1.3 resulting in an 8-hour shutdown action statement. Entering an 8-hour LCO is considered an undue hardship to the station per NUREG 1482 Rev 2 section 3.1.1.

Based on the above, on line testing of the valves listed under IAS-CS-003 is considered impractical due to the loss of Instrumentation Air/Nitrogen Supply to various components as well as due to the short term LCO condition.

ALTERNATE TEST

Exercise testing of the valves listed under IAS-CS-03 will be tested in accordance with ISTC-3521(c), which states that if exercising is not practicable during operations at power, it may be limited to full-stroke exercising during cold shutdowns.

ICS-CSJ-01

Component ID	Class	Cat.	System
2ICS*V156	1	A	ICS

FUNCTION

RCIC injection line outboard containment isolation check valve must open to allow RCIC flow to the vessel.

This valve must close to provide primary containment and reactor coolant pressure boundary isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

This is a swing check valve operated by system flow or by using a mechanical exerciser when the differential pressure across the valve is zero. The use of system flow to exercise this valve during power operation would require injecting cold water from the condensate storage tank into the reactor vessel. The cold water injection at power would produce reactivity effects that could cause a plant trip. Thermal shock could reduce expected component life. Due to the location of the injection point, water could be carried over in the main steam, causing damage to the main turbine. Since the ICS system is depressurized during normal operation, a differential pressure approximately equal to reactor pressure may exist across the testable check valve. During normal plant operation pressure monitoring is performed on the piping located downstream of 2ICS*V156 to ensure the piping remains water filled for RCIC to be operable. In the event line pressure drops to less than or equal to 50 psig actions are taken to refill the piping which partially opens the check valve to a very small degree. This partial stroking is only performed when downstream piping pressure conditions require the line to be filled. This activity is not routinely performed and is not a considered for quarterly partial stroke exercising due to the limited performance and the fractional disc movement that is of little value for degradation detection.

ALTERNATE TEST

Forward flow exercising will be performed using shutdown cooling flow or a mechanical exerciser. This testing will be performed during cold shutdowns.

ICS-CSJ-02

Component ID	Class	Cat.	System
2ICS*MOV126	1	A	ICS

FUNCTION

This valve must open to allow RCIC flow to the vessel.

This valve must close to provide primary containment isolation.

TEST REQUIREMENT

OM Code paragraph III-3721 requires 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.

BASIS FOR JUSTIFICATION

The installed piping configuration does not provide a means to verify that there is no leakage across the downstream testable check valve 2ICS*V156. Exercising 2ICS*MOV126 could subject the RCIC suction piping to pressures in excess of its design pressure. Deferring the testing until cold shutdown is consistent with the guidance in NUREG 1482, paragraph 3.1.1, *Deferring Valve Testing to Each Cold Shutdown or Refueling Outage.*

Based on the above, on line exercising of 2ICS*MOV126 is considered impractical due to system over-pressurization potential and subsequent loss of system function.

This on-line deferral justification is based on plant safety concerns. Therefore, a PRA evaluation justifying the potential increase in core damage frequency (CDF) and large early release (LER) associated with a longer exercise interval is small is not required.

ALTERNATE TEST

Exercise testing of the valve listed under ICS-CSJ-02 will be performed in accordance with III-3610, which states that *If full stroke exercising of an MOV is not practical during plant operation or cold shutdown, full stroke exercising shall be performed during the plant's refueling outage.* Therefore, full stroke exercising 2ICS*MOV126 will be performed during cold shutdowns.

MSS-CSJ-01

Component ID	Class	Cat.	System
2MSS*AOV6A (Inboard Isolation)	1	A	MSS
2MSS*AOV6B (Inboard Isolation)	1	A	MSS
2MSS*AOV6C (Inboard Isolation)	1	A	MSS
2MSS*AOV6D (Inboard Isolation)	1	A	MSS
2MSS*AOV7A (Outboard Isolation)	1	A	MSS
2MSS*AOV7B (Outboard Isolation)	1	A	MSS
2MSS*AOV7C (Outboard Isolation)	1	A	MSS
2MSS*AOV7D (Outboard Isolation)	1	A	MSS

FUNCTION

Main steam line inside and outside primary containment isolation valves must close to provide containment isolation in the event of a main steam line break or DBA-LOCA.

These valves open to supply main steam to the turbine generator and auxiliary equipment. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Exercising these valves during power operation would require a significant reduction in power and would place the plant in an abnormal operating condition with one main steam line isolated. Recent industry experience 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.

ALTERNATE TEST

The MSIVs will be full-stroke exercised during cold shutdown conditions.

RCS-CSJ-01

Component ID	Class	Cat.	System
2RCS*SOV65A	2	B	RCS
2RCS*SOV65B	2	B	RCS
2RCS*SOV66A	2	B	RCS
2RCS*SOV66B	2	B	RCS
2RCS*SOV67A	2	B	RCS
2RCS*SOV67B	2	B	RCS
2RCS*SOV68A	2	B	RCS
2RCS*SOV68B	2	B	RCS
2RCS*SOV79A	2	B	RCS
2RCS*SOV79B	2	B	RCS
2RCS*SOV80A	2	B	RCS
2RCS*SOV80B	2	B	RCS
2RCS*SOV81A	2	B	RCS
2RCS*SOV81B	2	B	RCS
2RCS*SOV82A	2	B	RCS
2RCS*SOV82B	2	B	RCS

FUNCTION

These Containment isolation valves on the Recirculation Flow Control Valve hydraulic lines must close to provide primary containment isolation.

These valves open to provide hydraulic control fluid for recirculation flow control. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These valves control the flow of hydraulic fluid to the reactor coolant recirculation flow control valves. Their positions control the positions of the flow control valves. Exercising these valves during reactor coolant recirculation flow could cause a disturbance of normal loop flow which could result in adverse plant operation; e.g., changes in reactivity, power transient, and a possible reactor scram. The operating circuitry of these valves only permits full stroke operation.

ALTERNATE TEST

The valves will be full-stroke exercised during cold shutdowns.

RHS-CSJ-01

Component ID	Class	Cat.	System
2RHS*V143	1	C	RHS

FUNCTION

RHR system reactor vessel head spray line check valve must open and allow flow when shutdown cooling is placed in service.

This valve closes on reverse flow when shutdown cooling is secured. This is not an active safety function

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Forward flow exercising of this valve would require the flow of water from the RHR system to the ICS system through valve 2RHS*MOV104. There is an interlock on 2RHS*MOV104, which is not permitted to be defeated by Technical Specifications. Therefore, forward flow exercise testing can only be accomplished at cold shutdown.

ALTERNATE TEST

The valve will be forward flow and bi-directional closure exercised during cold shutdowns.

RHS-CSJ-02

Component ID	Class	Cat.	System
2RHS*MOV24A	1	A	RHS

FUNCTION

This valve must open to allow low pressure coolant injection flow into the reactor vessel.

This valve must close to provide primary containment and reactor coolant pressure boundary isolation.

TEST REQUIREMENT

OM Code paragraph III-3721 requires 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.

BASIS FOR JUSTIFICATION

The MOV is interlocked to prevent it from opening when the reactor is at a higher pressure than the design of the low pressure RHS piping. During power operation, reactor pressure is greater than the interlock value, and testing is therefore impossible during normal power operations. Deferring the testing until cold shutdown is consistent with the guidance in NUREG 1482, paragraph 3.1.1, *Deferring Valve Testing to Each Cold Shutdown or Refueling Outage.*

Based on the above, on line exercising of this MOV is considered impractical due to system over-pressurization potential and subsequent loss of system function if the pressure interlock were to be defeated.

This on-line deferral justification is based on plant operating restrictions. Therefore, a PRA evaluation justifying the potential increase in core damage frequency (CDF) and large early release (LER) associated with a longer exercise interval is small is not required.

ALTERNATE TEST

Exercise testing of valve listed under RHS-CSJ-02 will be performed in accordance with III-3610, which states that *If full stroke exercising of an MOV is not practical during plant operation or cold shutdown, full stroke exercising shall be performed during the plant's refueling outage.* Therefore, full stroke exercising 2RHS*MOV24A will be performed during cold shutdowns.

SWP-CSJ-01

Component ID	Class	Cat.	System
2SWP*V1027	3	C	SWP
2SWP*V202A	3	C	SWP

FUNCTION

These valves must open to supply service water to the reactor building loads. They must close to prevent reverse flow through the service water system and 2SWP*V202A also closes to prevent draining the upper section of the SWP system piping during a loss of offsite power, which aids in preventing water hammer on a pump restart after trip.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Check valves 2SWP*V202A and 2SWP*V1027 are located off the main service water headers and are not provided with flow indication. Generic Letter 89-04 states the NRC position on acceptable forward flow testing: “A check valve's full-stroke to the open position may be verified by passing the maximum required flow through the valve. Any flow rate less than this will be considered a partial-stroke exercise.” Forward exercise testing 2SWP*V202A would require closing one of the safety related to non-safety related isolation valves (2SWP*MOV3A or 2SWP*MOV3B). Forward exercise testing of 2SWP*V1027 would require closing one of the SWP header cross connect valves (2SWP*MOV50A or 2SWP*MOV50B). Closing 2SWP*MOV3A/B, with the subsequent failure of either valve to reopen, would result in a complete loss of cooling to the CCS heat exchangers which cool the turbine generator. This loss of cooling water would require tripping the turbine generator and the subsequent power transient would result in a reactor trip.

Reverse flow closure of the check valves during normal plant operation is accomplished by isolating one SWP safety-related division and tripping all pumps on the isolated division. In addition to safety-related loads, the A division of SWP supplies the Reactor Building Closed Cooling Water (CCP) and Turbine Building Closed Cooling Water (CCS) Heat Exchangers. Since they are the largest SWP loads during normal plant operation, a large heat load imbalance exists between the A and B SWP divisions. To ensure adequate cooling is available to these loads, SWP is operated cross-connected. Therefore, the closing of either 2SWP*MOV50A or 50B would result in a significant reduction in cooling water to both the CCP and CCS loads and possible runout of the Division A pumps. Isolation of either SWP division during power operation would result in an undesirable transient which could cause a trip of the turbine generator (cooled by CCS) or cause a high drywell (cooled by CCP) pressure condition which would lead to a reactor scram.

ALTERNATE TEST

Full forward flow exercising and reverse flow exercising of these valves will be performed during cold shutdowns.

SWP-CSJ-02

Component ID	Class	Cat.	System
2SWP*MOV50A	3	B	SWP
2SWP*MOV50B	3	B	SWP

FUNCTION

These valves open to cross connect the service water loops. These are not active safety functions.

These valves must close to isolate the service water loop in the event of a fault in the other loop.

TEST REQUIREMENT

OM Code paragraph III-3721 requires 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.

BASIS FOR JUSTIFICATION

Both CCP and CCS are supplied from the A SWP division. Since they are the largest SWP loads (CCP and CCS heat exchangers) during normal plant operation, a large load imbalance exists between the A and B SWP divisions. To ensure adequate cooling is available to these loads, SWP is operated cross-connected. Therefore, closing either 2SWP*MOV50A or 50B would result in a significant reduction in cooling water to both CCP and CCS loads and possible runout of the A division pumps. Deferring the testing until cold shutdown is consistent with the guidance in NUREG 1482, paragraph 3.1.1, *Deferring Valve Testing to Each Cold Shutdown or Refueling Outage.*

Based on the above, on-line exercising of these MOVs is considered impractical due to the potential for a complete loss of cooling to CCP or CCS heat exchangers. This loss of cooling could result in a reactor trip.

This on-line deferral justification is based on plant operating restrictions. Therefore, a PRA evaluation justifying the potential increase in core damage frequency (CDF) and large early release (LER) associated with a longer exercise interval is small is not required.

ALTERNATE TEST

Exercise testing of valves listed under SWP-CSJ-02 will be performed in accordance with III-3610, which states that *If full stroke exercising of an MOV is not practical during plant operation or cold shutdown, full stroke exercising shall be performed during the plant's refueling outage.* Therefore, full stroke exercising 2SWP*MOV50A and 2SWP*MOV50B will be performed during cold shutdowns.

Attachment 10 – Unit 2

Refueling Outage Justification Index

ROJ NUMBER	REV #	TITLE
ADH-ROJ-01	0	2ADH*V21A, 2ADH*V21B, 2ADH*V22A, and 2ADH*V22B
CCP-ROJ-01	0	2CCP*V996, 2CCP*V997, 2CCP*V998, and 2CCP*V999
CMS-ROJ-01	0	2CMS*SOV23A, 2CMS*SOV23B, 2CMS*SOV23C, 2CMS*SOV23D, 2CMS*SOV23E, and 2CMS*SOV23F
CMS-ROJ-02	0	2CMS*SOV24A, 2CMS*SOV24B, 2CMS*SOV26A, 2CMS*SOV26B, 2CMS*SOV33A, 2CMS*SOV33B, 2CMS*SOV34A, and 2CMS*SOV34B
CMS-ROJ-03	0	2CMS*SOV61A, 2CMS*SOV61B, 2CMS*SOV63A, and 2CMS*SOV63B
CPS-ROJ-01	0	2CPS*SOV121 and 2CPS*SOV122
CPS-ROJ-02	0	2CPS*AOV106, 2CPS*AOV107, 2CPS*AOV108, and 2CPS*AOV109
CSH-ROJ-01	0	2CSH*V108
CSL-ROJ-01	0	2CSL*V101
FWS-ROJ-01	0	2FWS*V12A, 2FWS*V12B, 2FWS*V23A, and 2FWS*V23B
GV-ROJ-01	0	2CMS*EFV10, 2CMS*EFV1A, 2CMS*EFV1B, 2CMS*EFV3A, 2CMS*EFV3B, 2CMS*EFV5A, 2CMS*EFV5B, 2CMS*EFV6, 2CMS*EFV8A, 2CMS*EFV8B, 2CMS*EFV9A, 2CMS*EFV9B, 2CSH*EFV1, 2CSH*EFV2, 2DER*EFV31, 2IAS*EFV200, 2IAS*EFV201, 2IAS*EFV202, 2IAS*EFV203,2IAS*EFV204, 2IAS*EFV205, 2IAS*EFV206, 2ISC*EFV12,2ISC*EFV16, 2ISC*EFV19, 2ISC*EFV9, 2RCS*EFV44A, and 2RCS*EFV44B
HCS-ROJ-01	0	2HCS*SOV10A, 2HCS*SOV10B, 2HCS*SOV11A, and 2HCS*SOV11B
IAS-ROJ-01	0	2IAS*V1601, 2IAS*V1602, 2IAS*V1603, and 2IAS*V1604
ICS-ROJ-01	0	2ICS*V156 and 2ICS*V157
ISC-ROJ-01	0	2ISC*V200A, 2ISC*V200B, 2ISC*V200C, 2ISC*V200D, 2ISC*V204A, 2ISC*V204B, 2ISC*V204C, and 2ISC*V204D
LMS-ROJ-01	0	2LMS*SOV152 and 2LMS*SOV156
RCS-ROJ-01	0	2RCS*SOV104
RDS-ROJ-01	0	2RDS*V115
RDS-ROJ-02	0	2RDS*SOV136 and 2RDS*SOV137
RDS-ROJ-03	0	2RDS*AOV126, 2RDS*AOV127
RHS-ROJ-01	0	2RHS*V16A, 2RHS*V16B, and 2RHS*V16C

RHS-ROJ-02	0	2RHS*V39A and 2RHS*V39B
SLS-ROJ-01	0	2SLS*MOV5A and 2SLS*MOV5B

Attachment 11 – Unit 2

Refueling Outage Justifications

ADH-ROJ-01

Component ID	Class	Cat.	System
2ADH*V21A	3	C	ADH
2ADH*V21B	3	C	ADH
2ADH*V22A	3	C	ADH
2ADH*V22B	3	C	ADH

FUNCTION

These check valves provide secondary containment integrity when alternate decay heat removal is in service.

These check valves open when ADHR is in service. This is not a safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Testing these valves requires opening manual valves in the ADH lines. Opening the manual valves would violate Secondary Containment integrity. Therefore, the ADH check valves cannot be tested when secondary containment integrity is required. Simple check valves cannot be partially stroked closed.

ALTERNATE TEST

These valves shall be tested as part of the Reactor Building drawdown tests performed each refueling outage.

CCP-ROJ-01

Component ID	Class	Cat.	System
2CCP*V996	3	C	CCP
2CCP*V997	3	C	CCP
2CCP*V998	3	C	CCP
2CCP*V999	3	C	CCP

FUNCTION

These check valves provide secondary containment integrity when alternate drywell cooling is in service.

These check valves open to provide a flow path to the drywell during alternate drywell cooling which is not a safety related function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These spring-loaded check valves are located inside the reactor building at the penetrations of the inlet and outlet piping of the RBCLW system. The valves are arranged in pairs. Test connections are not available to allow individual valve closure testing. The valves are not in service during plant operation. During normal plant operation, secondary containment integrity is maintained by safety-related blind flanges on the outboard side of the reactor building penetrations. These blind flanges are installed prior to reactor startup. Therefore, the valves are not relied upon to provide secondary containment integrity except during operation of Alternate Drywell Cooling. Operation of Alternate Drywell Cooling typically occurs during refueling outages. Since these valves are not normally in service, they are not required to be tested quarterly during plant operation. If they are to be placed into service during a cold shutdown or refueling, they shall be tested within 3 months prior to placing them in an operable status.

ALTERNATE TEST

These valves shall be disassembled, inspected and manually exercised within 3 months prior to placing them in an operable status. This testing is not restricted to being performed only during a refueling outage. If these valves are not to be placed into service during a particular outage, no testing is required.

CMS-ROJ-01

Component ID	Class	Cat.	System
2CMS*SOV23A	2	B	CMS
2CMS*SOV23B	2	B	CMS
2CMS*SOV23C	2	B	CMS
2CMS*SOV23D	2	B	CMS
2CMS*SOV23E	2	B	CMS
2CMS*SOV23F	2	B	CMS

FUNCTION

These valves must open to provide a flow path for containment atmosphere samples.

These valves receive a containment isolation signal.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

ISTC-3560 & 5151: Quarterly fail-safe and stroke time to the closed and open position.

BASIS FOR JUSTIFICATION

Drywell sample selector valves. The CMS selector valves 2CMS*SOV23A-F are located inside containment. These valves are all located inboard of the inside containment isolation valves. These six CMS selector valves are associated with the drywell and suppression chamber supply sample lines. They perform an active safety related function to open to allow sampling of the drywell and suppression chamber atmosphere following a Designed Basis Accident (DBA). The location of the oxygen and hydrogen sample points within the drywell and suppression chamber are distributed vertically and radially. Following an accident, the system is activated manually to draw samples from five different areas, three from the drywell and two from the suppression chamber.

Note: These valves are inboard of the inside primary containment isolation valves. They are not relied upon to perform a containment isolation function. Failure of any of these SOVs to open would render the valve inoperable because it no longer would be capable of providing a flow path for containment atmosphere samples following a DBA.

Although these valves are capable of being tested at power, operating experience at other Exelon and non-Exelon plants has demonstrated a potential for valves to fail or degrade as a result of cycling at power (Reference ICES #314926, #314808 and #305581). Failure modes have included severe packing leakage and a loss of containment isolation function. Due to the

fact that these valves are located inside the drywell and are “inaccessible”, the inability of the valve to open would result in a degraded system with the potential for an unnecessary plant shutdown and challenge to safety systems. Additionally, the containment would require de-inerting in order to perform repairs. Thus, the risks associated with testing these valves on line vs during refuel outages outweigh the benefits of testing quarterly on line. During refuel outages, the primary containment is open, and any repairs could be performed immediately without cycling the plant and challenging safety systems during the process of shutting down the plant. Thus, this analysis provides the basis, in accordance with ISTC-3521(e) for deferring testing from a quarterly test frequency to refuel outages as noted in NUREG 1482 section 2.4.5 “Deferring Valve Testing to Cold Shutdown or Refueling Outages”.

ALTERNATE TEST

It has been determined under this evaluation that testing during cold shutdowns (ref. ISTC-3521(c)) is not practicable because primary containment (drywell and suppression chambers) is not always made accessible.

CMS-ROJ-02

Component ID	Class	Cat.	System
2CMS*SOV24A	2	A	CMS
2CMS*SOV24B	2	A	CMS
2CMS*SOV26A	2	A	CMS
2CMS*SOV26B	2	A	CMS
2CMS*SOV33A	2	A	CMS
2CMS*SOV33B	2	A	CMS
2CMS*SOV34A	2	A	CMS
2CMS*SOV34B	2	A	CMS

FUNCTION

These valves must open to provide a flow path to sample the containment atmosphere.

These valves must close to provide primary containment isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

ISTC-3560 & 5151: Quarterly fail-safe and stroke time to the closed and open position.

BASIS FOR JUSTIFICATION

These valves are all containment isolation valves located inside primary containment. They include various CMS valves associated with the drywell and suppression chamber supply sample lines going in and out through penetrations in containment. (CMS from Drywell to H2O2 Analyzer, CMS from Suppression Chamber to H2O2 Analyzer, CMS to Drywell from H2O2 Analyzer, and CMS to Suppression Chamber from H2O2 Analyzer).

They all perform an active safety related function to open to allow a flow path to sample containment atmosphere. Additionally, they all serve an active safety related function to close to provide primary containment isolation.

Although these valves are capable of being tested at power, operating experience at other Exelon and non-Exelon plants has demonstrated a potential for valves to fail as a result of cycling at power (Reference ICES #314926, #314808 and #305581). Failure modes have included severe packing leakage and a loss of containment isolation function. Due to the fact that these valves are located inside the drywell and are "inaccessible," the inability of these valves to open or close would result in a degraded system with the potential for an unnecessary

plant shutdown and challenge to safety systems. Additionally, the containment would require de-inerting in order to perform repairs.

Failure of the any of these valves to open would inhibit a flow path to sample the containment atmosphere, which would require entry in a Technical Specification LCO associated with Containment monitoring (3.3.3.1 and 3.6.1.3).

Failure of the any of these valves to return to the closed position would result in the necessity to declare a Containment Isolation Valve inoperable requiring entry into Technical Specification 3.6.1.3 5 (Reference B 3.6.1.3).

Thus, the risks associated with testing these valves on line vs during a refuel outage outweigh the benefits of testing quarterly on line. During refuel outages, the primary containment is open, and any repairs could be performed immediately without cycling the plant and challenging safety systems during the process of shutting down the plant. Thus, this analysis provides the basis, in accordance with ISTC-3521(e) for deferring testing from a quarterly test frequency to refuel outages as noted in NUREG 1482 section 2.4.5 “Deferring Valve Testing to Cold Shutdown or Refueling Outages”.

ALTERNATE TEST

It has been determined under this evaluation that testing during cold shutdowns (ref. ISTC-3521(c)) is not practicable because primary containment (drywell and suppression chambers) is not always made accessible.

CMS-ROJ-03

Component ID	Class	Cat.	System
2CMS*SOV61A	2	A	CMS
2CMS*SOV61B	2	A	CMS
2CMS*SOV63A	2	A	CMS
2CMS*SOV63B	2	A	CMS

FUNCTION

These valves must open to allow flow through the radiation monitor (NSR function)

These valves must close to provide primary containment isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

ISTC-3560 & 5151: Quarterly fail-safe and stroke time to the closed and open position.

BASIS FOR JUSTIFICATION

These valves are all containment isolation valves located inside primary containment. They include four CMS valves which provide flow from the drywell to the Atmosphere Radiation Monitor.

They all perform an active non-safety related function to open to allow flow from the drywell to the Atmosphere Radiation Monitor. Additionally, they all serve an active safety related function to close to provide primary containment isolation.

Although these valves are capable of being tested at power, operating experience at other Exelon and non-Exelon plants has demonstrated a potential for valves to fail as a result of cycling at power (Reference ICES #314926, #314808 and #305581). Failure modes have included severe packing leakage and a loss of containment isolation function. Due to the fact that these valves are located inside the drywell and are “inaccessible”, the inability of these valves to open or close would result in a degraded system with the potential for an unnecessary plant shutdown and challenge to safety systems. Additionally, the containment would require de-inerting in order to perform repairs.

Failure of the any of these valves to open would inhibit a flow path from the drywell to the Atmosphere Radiation Monitor.

Failure of the any of these valves to return to the closed position would result in the necessity to declare a Containment Isolation Valve inoperable requiring entry into Technical Specification 3.6.1.3 5 (ref B 3.6.1.3).

Thus, the risks associated with testing these valves on line vs during a refuel outage outweigh the benefits of testing quarterly on line. During refuel outages, the primary containment is open, and any repairs could be performed immediately without cycling the plant and challenging safety systems during the process of shutting down the plant. Thus, this analysis provides the basis, in accordance with ISTC-3521(e) for deferring testing from a quarterly test frequency to refuel outages as noted in NUREG 1482 section 2.4.5 “Deferring Valve Testing to Cold Shutdown or Refueling Outages”.

ALTERNATE TEST

It has been determined under this evaluation that testing during cold shutdowns (ref ISTC-3521(c) is not practicable because primary containment (drywell and suppression chambers) is not always made accessible.

CPS-ROJ-01

Component ID	Class	Cat.	System
2CPS*SOV121	2	A	CPS
2CPS*SOV122	2	A	CPS

FUNCTION

These valves must open to purge the containment (non-safety related function)

These valves must close to provide primary containment isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

ISTC-3560 & 5151: Quarterly fail-safe and stroke time to the closed and open position.

BASIS FOR JUSTIFICATION

These valves are both containment isolation valves located inside primary containment. These two CPS valves open to purge the containment. This is not an active safety function. Additionally, they both serve an active safety related function to close to provide primary containment isolation.

Although these valves are capable of being tested at power, operating experience at other Exelon and non-Exelon plants has demonstrated a potential for valves to fail as a result of cycling at power (Reference ICES #314926, #314808 and #305581). Failure modes have included severe packing leakage and a loss of containment isolation function. Due to the fact that these valves are located inside the drywell and are “inaccessible”, the inability of these valves to open or close would result in a degraded system with the potential for an unnecessary plant shutdown and challenge to safety systems. Additionally, the containment would require de-inerting in order to perform repairs.

Failure of the any of these valves to open would inhibit a flow path to the purge the containment.

Failure of the any of these valves to return to the closed position would result in the necessity to declare a Containment Isolation Valve inoperable requiring entry into Technical Specification 3.6.1.3 5. Thus, the risks associated with testing these valves on line vs during a refuel outage outweigh the benefits of testing quarterly on line. During refuel outages, the primary containment is open, and any repairs could be performed immediately without cycling the plant and challenging safety systems during the process of shutting down the plant. Thus, this analysis provides the basis, in accordance with ISTC-3521(e) for deferring testing from a quarterly test frequency to refuel outages as noted in NUREG 1482 section 2.4.5 Deferring Valve Testing to Cold Shutdown or Refueling Outages.

ALTERNATE TEST

It has been determined under this evaluation that testing during cold shutdowns (ref ISTC-3521(c) is not practicable because primary containment (drywell and suppression chambers) is not always made accessible.

CPS-ROJ-02

Component ID	Class	Cat.	System
2CPS*AOV106	2	A	CPS
2CPS*AOV107	2	A	CPS
2CPS*AOV108	2	A	CPS
2CPS*AOV109	2	A	CPS

FUNCTION

These valves open to vent and purge containment (This is not a safety related function).

These valves must close to provide primary containment isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

ISTC-3560 & 5131: Quarterly fail-safe and stroke time to the closed position.

BASIS FOR JUSTIFICATION

These valves are containment isolation valves located inside primary containment. These CPS valves open to vent and purge containment. This is not an active safety function. Additionally, these valves serve an active safety related function to close to provide primary containment isolation.

Although these valves are capable of being tested at power, operating experience at other Exelon and non-Exelon plants has demonstrated a potential for valves to fail as a result of cycling at power (Reference ICES #314926, #314808 and #305581). Failure modes have included severe packing leakage and a loss of containment isolation function. Due to the fact that these valves are located inside the drywell and are “inaccessible”, the inability of these valves to open or close would result a degraded system with the potential for an unnecessary plant shutdown and challenge to safety systems. Additionally, the containment would require de-inerting in order to perform repairs.

Failure of the any of these valves to open would inhibit the ability to vent and purge containment.

Failure of this valve to return to the closed position would result in the necessity to declare a Containment Isolation Valve inoperable requiring entry into Technical Specification 3.6.1.3 5. Thus, the risks associated with testing this valve on line vs during a refuel outage outweigh the benefits of testing quarterly on line. During refuel outages, the primary containment is open, and any repairs could be performed immediately without cycling the plant and challenging safety

systems during the process of shutting down the plant. Thus, this analysis provides the basis, in accordance with ISTC-3521(e) for deferring testing from a quarterly test frequency to refuel outages as noted in NUREG 1482 section 2.4.5 Deferring Valve Testing to Cold Shutdown or Refueling Outages.

ALTERNATE TEST

It has been determined under this evaluation that testing during cold shutdowns (ref ISTC-3521(c) is not practicable because primary containment (drywell and suppression chambers) is not always made accessible.

CSH-ROJ-01

Component ID	Class	Cat.	System
2CSH*V108	1	A/C	CSH

FUNCTION

HPCS discharge line inside containment isolation valve must open to inject high pressure core spray into the reactor vessel.

This valve must close to provide primary containment and reactor coolant pressure boundary isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Operation of this valve using system flow during power operation would require injecting cold water from the condensate storage tank into the reactor vessel. This cold-water injection would cause reactivity spikes which could cause a plant trip and thermal shock of system components which could reduce their expected life. At power, full reactor pressure is imposed on the valve disk, causing a large differential pressure across the valve. The valve is located inside the drywell and is not accessible to be mechanically exercised except when primary containment is de-inerted. It is not practical to de-inert the containment during each cold shutdown outage solely to perform this testing. Deferring testing to refueling outages is permitted by the OM Code and NUREG-1482, Revision 2, paragraph 3.1.1.3, “De-inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing” which states: “The staff has determined that it is impractical to de-inert the containment during each cold shutdown outage solely to perform such routine testing or repair activities.”

ALTERNATE TEST

Forward flow operability and reverse flow closure will be verified using a mechanical exerciser when the differential pressure across the valve is zero. This testing will be performed during each refueling outage.

CSL-ROJ-01

Component ID	Class	Cat.	System
2CSL*V101	1	A/C	CSL

FUNCTION

LPCS injection line inside containment isolation valve must open to inject low pressure core spray into the reactor vessel.

This valve must close to provide primary containment and reactor coolant pressure boundary isolation.

TEST REQUIREMENT:

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

This valve is a reactor coolant system pressure boundary valve. It provides isolation between high and low pressure CSL piping. The check valve can be operated either by using system flow through 2CSL*MOV104 or by using a mechanical exerciser when the differential pressure across the valve is zero. During normal plant operation, these conditions cannot be achieved. The valve is located inside the drywell and is not accessible to be mechanically exercised except when primary containment is de-inerted. It is not practical to de-inert the containment during each cold shutdown outage solely to perform this testing. Deferring testing to refueling outages is permitted by the OM Code and NUREG-1482, Revision 2, paragraph 3.1.1.3, “De-inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing” which states: “The staff has determined that it is impractical to de-inert the containment during each cold shutdown outage solely to perform such routine testing or repair activities.”

ALTERNATE TEST

Forward flow operability and reverse flow closure will be verified using a mechanical exerciser when the differential pressure across the valve is zero. This testing will be performed during each refueling outage.

FWS-ROJ-01

Component ID	Class	Cat.	System
2FWS*V12A	1	A/C	FWS
2FWS*V12B	1	A/C	FWS
2FWS*V23A	1	A/C	FWS
2FWS*V23B	1	A/C	FWS

FUNCTION

Feedwater System inboard and outboard primary containment isolation valves. These valves must close to provide primary containment isolation.

These valves open to inject feedwater into the reactor vessel during normal power operation. This is not an active safety function.

TEST REQUIREMENT:

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These valves have no open safety function. Verifying the reverse flow closure of these valves during normal operation would require reducing power and stopping feedwater flow in one line. Isolating one feedwater line during normal operation would introduce an undesirable transient that could result in a reactor scram. The only practical means of verifying that the valves are capable of closure is by performing local leak-rate testing which requires de-inerting the primary containment. De-inerting primary containment at cold shutdowns solely to perform Inservice Testing is not required. Deferral of testing until refueling is acceptable based on NUREG-1482, Rev. 2, paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing" and paragraph 4.1.6, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

ALTERNATE TEST

The full-stroke exercise in the reverse flow direction will be performed during each refueling outage, prior to startup.

GV-ROJ-01

Component ID	Class	Cat.	System
2CMS*EFV10	2	C	CMS
2CMS*EFV1A	2	C	CMS
2CMS*EFV1B	2	C	CMS
2CMS*EFV3A	2	C	CMS
2CMS*EFV3B	2	C	CMS
2CMS*EFV5A	2	C	CMS
2CMS*EFV5B	2	C	CMS
2CMS*EFV6	2	C	CMS
2CMS*EFV8A	2	C	CMS
2CMS*EFV8B	2	C	CMS
2CMS*EFV9A	2	C	CMS
2CMS*EFV9B	2	C	CMS
2CSH*EFV1	2	C	CSH
2CSH*EFV2	2	C	CSH
2DER*EFV31	2	C	DER
2IAS*EFV200	2	C	IAS
2IAS*EFV201	2	C	IAS
2IAS*EFV202	2	C	IAS
2IAS*EFV203	2	C	IAS
2IAS*EFV204	2	C	IAS
2IAS*EFV205	2	C	IAS
2IAS*EFV206	2	C	IAS
2ISC*EFV12	2	C	ISC
2ISC*EFV16	2	C	ISC
2ISC*EFV19	2	C	ISC
2ISC*EFV9	2	C	ISC
2RCS*EFV44A	2	C	RCS
2RCS*EFV44B	2	C	RCS

FUNCTION

These valves close to prevent excess flow in the event of an instrument line break outside the primary containment.

These valves open to allow instruments to be placed in service. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Excess flow check valves are installed on instrument lines penetrating containment to minimize leakage in the event of an instrument line failure outside the containment in accordance with Regulatory Guide 1.11. The excess flow check valve is basically a spring-loaded ball check valve. Since the system is normally in a static condition, the valve ball is held open by the spring. Any sudden increase in flow through the valve (i.e., line break) will result in a differential pressure across the valve which will overcome the spring and close the valve. The valve is designed to allow some leakage past the seat in the closed position. This leakage will act to equalize pressure across the valve in the event the excess flow condition is corrected, thus allowing the spring to reopen the valve.

At NMP2, there are excess flow check valves with and without installed position indication. Functional testing of valve closure is accomplished by venting the instrument side of the valve while the process side is under pressure and observing the position indicator (for those with installed position indicators) and by verifying that only a small amount of leakage exits through the vent.

The testing described above requires the removal of the associated instrument or instruments from service. Since these instruments are in use during plant operation and cold shutdown, removal of any of these instruments from service could cause a spurious signal which could result in a plant trip, an inadvertent initiation of a safety system, loss of decay heat removal, or the defeating of safety interlocks. In addition to the plant safety concerns, personnel safety concerns must be considered since the process side of many of these valves is normally high pressure (>500 psig) or high temperature (>200°F) and highly contaminated reactor coolant. The remainder of the valves process side is the containment atmosphere, which is inerted during operation, or is compressed air / nitrogen supply to a safety-related valve. Testing one of these excess flow check valves could result in a loss of actuating air for the safety-related function. Therefore, the test described above cannot be accomplished during normal plant operation.

Additionally, testing many of these excess flow check valves requires access to the primary containment. It is not practical to de-inert the containment during each cold shutdown outage solely to perform this testing. Deferring testing to refueling outages is permitted by the OM Code and NUREG-1482, Revision 2, paragraph 3.1.1.3, “De-inerting Containment of Boiling

Water Reactors to Allow Cold Shutdown Testing," which states: "The staff has determined that it is impractical to de-inert the containment during each cold shutdown outage solely to perform such routine testing or repair activities."

In summary, due to the plant and personnel safety concerns and plant operating conditions that prohibit the testing of these valves quarterly or at cold shutdown, testing will be performed during refueling when decay heat loads are at a minimum, the containment is de-inerted and ventilated, and safety systems can be removed from service to prevent inadvertent initiation.

ALTERNATE TEST

Reverse flow and Bi-directional open exercise testing shall be performed during refueling outages.

HCS-ROJ-01

Component ID	Class	Cat.	System
2HCS*SOV10A	2	B	HCS
2HCS*SOV10B	2	B	HCS
2HCS*SOV11A	2	B	HCS
2HCS*SOV11B	2	B	HCS

FUNCTION

These valves open to provide cooling water to the hydrogen recombiner.

These valves close to stop service water flow to the hydrogen recombiner. This is not a safety related function

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

ISTC-3560 & 5151: Quarterly fail-safe and stroke time to the open position.

BASIS FOR JUSTIFICATION

These valves are all solenoid operated valves located outside primary containment. These HCS valves open to provide cooling water to the hydrogen recombiner. These valves close to stop service water flow to the hydrogen recombiner. This is not a safety related function.

Note: By design, these four SOVs are logic tied to “inaccessible” valves.

- 2HCS*SOV10A – Logic tied to inaccessible valve 2HCS*MOV4A
- 2HCS*SOV10B – Logic tied to inaccessible valve 2HCS*MOV4B
- 2HCS*SOV11A – Logic tied to inaccessible valve 2HCS*MOV4A
- 2HCS*SOV11B – Logic tied to inaccessible valve 2HCS*MOV4B

Because of the logic tie, whenever any of the 4 SOVs are stroke tested, the associated inaccessible MOV must be stroked open first.

Although these SOVs and their associated inaccessible MOVs are capable of being tested at power, operating experience at other Exelon and non-Exelon plants has demonstrated a potential for valves to fail as a result of cycling at power (Reference ICES #314926, #314808 and #305581). Failure modes have included severe packing leakage and a loss of containment isolation function. Due to the fact that the associated MOVs, which are both Containment Isolation Valves, are located inside the drywell and are “inaccessible”, the inability of either of these valves to open or close would result in a degraded system with the potential for an

unnecessary plant shutdown and challenge to safety systems. Additionally, the containment would require de-inerting in order to perform repairs.

Failure of the any of these MOVs to open would inhibit the ability to place the hydrogen recombiner into service.

Failure of this valve to return to the closed position would result in the necessity to declare a Containment Isolation Valve inoperable requiring entry into Technical Specification 3.6.1.3 5

Thus, the risks associated with testing these valves on line vs during a refuel outage outweigh the benefits of testing quarterly on line. During refuel outages, the primary containment is open, and any repairs could be performed immediately without cycling the plant and challenging safety systems during the process of shutting down the plant. Thus, this analysis provides the basis, in accordance with ISTC-3521(e) for deferring testing from a quarterly test frequency to refuel outages as noted in NUREG 1482 section 2.4.5 “Deferring Valve Testing to Cold Shutdown or Refueling Outages”.

ALTERNATE TEST

It has been determined under this evaluation that testing during cold shutdowns (ref ISTC-3521(c)) is not practicable because primary containment (drywell and suppression chambers) is not always made accessible.

IAS-ROJ-01

Component ID	Class	Cat.	System
2IAS*V1601	3	A/C	IAS
2IAS*V1602	3	A/C	IAS
2IAS*V1603	3	A/C	IAS
2IAS*V1604	3	A/C	IAS

FUNCTION

Inboard MSIV accumulator air inlet check valves must close to maintain accumulator pressure.

These valves open to allow the accumulator to be recharged. This is not an active safety function because both sources of air are non-safety related.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

To verify reverse flow closure requires isolating the associated instrument air header and venting the upstream side of the check valve while pressure is applied to the downstream (accumulator) side of the valve. The check valves on the accumulators for the inboard MSIVs are located inside the primary containment. Access to the primary containment is restricted during power operation due to the inert atmosphere in the containment. Performing this test during power operation or cold shutdown requires de-inerting the primary containment. It also requires isolating the air/nitrogen supply to the inboard MSIVs, which could eventually cause the valves to close. It is not practical to de-inert the containment during each cold shutdown outage solely to perform this testing. Deferring testing to refueling outages is permitted by the OM Code and NUREG-1482, Revision 2, paragraph 3.1.1.3, “De-inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing,” which states: “The staff has determined that it is impractical to de-inert the containment during each cold shutdown outage solely to perform such routine testing or repair activities.”

ALTERNATE TEST

Reverse flow closure and Bi-directional open testing of the inboard MSIV accumulator inlet check valves will be performed during each refueling outage.

ICS-ROJ-01

Component ID	Class	Cat.	System
2ICS*V156	1	A/C	ICS
2ICS*V157	1	A/C	ICS

FUNCTION

RCIC injection line inboard containment isolation check valves must open to allow RCIC flow to the vessel.

Both valves must close to provide primary containment and reactor coolant pressure boundary isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These check valves operate by system flow or can be exercised with a mechanical exerciser. The use of system flow to exercise the valves during power operation would require injecting cold water from the condensate storage tank into the reactor vessel. The cold-water injection at power would produce reactivity effects that could cause a plant trip. Thermal shock could reduce expected component life. Due to the location of the injection point, water could be carried over in the main steam, causing damage to the main turbine. Since the ICS system is depressurized during normal operation, a differential pressure approximately equal to reactor pressure exists across the check valves and manual exercising is not possible. Check Valve 2ICS*V157 is located inside the drywell. A forward flow failure of 2ICS*V157 would require the drywell to be de-inerted to perform maintenance. The only practical means of verifying reverse flow closure for both check valves is by use of a mechanical exerciser or during local leak rate testing. Reverse flow closure by leak rate testing requires the primary containment to be accessible. It is not practical to de-inert the containment during each cold shutdown outage solely to perform this testing. Deferring testing to refueling outages is permitted by the OM Code and NUREG-1482, Revision 2, paragraph 3.1.1.3, “De-inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing,” which states: “The staff has determined that it is impractical to de-inert the containment during each cold shutdown outage solely to perform such routine testing or repair activities.”

ALTERNATE TEST

Forward flow exercising of 2ICS*V157 will be performed by using system flow or a mechanical exerciser. Reverse flow closure of both check valves will be verified using local leak rate testing or a mechanical exerciser. This testing will be performed during refueling outages.

ISC-ROJ-01

Component ID	Class	Cat.	System
2ISC*V200A	N	N/A	ISC
2ISC*V200B	N	N/A	ISC
2ISC*V200C	N	N/A	ISC
2ISC*V200D	N	N/A	ISC
2ISC*V204A	N	N/A	ISC
2ISC*V204B	N	N/A	ISC
2ISC*V204C	N	N/A	ISC
2ISC*V204D	N	N/A	ISC

FUNCTION

These valves close to prevent the reactor water level reference leg from draining in the event CRD is lost.

These valves open to admit approximately 4lbm/hr of CRD flow to the reactor water level reference leg.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Testing of these valves would require depressurizing the associated CRD headers to ensure the reference leg did not depressurize. This could potentially result in control rod drive movement and plant reactivity excursions.

ALTERNATE TEST

These valves will be reverse flow and leak rate tested every refueling outage. Open testing is performed during normal plant operation as each valve is required to pass 4 lbm/hr to ensure each reference leg is kept full. Failure to pass this flow would result in reference leg level changes and therefore changes in the plant level instrumentation readings.

LMS-ROJ-01

Component ID	Class	Cat.	System
2LMS*SOV152	2	A	LMS
2LMS*SOV156	2	A	LMS

FUNCTION

These valves must open provide pressure indication during primary containment leakage rate testing (Type A testing).

These valves must close to provide primary containment isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

ISTC-3560 & 5151: Quarterly fail-safe and stroke time to the closed position.

BASIS FOR JUSTIFICATION

These valves are both containment isolation valves located inside primary containment. These two LMS valves open to provide pressure indication during primary containment leakage rate testing. This is not an active safety function. Additionally, they both serve an active safety related function to close to provide primary containment isolation.

Although these valves are capable of being tested at power, operating experience at other Exelon and non-Exelon plants has demonstrated a potential for valves to fail as a result of cycling at power (Reference ICES #314926, #314808 and #305581). Failure modes have included severe packing leakage and a loss of containment isolation function. Due to the fact that these valves are located inside the drywell and are “inaccessible”, the inability of these valves to open or close would result a degraded system with the potential for an unnecessary plant shutdown and challenge to safety systems. Additionally, the containment would require de-inerting in order to perform repairs.

Failure of the any of these valves to open during Type A testing would inhibit a flow path for gathering pressure indication inside containment during Appendix J Type A testing. Failure of either of these valves to return to the closed position would result in the necessity to declare a Containment Isolation Valve inoperable requiring entry into Technical Specification 3.6.1.3 5.

Thus, the risks associated with testing these valves on line vs during a refuel outage outweigh the benefits of testing quarterly on line. During refuel outages, the primary containment is open, and any repairs could be performed immediately without cycling the plant and challenging safety systems during the process of shutting down the plant. Thus, this analysis provides the basis, in accordance with ISTC-3521(e) for deferring testing from a quarterly test frequency to refuel

outages as noted in NUREG 1482 section 2.4.5 Deferring Valve Testing to Cold Shutdown or Refueling Outages.

ALTERNATE TEST

It has been determined under this evaluation that testing during cold shutdowns (ref ISTC-3521(c)) is not practicable because primary containment (drywell and suppression chambers) is not always made accessible.

RCS-ROJ-01

Component ID	Class	Cat.	System
2RCS*SOV104	2	A	RCS

FUNCTION

This valve opens to provide a reactor coolant sample. (This is not a safety function).

This valve must close to provide primary containment isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

ISTC-3560 & 5151: Quarterly fail-safe and stroke time to the closed position.

BASIS FOR JUSTIFICATION

This valve is a containment isolation valve located inside primary containment. This RCS valve open to provide a reactor coolant sample This is not an active safety function. Additionally, this valve serves an active safety related function to close to provide primary containment isolation.

Although this valve is capable of being tested at power, operating experience at other Exelon and non-Exelon plants has demonstrated a potential for valves to fail as a result of cycling at power (Reference ICES #314926, #314808 and #305581). Failure modes have included severe packing leakage and a loss of containment isolation function. Due to the fact that this valve is located inside the drywell and is “inaccessible”, the inability of this valve to open or close would result a degraded system with the potential for an unnecessary plant shutdown and challenge to safety systems. Additionally, the containment would require de-inerting in order to perform repairs.

Failure of this valve to open would inhibit a flow path for gathering a reactor coolant sample. Failure of this valve to return to the closed position would result in the necessity to declare a Containment Isolation Valve inoperable requiring entry into Technical Specification 3.6.1.3 5. Thus, the risks associated with testing this valve on line vs during a refuel outage outweigh the benefits of testing quarterly on line. During refuel outages, the primary containment is open, and any repairs could be performed immediately without cycling the plant and challenging safety systems during the process of shutting down the plant. Thus, this analysis provides the basis, in accordance with ISTC-3521(e) for deferring testing from a quarterly test frequency to refuel outages as noted in NUREG 1482 section 2.4.5 Deferring Valve Testing to Cold Shutdown or Refueling Outages.

ALTERNATE TEST

It has been determined under this evaluation that testing during cold shutdowns (ref ISTC-3521(c)) is not practicable because primary containment (drywell and suppression chambers) is not always made accessible.

RDS-ROJ-01

Component ID	Class	Cat.	System
2RDS*V115	2	C	RDS

FUNCTION

This valve closes on reverse flow to prevent accumulator water from backflowing into the charging water header during scram.

This check valve opens to allow the RDS pumps to pressurize the HCUs. This is not an active safety function.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION:

Closure verification of the charging water header check valves requires that the control rod drive pumps must be stopped to depressurize the charging water header. This test should not be performed during power operation because stopping the pumps results in a loss of cooling water to all control rod drive mechanisms, and seal damage could result. Additionally, this test cannot be performed during each cold shutdown because the control rod drive pumps also supply water for the reactor vessel level instrumentation reference leg backfill injection lines. This prevents non-condensable gases from accumulating which could result in erroneous reactor water level measurements.

ALTERNATE TEST

This charging water check valve will be tested each refueling outage by performing a scram accumulator pressure decay test. This is consistent with NUREG 1482, Rev. 2, section 4.4.6.

RDS-ROJ-02

Component ID	Class	Cat.	System
2RDS*SOV137	N	N/A	RDS
2RDS*SOV138	N	N/A	RDS

FUNCTION

The two 125-V dc solenoid-operated backup scram valves provide a second means of controlling the air supply to the scram valves for all control rods. When the solenoid for either backup scram valve is energized, the associated backup scram valve vents the air supply for the scram valves. This action initiates insertion of any withdrawn control rods regardless of the action of the scram pilot valves.

TEST REQUIREMENT:

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION:

Exercising these valves scrams the associated control rods resulting in a unit trip.

ALTERNATE TEST

These valves will be tested each refueling outage. This is consistent with NUREG 1482 Rev. 2, section 4.4.6

RDS-ROJ-03

Component ID	Class	Cat.	System
2RDS*AOV126	N	N/A	RDS
2RDS*AOV127	N	N/A	RDS
2RDS*SOV139	N	N/A	RDS
2RDS*V114	N	N/A	RDS
2RDS*V138	N	N/A	RDS

FUNCTION

SCRAM inlet, outlet and pilot valves actuation result in scram of each associated control rod. The SCRAM discharge outlet header check valve closes on reverse flow to prevent RDS hydraulic system scram discharge header backflow from entering the HCU through the outlet scram valve during and following reactor scram. The cooling water check valve protects the cooling water riser from driving pressure or scram pressure backflow through the inlet scram valve.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Exercising the scram inlet, outlet and pilot valves scrams the associated control rod. Scramming individual control rods at power may produce unacceptable peaking factors in the core. These valves cannot be partial-stroke tested. Removing air from the actuator of the AOVs, or power from the SOVs, causes the associated scram inlet and outlet valves to go fully open. Testing of the scram discharge outlet header check valve would require scraming the associated CDRs for an open test or isolating the scram discharge header for a closed disassembly and inspection. Testing of the cooling water check valve would require either scramming each associated CRD or isolating the CRD header for disassembly and inspection. Testing at a frequency greater than that specified in Technical Specifications accelerates the wear on the CRD mechanisms with no commensurate improvement in safety.

ALTERNATE TEST

These valves will be tested in conjunction with the control rod scram insertion time testing specified in TS 3.1.1.Acceptability of the valve stroke times and exercises will be shown by the respective CRD meeting its' required stroke time. This is consistent with NUREG 1482 Rev. 2, section 4.4.6.

RHS-ROJ-01

Component ID	Class	Cat.	System
2RHS*V16A	1	A/C	RHS
2RHS*V16B	1	A/C	RHS
2RHS*V16C	1	A/C	RHS

FUNCTION

RHS injection line containment isolation check valves must open to allow low pressure coolant injection flow into the reactor vessel.

The valves must close to provide primary containment and reactor coolant pressure boundary isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These check valves are capable of being operated either by system flow or by using a mechanical exerciser. The use of system flow to operate the valves during power operation would require injecting cold water from the suppression pool into the reactor vessel. The cold-water injection at power would produce reactivity effects that could cause a plant trip. Thermal shock could reduce expected component life. The only practical means of verifying reverse flow closure of the check valves is by use of a mechanical exerciser or during leak-rate testing. Since the RHS system is depressurized during normal operation, a differential pressure approximately equal to reactor pressure exists across the check valves. The mechanical exerciser is only capable of exercising the valve with a zero-pressure differential. Reverse flow closure testing requires the primary containment to be accessible. The check valves are located inside the drywell and can only be accessed for exercising when the containment is de-inerted. It is not practical to de-inert the containment during each cold shutdown outage solely to perform this testing. Deferring testing to refueling outages is permitted by the OM Code and NUREG-1482, Revision 2, paragraph 3.1.1.3, “De-inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing,” which states: “The staff has determined that it is impractical to de-inert the containment during each cold shutdown outage solely to perform such routine testing or repair activities.”

ALTERNATE TEST

Forward flow exercising, and reverse flow closure will be performed using a mechanical exerciser when the differential pressure across the valve is zero. This testing will be performed during each refueling outage.

RHS-ROJ-02

Component ID	Class	Cat.	System
2RHS*V39A	1	A/C	RHS
2RHS*V39B	1	A/C	RHS

FUNCTION

RHS injection line containment isolation check valves must close to provide primary containment and reactor coolant pressure boundary isolation.

These check valves must open to allow shutdown cooling to be placed in service for achieving cold shutdown or long-term cooling following a design basis accident. This function is important to safety.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

These check valves are capable of being operated either by system flow or by using a mechanical exerciser. The use of system flow to operate the valves during power operation would require injecting cold water from the suppression pool into the reactor vessel. The cold-water injection at power would produce reactivity effects that could cause a plant trip. Thermal shock could reduce expected component life. A forward flow failure would require the drywell to be de-inerted to perform maintenance. The only practical means of verifying reverse flow closure of the check valves is by use of a mechanical exerciser or during leak-rate testing. Since the RHS system is depressurized during normal operation, a differential pressure approximately equal to reactor pressure exists across the check valves. The injection isolation valves are interlocked to prevent injection at high pressure. The mechanical exerciser is only capable of exercising the valve with a zero-pressure differential. Reverse flow closure testing requires the primary containment to be accessible. The check valves are located inside the drywell and can only be accessed for exercising when the containment is de-inerted. It is not practical to de-inert the containment during each cold shutdown outage solely to perform this testing. Deferring testing to refueling outages is permitted by the OM Code and NUREG-1482, Revision 2, paragraph 3.1.1.3, “De-inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing,” which states: “The staff has determined that it is impractical to de-inert the containment during each cold shutdown outage solely to perform such routine testing or repair activities.”

ALTERNATE TEST

Forward flow exercising will be performed by using system flow or a mechanical exerciser. Reverse flow closure of both check valves will be verified using local leak rate testing or a mechanical exerciser. This testing will be performed during refueling outages.

SLS-ROJ-01

Component ID	Class	Cat.	System
2SLS*MOV5A	1	A/C	SLS
2SLS*MOV5B	1	A/C	SLS

FUNCTION

SLS injection outside containment isolation valves must open to inject standby liquid control into the reactor vessel.

The valves must close to provide primary containment isolation.

TEST REQUIREMENT

OM Code paragraph ISTC-3510 requires Active Category A and B valves and Category C check valves to be exercised nominally every 3 months during operation at power to the position(s) required to fulfill its function(s), except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and 5222.

BASIS FOR JUSTIFICATION

Since the only flow path through these valves is the injection flow path, forward flow exercising during any operational mode requires firing a squib valve and injecting water into the reactor coolant system, using the SLS pumps. Injecting water during normal operation could result in adverse plant conditions, such as changes in reactivity, power transients, thermal shock-induced cracking, and a possible plant trip. Since firing the squib valve destroys the valve internals, it should be minimized. There is no provision for partial stroke testing. Firing the explosive valves at every cold shutdown would produce excessive wear on the squib valve internals and is considered impracticable. Technical specification testing further reduces the firing of the squib valves by alternating the firing between squib valves 2SLS*VEX3A&B. Therefore, forward flow testing of the check valves will be performed at refueling during the SLS injection test required by Technical Specification SR 3.7.1.8.

ALTERNATE TEST

Forward flow operability will be verified at refueling during the SLS injection test.

Attachment 12 – Unit 2

Technical Position index

TECHNICAL POSITION NUMBER	**REV #**	**TITLE**
Note: Refer to ER-AA-321-1007, Inservice Testing (IST) Program Corporate Technical Positions, for a listing and subsequent discussion of Corporate Technical Positions. NMPNS adheres to the applicable Corporate Technical Positions addressed in the latest revision of ER-AA-321-1007.		
2017-001	0	Fuel Oil Transfer Pump Differential Pressure Accuracy Technical Position

Attachment 13 – Unit 2

Technical Positions

TP-2017-001

SUBJECT: Fuel Oil Transfer Pump Differential Pressure Accuracy Technical Position

System: Diesel Generator Fuel Oil

Components: Fuel Oil Transfer Pumps (1A, 1B, 1C, 1D, 2A, 2B)

Code Class: 3

Category: B

Surveillance Test: N2-OSP-EGF-Q@001

IST Safety Function Verification: Transfer diesel generator fuel oil from the underground storage tanks to the fuel oil day tanks.

Code Requirement: Per ASME OM-2012, "Operation and Maintenance of Nuclear Power Plants" Code, Table ISTB-3510-1, the required instrument accuracy for CPT and Preservice Tests for differential pressure measurement shall be +/- ½% and +/- 2% for Group A and B tests.

Document Purpose: IST Engineering to present a white paper on the accuracy determination of the differential pressure measurement for the Fuel Oil Transfer Pumps as tested per N2-OSP-EGF-Q@001.

Technical Position: NMP2 does not have differential pressure gauges nor does it have suction pressure gauges installed for the Fuel Oil Transfer Pumps. To obtain suction pressure a dip-stick measuring device with 1/8-inch increments is lowered into the underground fuel tank and measures the level of the tank. A calculation is performed within N2-OSP-EGF-Q@001 that determines the actual level of fuel oil within the underground storage tank. This height measurement is then converted within N2-OSP-EGF-Q@001 to PSI (suction pressure).

The discharge pressure measurement is recorded directly from an installed pressure indicator. The test pressure gauges are considered M&TE and are required to be calibrated to +/- ½% accuracy of full scale (range 0-30 psig). Differential pressure is determined by adding the calculated suction pressure value to the recorded discharge pressure value. NMP does not consider the differential pressure determination to be an "instrument loop."

Per paragraph 5.5.3 of the NUREG-1482 Revision 2, *Use of Tank or Bay Level to Calculate Differential Pressure,* "when inlet pressure gauges are not installed in the inlet of a vertical line shaft pump, it is impractical to directly measure inlet pressure for use in determining differential pressure for the pump. The staff has determined that, if the licensee uses the bay level to calculate the suction (inlet) pressure, the implementing procedure must include the calculation. The licensee must also verify that the reading scale for measuring the level and the calculational method yield an accuracy within +/- 2% for Group A and B tests, and +/- ½% for Preservice and Comprehensive tests."

The paragraph 5.5.3 of the NUREG-1482 Revision 2, *Use of Tank or Bay Level to Calculate Differential Pressure*, further states that "the Code allows the licensee to determine differential

pressure by obtaining the information from a differential pressure gauge or differential pressure transmitter, or by determining the difference between the pressure at a point in the inlet pipe and the pressure at a point in the discharge pipe. Therefore, the licensee may implement a calculational method without obtaining relief because the ASME Code allows for the determination of differential pressure from the discharge pressure and the pressure in the pump inlet."

NMP does not consider the differential pressure determination (discharge pressure less the suction pressure) to be an "instrument loop" or to be derived from "analytical methods instead of measurement" as discussed in ASME OM-2012, "Operation and Maintenance of Nuclear Power Plants" Code, ISTB-3510. Referenced below is the applicable ASME Interpretation that has allowed NMP to reach this position:

Interpretation: 04-07

Subject: ASME/ANSI OM Code 2001 and Later Editions and Addenda; ISTA-2000, Definitions; ISTB-3500, Data Collection; and ISTB-3520(b), Differential Pressures

Date Issued: June 20, 2005

File: OMI 05-02

Question: Is it a requirement of ISTB-3510(a) that when pump differential pressure is determined by paras. (a) through (c) below, the pressure instruments utilized must be considered an *instrument loop* as defined by ISTA-2000, Definitions?

(a) reading pump discharge pressure on an analog or digital pressure indicator
(b) reading pump suction pressure on an analog or digital pressure indicator, and then
(c) subtracting the suction pressure reading from the discharge pressure reading

Reply: No.

Based on the above ASME Interpretation, NMP considers both the suction pressure measurement and discharge pressure measurement to be independent parameters and therefore each are required to satisfy the required instrument accuracies individually as listed in ISTB-3510 (+/- 2% for Group A and B tests, and +/- ½ % for Preservice and Comprehensive tests).

Suction Pressure Accuracy: Per ASME NQA-1-2008, *Quality Assurance Requirements for Nuclear Facility Applications*, Requirement 12, *Control of Measuring and Test Control*, "calibration and control measures are not required for commercial equipment such as rulers, tape measures, levels, etc., if such equipment provides the required accuracy."

As stated above the suction pressure is a physical measurement taken using a dip-stick measuring device. It is assumed that the measurement can be taken to at least the nearest 1/8-inch. As detailed in N2-OSP-EGF-Q@001 the measurement is taken over a span of 226.5 inches (18.875 feet). 226.5 inches is the length from centerline of pump discharge to the bottom of storage tank.

$$Suction\ Pressure = \left[\frac{(0.5\ inches) \cdot \left(\frac{1.0\ ft}{12\ inches}\right)}{18.875\ feet}\right] = (0.0022) \cdot 100 = 0.22\%$$

Based on the above calculation the suction pressure measurement is assumed to be accurate to within +/-0.22% of the 18.875 ft. span.

Discharge Pressure Accuracy: The discharge pressure measurement is recorded directly from a test gauge instrumented from the discharge pipe of the respective Fuel Oil Transfer Pump. The test pressure gauges are considered M&TE and are required to be calibrated to +/- ½% accuracy of full scale (range 0-30 psig).

Conclusion: NMP considers both the suction pressure measurement and discharge pressure measurement to be independent parameters and therefore each are required to satisfy the required instrument accuracies individually as listed in ISTB-3510 (+/- 2% for Group A and B tests, and +/- ½ % for Preservice and Comprehensive tests). As stated above the suction pressure measurement is assumed to be accurate to within +/- 0.22% and the discharge pressure instrument is calibrated to within +/- 0.5%. These aspects taken collectively ensure the Fuel Oil Transfer Pumps differential pressure measurement is within the +/- ½ % accuracy requirement.

Attachment 14 – Unit 2

Inservice Testing Pump Table

NMP Unit 2
Pump Table

PUMPS - IST Program Pumps

Component	PID(Coord)	Code Class	Group	Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
2CSH*P1 HPCS INJECTION PUMP 13 Stage Centrifugal Vertical Line Shaft Pump	33B (H-7)	2	B	No	Yes	Yes	No	No	N2-OSP-CSH-Q@002	Q		
				No	Yes	Yes	Yes	No	N2-OSP-CSH-Q@002	2Y		Comprehensive / PPVT
2CSL*P1 LPCS INJECTION PUMP 5 Stage Centrifugal Vertical Line Shaft Pump	32A (B-8)	2	B	No	Yes	Yes	No	No	N2-OSP-CSL-Q@002	Q		
				No	Yes	Yes	Yes	No	N2-OSP-CSL-Q@002	2Y		Comprehensive / PPVT
2EGF*P1A FUEL OIL TRANSFER PUMP 4 Stage Centrifugal Vertical Line Shaft Pump	104C (E-6)	3	B	No	Yes	Yes	Yes	No	N2-OSP-EGF-Q@001	2Y		Comprehensive / PPVT
				No	Yes	Yes	No	No	N2-OSP-EGF-Q@001	Q		
2EGF*P1B FUEL OIL TRANSFER PUMP 4 Stage Centrifugal Vertical Line Shaft Pump	104B (E-8)	3	B	No	Yes	Yes	Yes	No	N2-OSP-EGF-Q@001	2Y		Comprehensive / PPVT
				No	Yes	Yes	No	No	N2-OSP-EGF-Q@001	Q		
2EGF*P1C FUEL OIL TRANSFER PUMP 4 Stage Centrifugal Vertical Line Shaft Pump	104C (C-6)	3	B	No	Yes	Yes	Yes	No	N2-OSP-EGF-Q@001	2Y		Comprehensive / PPVT
				No	Yes	Yes	No	No	N2-OSP-EGF-Q@001	Q		
2EGF*P1D FUEL OIL TRANSFER PUMP 4 Stage Centrifugal Vertical Line Shaft Pump	104B (E-4)	3	B	No	Yes	Yes	Yes	No	N2-OSP-EGF-Q@001	2Y		Comprehensive / PPVT
				No	Yes	Yes	No	No	N2-OSP-EGF-Q@001	Q		
2EGF*P2A FUEL OIL TRANSFER PUMP 4 Stage Centrifugal Vertical Line Shaft Pump	104B (E-4)	3	B	No	Yes	Yes	Yes	No	N2-OSP-EGF-Q@001	2Y		Comprehensive / PPVT
				No	Yes	Yes	No	No	N2-OSP-EGF-Q@001	Q		
2EGF*P2B FUEL OIL TRANSFER PUMP 4 Stage Centrifugal Vertical Line Shaft Pump	104B (C-4)	3	B	No	Yes	Yes	Yes	No	N2-OSP-EGF-Q@001	2Y		Comprehensive / PPVT
				No	Yes	Yes	No	No	N2-OSP-EGF-Q@001	Q		
2HVK*P1A CONTROL ROOM CHILLED WATER PUMP Single Stage Horizonatl Centrifugal Pump	53A (C-6)	3	A	No	Yes	Yes	Yes	No	N2-OSP-HVK-Q001	Q		
				No	Yes	Yes	Yes	No	N2-OSP-HVK-Q001	2Y		Comprehensive / PPVT
2HVK*P1B CONTROL ROOM CHILLED WATER PUMP Single Stage Horizonatl Centrifugal Pump	53A (C-10)	3	A	No	Yes	Yes	Yes	No	N2-OSP-HVK-Q001	Q		
				No	Yes	Yes	Yes	No	N2-OSP-HVK-Q001	2Y		Comprehensive / PPVT

NMP Unit 2
Pump Table

PUMPS - IST Program Pumps

Component	PID(Coord)	Code Class	Group	Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
				----------------Test Parameters-----------								
2ICS*P1 RCIC INJECTION PUMP Turbine Driven 4 SStage Horizontal Centrifugal Pump	35D (G-9)	2	B	No	Yes	Yes	No	Yes	N2-OSP-ICS-Q@002	Q		
				No	Yes	Yes	Yes	Yes	N2-OSP-ICS-Q@002	2Y		Comprehensive / PPVT
2RHS*P1A LPCI/RHR INJECTION PUMP 3 STAGE CENTRIFUGAL VERTICAL LINE SHAFT PUMP	31F (D-7)	2	A	No	Yes	Yes	Yes	No	N2-OSP-RHS-Q@004	Q		
				No	Yes	Yes	Yes	No	N2-OSP-RHS-Q@004	2Y		Comprehensive / PPVT
2RHS*P1B LPCI/RHR INJECTION PUMP 3 STAGE CENTRIFUGAL VERTICAL LINE SHAFT PUMP	31E (E-2)	2	A	No	Yes	Yes	Yes	No	N2-OSP-RHS-Q@005	Q		
				No	Yes	Yes	Yes	No	N2-OSP-RHS-Q@005	2Y		Comprehensive / PPVT
2RHS*P1C LPCI/RHR INJECTION PUMP 3 STAGE CENTRIFUGAL VERTICAL LINE SHAFT PUMP	31G (D-6)	2	A	No	Yes	Yes	Yes	No	N2-OSP-RHS-Q@006	Q		
				No	Yes	Yes	Yes	No	N2-OSP-RHS-Q@006	2Y		Comprehensive / PPVT
2SFC*P1A SPENT FUEL CIRCULATING PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	38B (E-3)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SFC-Q001	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SFC-Q001	2Y		Comprehensive / PPVT
2SFC*P1B SPENT FUEL CIRCULATING PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	38A (E-10)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SFC-Q001	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SFC-Q001	2Y		Comprehensive / PPVT
2SLS*P1A STANDBY LIQUID CONTROL INJECTION PUMP TRIPLEX RECIPROCATING PUMP - POSITIVE DISPLACEMENT	36A (H-5)	2	B	No	No	Yes	No	No	N2-OSP-SLS-Q001	Q		
				Yes	No	Yes	Yes	No	N2-OSP-SLS-Q001	2Y		Comprehensive / PPVT
2SLS*P1B STANDBY LIQUID CONTROL INJECTION PUMP TRIPLEX RECIPROCATING PUMP - POSITIVE DISPLACEMENT	36A (H-9)	2	B	No	No	Yes	No	No	N2-OSP-SLS-Q001	Q		
				Yes	No	Yes	Yes	No	N2-OSP-SLS-Q001	2Y		Comprehensive / PPVT
2SWP*P1A SERVICE WATER PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	11B (C-9)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	2Y		Comprehensive / PPVT
2SWP*P1B SERVICE WATER PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	11A (H-5)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	2Y		Comprehensive / PPVT

NMP Unit 2
Pump Table

PUMPS - IST Program Pumps

Component	PID(Coord)	Code Class	Group	Test Parameters: Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
2SWP*P1C SERVICE WATER PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	11A (H-10)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	2Y		Comprehensive / PPVT
2SWP*P1D SERVICE WATER PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	11A (D-5)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	2Y		Comprehensive / PPVT
2SWP*P1E SERVICE WATER PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	11B (H-9)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	2Y		Comprehensive / PPVT
2SWP*P1F SERVICE WATER PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	11A (D-10)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SWP-Q002	2Y		Comprehensive / PPVT
2SWP*P2A SERVICE WATER CR CHILLER PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	11J (J-6)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SWP-Q@003	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SWP-Q@003	2Y		Comprehensive / PPVT
2SWP*P2B SERVICE WATER CR CHILLER PUMP SINGLE STAGE HORIZONTAL CENTRIFUGAL PUMP	11J (J-6)	3	A	No	Yes	Yes	Yes	No	N2-OSP-SWP-Q@003	Q		
				No	Yes	Yes	Yes	No	N2-OSP-SWP-Q@003	2Y		Comprehensive / PPVT

Attachment 15 – Unit 2

Inservice Testing Valve Table

Valve Table

AAS - Breathing Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2AAS*HCV134 Breathing Air	2	N	A	P	2	GL	MAN	20E (D-3)	LC	C	NA	LTJ PI	60 2Y		N2-ISP-LRT-R@002 N2-OSP-AAS-R001	
2AAS*HCV135 Breathing Air	2	N	A	P	2	GL	MAN	20E (C-7)	LC	C	NA	LTJ PI	60 2Y		N2-ISP-LRT-R@003 N2-OSP-AAS-R001	
2AAS*HCV136 Breathing Air	2	N	A	P	2	GL	MAN	20E (D-3)	LC	C	NA	LTJ PI	60 2Y		N2-ISP-LRT-R@002 N2-OSP-AAS-R001	
2AAS*HCV137 Breathing Air	2	N	A	P	2	GL	MAN	20E (E-7)	LC	C	NA	LTJ PI	60 2Y		N2-ISP-LRT-R@003 N2-OSP-AAS-R001	

Valve Table

ADH - Alternate Drywell Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ADH*V21A	3	Y	C	A	10	CK	SE	115A (J-4)	C	C	NA	BDO	R	ADH-ROJ - 01	N2-OSP-GTS-R001	
Return From Cooling Tower; Required for Sec. CT Integrity; 6.92 in.H2O												CC	R	ADH-ROJ - 01	N2-OSP-GTS-R001	
2ADH*V21B	3	Y	C	A	10	CK	SE	115A (J-4)	C	C	NA	BDO	R	ADH-ROJ - 01	N2-OSP-GTS-R001	
Return From Cooling Tower; Required for Sec. CT Integrity; 6.92 in.H2O												CC	R	ADH-ROJ - 01	N2-OSP-GTS-R001	
2ADH*V22A	3	Y	C	A	10	CK	SE	115A (J-4)	C	C	NA	BDO	R	ADH-ROJ - 01	N2-OSP-GTS-R001	
Heat Exchanger to Cooling Tower; Required for Sec. CT Integrity; 6.92 in.H2O												CC	R	ADH-ROJ - 01	N2-OSP-GTS-R001	
2ADH*V22B	3	Y	C	A	10	CK	SE	115A (J-4)	C	C	NA	BDO	R	ADH-ROJ - 01	N2-OSP-GTS-R001	
Heat Exchanger to Cooling Tower; Required for Sec. CT Integrity; 6.92 in.H2O												CC	R	ADH-ROJ - 01	N2-OSP-GTS-R001	

Valve Table

CCP - Reactor Building Closed Loop Cooling

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CCP*AOV37A	3	N	B	A	1.5	PGV	AO	13E (J-2)	O	C	C	FC	Q		N2-OSP-CCP-Q001	AOV Program
												FE	Q		N2-OSP-CCP-Q001	
RHR Pump A Seal Cooler Supply From CCP												PI	2Y		N2-OSP-CCP-R001	
												STC	Q		N2-OSP-CCP-Q001	
2CCP*AOV37B	3	N	B	A	2	PGV	AO	13E (D-8)	O	C	C	FC	Q		N2-OSP-CCP-Q001	AOV Program
												FE	Q		N2-OSP-CCP-Q001	
RHR Pump B & C Seal Cooler Supply From CCP												PI	2Y		N2-OSP-CCP-R001	
												STC	Q		N2-OSP-CCP-Q001	
2CCP*AOV38A	3	N	B	A	1.5	PGV	AO	13E (J-4)	O	C	C	FC	Q		N2-OSP-CCP-Q001	AOV Program
												FE	Q		N2-OSP-CCP-Q001	
RHR Pump A Seal Cooler Return To CCP												PI	2Y		N2-OSP-CCP-R001	
												STC	Q		N2-OSP-CCP-Q001	
2CCP*AOV38B	3	N	B	A	2	PGV	AO	13E (D-10)	O	C	C	FC	Q		N2-OSP-CCP-Q001	AOV Program
												FE	Q		N2-OSP-CCP-Q001	
RHR Pump B & C Seal Cooler Return To CCP												PI	2Y		N2-OSP-CCP-R001	
												STC	Q		N2-OSP-CCP-Q001	
2CCP*MOV122	2	N	A	A	8	GA	MO	13C (J-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
Drywell Space Cooler Return												LTJ	60		N2-ISP-LRT-R@008	
												RPI	MOV		S-EPM-GEN-063	
															S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*MOV124	2	N	A	A	8	FWGTV	MO	13C (I-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
Drywell Space Cooler Return												LTJ	60		N2-ISP-LRT-R@008	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*MOV14A	3	N	B	A	12	GA	MO	13E (G-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-CCP-Q001	
Spent Fuel Pool Cooling HX-A Inlet Blocking Valve												RPI	MOV		S-EPM-GEN-063	
2CCP*MOV14B	3	N	B	A	12	GA	MO	13E (H-10)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-CCP-Q001	
Spent Fuel Pool Cooling HX-B Inlet Blocking Valve												RPI	MOV		S-EPM-GEN-063	
2CCP*MOV15A	2	N	A	A	4	FWGTV	MO	13D (K-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
RCS Pump A Cooling Water Return												LTJ	60		N2-ISP-LRT-R@004	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CCP*MOV15B	2	N	A	A	4	FWGTV	MO	13A (I-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
RCS Pump B Cooling Water Return												LTJ	60		N2-ISP-LRT-R@006	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*MOV16A	2	N	A	A	4	GA	MO	13D (K-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
RCS Pump A Cooling Water Return												LTJ	60		N2-ISP-LRT-R@004	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*MOV16B	2	N	A	A	4	GA	MO	13A (G-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
RCS Pump B Cooling Water Return												LTJ	60		N2-ISP-LRT-R@006	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*MOV17A	2	N	A	A	4	FWGTV	MO	13D (C-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
RCS Pump A Cooling Water Supply												LTJ	60		N2-ISP-LRT-R@005	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*MOV17B	2	N	A	A	4	FWGTV	MO	13B (E-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
RCS Pump B Cooling Water Supply												LTJ	60		N2-ISP-LRT-R@007	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*MOV18A	3	N	B	A	12	GA	MO	13E (G-5)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-CCP-Q001	
Spent Fuel Pool Cooling HX-A Outlet Blocking Valve												RPI	MOV		S-EPM-GEN-063	
2CCP*MOV18B	3	N	B	A	12	GA	MO	13E (I-8)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-CCP-Q001	
Spent Fuel Pool Cooling HX-B Outlet Blocking Valve												RPI	MOV		S-EPM-GEN-063	
2CCP*MOV265	2	N	A	A	8	FWGTV	MO	13C (B-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
Drywell Space Cooler Supply												LTJ	60		N2-ISP-LRT-R@009	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*MOV273	2	N	A	A	8	GA	MO	13C (C-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
Drywell Space Cooler Supply												LTJ	60		N2-ISP-LRT-R@009	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	

Valve Table

CCP - Reactor Building Closed Loop Cooling

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CCP*MOV94A	2	N	A	A	4	GA	MO	13D (C-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
RCS Pump A Cooling Water Supply												LTJ	60		N2-ISP-LRT-R@005	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*MOV94B	2	N	A	A	4	GA	MO	13B (E-8)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-CCP-CS001	
RCS Pump B Cooling Water Supply												LTJ	60		N2-ISP-LRT-R@007	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CCP-CS001	
2CCP*RV1019A	2	N	A/C	A	0.75	RV	SE	13D (D-7)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
GL 96-06 Containment Penetration Relief												LTJ	60		N2-ISP-LRT-R@005	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2CCP*RV1020A	2	N	A/C	A	0.75	RV	SE	13D (L-6)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
GL 96-06 Containment Penetration Relief												LTJ	60		N2-ISP-LRT-R@004	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2CCP*RV1021A	2	N	A/C	A	0.75	RV	SE	13C (B-5)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
GL 96-06 Containment Penetration Relief												LTJ	60		N2-ISP-LRT-R@009	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2CCP*RV1022A	2	N	A/C	A	0.75	RV	SE	13C (I-7)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
GL 96-06 Containment Penetration Relief												LTJ	60		N2-ISP-LRT-R@008	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2CCP*RV170	2	N	A/C	A	0.75	RV	SE	13B (F-7)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
Containment Penetration Relief												LTJ	30		N2-ISP-LRT-R@007	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2CCP*RV171	2	N	A/C	A	0.75	RV	SE	13A (H-6)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
Containment Penetration Relief												LTJ	60		N2-ISP-LRT-R@006	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	

Valve Table

CCP - Reactor Building Closed Loop Cooling

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CCP*RV60A RHR Pump 2RHS*P1A Seal Cooler Thermal Relief	3	N	C	A	0.75	RV	SE	13E (K-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2CCP*RV60B RHR Pump 2RHS*P1B Seal Cooler Thermal Relief	3	N	C	A	0.75	RV	SE	13E (D-9)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2CCP*RV60C RHR Pump 2RHS*P1C Seal Cooler Thermal Relief	3	N	C	A	0.75	RV	SE	13E (E-9)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2CCP*RV64A 2SFC*E1A Over-Pressure Protection	3	N	C	A	2	RV	SE	13E (H-5)	C	O	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206	Note - 01
2CCP*RV64B 2SFC*E1B Over-Pressure Protection	3	N	C	A	2	RV	SE	13E (I-9)	C	O	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206	Note - 01
2CCP*V996 Alternate Drywell Cooling	3	N	C	A	4	CK	SE	13C (M-6)	OC	C	NA	DI	R	CCP-ROJ - 01	N2-MPM-GEN-R240	
2CCP*V997 Alternate Drywell Cooling	3	N	C	A	4	CK	SE	13C (M-6)	OC	C	NA	DI	R	CCP-ROJ - 01	N2-MPM-GEN-R240	
2CCP*V998 Alternate Drywell Cooling	3	N	C	A	4	CK	SE	13C (M-4)	OC	C	NA	DI	R	CCP-ROJ - 01	N2-MPM-GEN-R240	
2CCP*V999 Alternate Drywell Cooling	3	N	C	A	4	CK	SE	13C (M-5)	OC	C	NA	DI	R	CCP-ROJ - 01	N2-MPM-GEN-R240	

Valve Table

CMS - Containment Atmosphere Monitoring

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CMS*EFV10	2	N	C	A	0.75	EFV	SE	82A (I-2)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*PI173; PS173												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV1A	2	N	C	A	0.75	EFV	SE	82A (I-2)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*PT1A; *PT17B												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV1B	2	N	C	A	0.75	EFV	SE	82A (E-2)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*PT1B												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV3A	2	N	C	A	0.75	EFV	SE	82A (J-9)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*PT2A												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV3B	2	N	C	A	0.75	EFV	SE	82A (D-9)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*PT2B												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV5A	2	N	C	A	0.75	EFV	SE	82B (I-3)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*PT7A												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV5B	2	N	C	A	0.75	EFV	SE	82B (C-3)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*PT7B												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV6	2	N	C	A	0.75	EFV	SE	82B (I-2)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*PT168												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV8A	2	N	C	A	0.75	EFV	SE	82B (I-5)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*LT9A; 11A; 114												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV8B	2	N	C	A	0.75	EFV	SE	82B (C-5)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CMS*LT9B; 11B; 105												PI	2Y		N2-ISP-ISC-R003	
2CMS*EFV9A	2	N	C	A	0.75	EFV	SE	82B (I-9)	O	C	NA	BDO	R		N2-ISP-ISC-R@002	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R@002	
Instrument Line to 2CMS*LT9A; 11A; 114												PI	2Y		N2-ISP-ISC-R@002	
2CMS*EFV9B	2	N	C	A	0.75	EFV	SE	82B (C-9)	O	C	NA	BDO	R		N2-ISP-ISC-R@002	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R@002	
Instrument Line to 2CMS*LT9B; 11B; 105												PI	2Y		N2-ISP-ISC-R@002	

Valve Table

CMS - Containment Atmosphere Monitoring

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CMS*SOV23A	2	N	B	A	0.75	GL	SO	82A (G-6)	OC	OC	C	FC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
Post-Accident Sample Selector												FE	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
2CMS*SOV23B	2	N	B	A	0.75	GL	SO	82A (F-6)	OC	OC	C	FC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
Post-Accident Sample Selector												FE	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
2CMS*SOV23C	2	N	B	A	0.75	GL	SO	82A (G-5)	OC	OC	C	FC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
Post-Accident Sample Selector												FE	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
2CMS*SOV23D	2	N	B	A	0.75	GL	SO	82A (F-5)	OC	OC	C	FC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
Post-Accident Sample Selector												FE	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	

Valve Table

CMS - Containment Atmosphere Monitoring

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Normal	Safety	Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CMS*SOV23E	2	N	B	A	0.75	GL	SO	82A (G-4)	OC	OC	C	FC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
Post-Accident Sample Selector												FE	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
2CMS*SOV23F	2	N	B	A	0.75	GL	SO	82A (F-5)	OC	OC	C	FC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
Post-Accident Sample Selector												FE	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 01	N2-OSP-CMS-Q001	
2CMS*SOV24A	2	N	A	A	0.75	GL	SO	82A (H-5)	O	OC	C	FC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
CMS from Drywell to H2O2 Analyzer												FE	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@010	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
2CMS*SOV24B	2	N	A	A	0.75	GL	SO	82A (F-5)	O	OC	C	FC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
CMS from Drywell to H2O2 Analyzer												FE	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@016	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	

Valve Table

CMS - Containment Atmosphere Monitoring

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CMS*SOV24C	2	N	A	A	0.75	GL	SO	82A (I-5)	O	OC	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS from Drywell to H2O2 Analyzer												LTJ	60		N2-ISP-LRT-R@010	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV24D	2	N	A	A	0.75	GL	SO	82A (D-5)	O	OC	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS from Drywell to H2O2 Analyzer												LTJ	60		N2-ISP-LRT-R@016	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV26A	2	N	A	A	0.75	GL	SO	82B (H-5)	OC	OC	C	FC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
CMS from Suppression Chamber to H2O2 Analyzer												FE	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@011	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
2CMS*SOV26B	2	N	A	A	0.75	GL	SO	82B (D-5)	OC	OC	C	FC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
CMS from Suppression Chamber to H2O2 Analyzer												FE	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@017	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
2CMS*SOV26C	2	N	A	A	0.75	GL	SO	82B (J-5)	OC	OC	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS from Suppression Chamber to H2O2 Analyzer												LTJ	60		N2-ISP-LRT-R@011	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
												STO	Q		N2-OSP-CMS-Q001	

Valve Table

CMS - Containment Atmosphere Monitoring

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CMS*SOV26D	2	N	A	A	0.75	GL	SO	82B (B-5)	OC	OC	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS from Suppression Chamber to H2O2 Analyzer												LTJ	60		N2-ISP-LRT-R@017	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV32A	2	N	A	A	0.75	GL	SO	82A (J-8)	OC	OC	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS to Drywell from H2O2 Analyzer												LTJ	60		N2-ISP-LRT-R@012	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV32B	2	N	A	A	0.75	GL	SO	82A (E-8)	OC	OC	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS to Drywell from H2O2 Analyzer												LTJ	60		N2-ISP-LRT-R@018	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV33A	2	N	A	A	0.75	GL	SO	82A (H-8)	O	OC	C	FC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
CMS to Drywell from H2O2 Analyzer												FE	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@012	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
2CMS*SOV33B	2	N	A	A	0.75	GL	SO	82A (F-8)	O	OC	C	FC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
CMS to Drywell from H2O2 Analyzer												FE	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@018	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	

Valve Table

CMS - Containment Atmosphere Monitoring

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CMS*SOV34A	2	N	A	A	0.75	GL	SO	82B (H-8)	O	OC	C	FC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
CMS to Suppression Chamber from H2O2 Analyzer												FE	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@013	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
2CMS*SOV34B	2	N	A	A	0.75	GL	SO	82B (E-8)	O	OC	C	FC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
CMS to Suppression Chamber from H2O2 Analyzer												FE	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@019	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
												STO	R	CMS-ROJ - 02	N2-OSP-CMS-Q001	
2CMS*SOV35A	2	N	A	A	0.75	GL	SO	82B (J-8)	OC	OC	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS to Suppression Chamber from H2O2 Analyzer												LTJ	60		N2-ISP-LRT-R@013	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV35B	2	N	A	A	0.75	GL	SO	82B (C-8)	OC	OC	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS to Suppression Chamber from H2O2 Analyzer												LTJ	60		N2-ISP-LRT-R@019	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV60A	2	N	A	A	0.75	GL	SO	82A (I-3)	O	C	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS from Drywell To Containment Atmosphere Rad. Monitor												LTJ	60		N2-ISP-LRT-R@022	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
2CMS*SOV60B	2	N	A	A	0.75	GL	SO	82A (D-3)	O	C	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS from Drywell To Containment Atmosphere Rad. Monitor												LTJ	60		N2-ISP-LRT-R@024	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	

Valve Table

CMS - Containment Atmosphere Monitoring

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CMS*SOV61A	2	N	A	A	0.75	GL	SO	82A (H-3)	O	C	C	FC	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
CMS from Drywell To Containment Atmosphere Rad. Monitor												FE	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@022	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
2CMS*SOV61B	2	N	A	A	0.75	GL	SO	82A (F-3)	O	C	C	FC	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
CMS from Drywell To Containment Atmosphere Rad. Monitor												FE	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@024	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
2CMS*SOV62A	2	N	A	A	0.75	GL	SO	82A (I-7)	O	C	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS to Drywell From Containment Atmosphere Rad. Monitor												LTJ	60		N2-ISP-LRT-R@023	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
2CMS*SOV62B	2	N	A	A	0.75	GL	SO	82A (E-7)	O	C	C	FC	Q		N2-OSP-CMS-Q001	
												FE	Q		N2-OSP-CMS-Q001	
CMS to Drywell From Containment Atmosphere Rad. Monitor												LTJ	60		N2-ISP-LRT-R@025	
												PI	2Y		N2-OSP-CMS-R001	
												STC	Q		N2-OSP-CMS-Q001	
2CMS*SOV63A	2	N	A	A	0.75	GL	SO	82A (H-7)	O	C	C	FC	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
CMS to Drywell From Containment Atmosphere Rad. Monitor												FE	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@023	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
2CMS*SOV63B	2	N	A	A	0.75	GL	SO	82A (F-7)	O	C	C	FC	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
CMS to Drywell From Containment Atmosphere Rad. Monitor												FE	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	
												LTJ	60		N2-ISP-LRT-R@025	
												PI	2Y		N2-OSP-CMS-R001	
												STC	R	CMS-ROJ - 03	N2-OSP-CMS-Q001	

Valve Table

CMS - Containment Atmosphere Monitoring

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CMS*SOV64A	2	N	B	A	0.75	GL	SO	82A (L-5)	O	O	C	FE	Q		N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
H2O2 Analyzer Inlet												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV64B	2	N	B	A	0.75	GL	SO	82A (B-5)	O	O	C	FE	Q		N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
H2O2 Analyzer Inlet												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV65A	2	N	B	A	0.75	GL	SO	82A (L-8)	O	O	C	FE	Q		N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
H2O2 Analyzer Outlet												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV65B	2	N	B	A	0.75	GL	SO	82A (B-8)	O	O	C	FE	Q		N2-OSP-CMS-Q001	
												PI	2Y		N2-OSP-CMS-R001	
H2O2 Analyzer Outlet												STO	Q		N2-OSP-CMS-Q001	
2CMS*SOV74A	2	N	A	P	0.75	GL	SO	82A (K-4)	C	C	C	LJ	AJ		N2-ISP-LRT-R@014	Note - 02
												PI	2Y		N2-OSP-CMS-R001	
DW Atmos. Post-Accident Sample Loop A																
2CMS*SOV74B	2	N	A	P	0.75	GL	SO	82A (C-4)	C	C	C	LJ	AJ		N2-ISP-LRT-R@020	Note - 02
												PI	2Y		N2-OSP-CMS-R001	
DW Atmos. Post-Accident Sample Loop B																
2CMS*SOV75A	2	N	A	P	0.75	GL	SO	82A (K-9)	C	C	C	LJ	AJ		N2-ISP-LRT-R@015	Note - 02
												PI	2Y		N2-OSP-CMS-R001	
DW Atmos. Post-Accident Sample																
2CMS*SOV75B	2	N	A	P	0.75	GL	SO	82A (C-9)	C	C	C	LJ	AJ		N2-ISP-LRT-R@021	Note - 02
												PI	2Y		N2-OSP-CMS-R001	
DW Atmos. Post-Accident Sample																
2CMS*SOV76A	2	N	A	P	0.75	GL	SO	82A (L-4)	C	C	C	LJ	AJ		N2-ISP-LRT-R@014	Note - 02
												PI	2Y		N2-OSP-CMS-R001	
DW Atmos. Post-Accident Sample																
2CMS*SOV76B	2	N	A	P	0.75	GL	SO	82A (B-4)	C	C	C	LJ	AJ		N2-ISP-LRT-R@020	Note - 02
												PI	2Y		N2-OSP-CMS-R001	
DW Atmos. Post-Accident Sample																
2CMS*SOV77A	2	N	A	P	0.75	GL	SO	82A (L-2)	C	C	C	LJ	AJ		N2-ISP-LRT-R@015	Note - 02
												PI	2Y		N2-OSP-CMS-R001	
DW Atmos. Post-Accident Sample																
2CMS*SOV77B	2	N	A	P	0.75	GL	SO	82A (B-9)	C	C	C	LJ	AJ		N2-ISP-LRT-R@021	Note - 02
												PI	2Y		N2-OSP-CMS-R001	
DW Atmos. Post-Accident Sample																

Valve Table

CPS - Primary Containment Purge

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CPS*AOV104	2	N	A	A	14	BTF	AO	61A (F-5)	C	C	C	FC	Q		N2-OSP-CPS-Q001	Notes - 02 & 04
												FE	Q		N2-OSP-CPS-Q001	AOV Program
Drywell Purge - Inlet												LTJ	Q		N2-ISP-CPS-Q001	
												PI	2Y		N2-OSP-CPS-R001	
												STC	Q		N2-OSP-CPS-Q001	
2CPS*AOV105	2	N	A	A	12	BTF	AO	61A (F-7)	C	C	C	FC	Q		N2-OSP-CPS-Q001	Notes - 02 & 04
												FE	Q		N2-OSP-CPS-Q001	AOV Program
Suppression Chamber Purge - Inlet												LTJ	Q		N2-ISP-CPS-Q001	
												PI	2Y		N2-OSP-CPS-R001	
												STC	Q		N2-OSP-CPS-Q001	
2CPS*AOV106	2	N	A	A	14	BTF	AO	61A (G-5)	C	C	C	FC	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	Notes - 02 & 04 AOV Program
Drywell Purge - Inlet												FE	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	
												LTJ	Q		N2-ISP-CPS-Q001	
												PI	2Y		N2-OSP-CPS-R001	
												STC	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	
2CPS*AOV107	2	N	A	A	12	BTF	AO	61A (G-7)	C	C	C	FC	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	Notes - 02 & 04 AOV Program
Suppression Chamber Purge - Inlet												FE	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	
												LTJ	Q		N2-ISP-CPS-Q001	
												PI	2Y		N2-OSP-CPS-R001	
												STC	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	
2CPS*AOV108	2	N	A	A	14	BTF	AO	61A (I-5)	C	C	C	FC	R		N2-OSP-CPS-Q001	Note - 04
												FE	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	AOV Program
Drywell Vent - Exhaust												LTJ	Q		N2-ISP-CPS-Q002	
												PI	2Y		N2-OSP-CPS-R001	
												STC	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	
2CPS*AOV109	2	N	A	A	12	BTF	AO	61A (I-7)	C	C	C	FC	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	
Suppression Chamber Vent - Exhaust												FE	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	
												LTJ	Q		N2-ISP-CPS-Q002	
												PI	2Y		N2-OSP-CPS-R001	
												STC	R	CPS-ROJ - 02	N2-OSP-CPS-Q001	

Valve Table

CPS - Primary Containment Purge

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CPS*AOV109 Inner Flange	NA	N	NA	NA	12	FLANGE	NA	61A (J-7)	NA	NA		LJ-B	30		N2-ISP-CNT-R@001	
Inner flange for CIV																
2CPS*AOV110	2	N	A	A	14	BTF	AO	61A (K-5)	C	C	C	FC	Q		N2-OSP-CPS-Q001	Note - 04
												FE	Q		N2-OSP-CPS-Q001	AOV Program
Drywell Vent - Exhaust												LTJ	Q		N2-ISP-CPS-Q002	
												PI	2Y		N2-OSP-CPS-R001	
												STC	Q		N2-OSP-CPS-Q001	
2CPS*AOV111	2	N	A	A	12	BTF	AO	61A (K-7)	C	C	C	FC	Q		N2-OSP-CPS-Q001	
												FE	Q		N2-OSP-CPS-Q001	AOV Program
Suppression Chamber Vent - Exhaust												LTJ	Q		N2-ISP-CPS-Q002	
												PI	2Y		N2-OSP-CPS-R001	
												STC	Q		N2-OSP-CPS-Q001	
2CPS*SOV119	2	N	A	A	2	GL	SO	61A (E-8)	C	C	C	FC	Q		N2-OSP-CPS-Q001	Note - 02
												FE	Q		N2-OSP-CPS-Q001	
Containment N2 Makeup - Suppression Chamber												LTJ	60		N2-ISP-LRT-R@026	
												PI	2Y		N2-OSP-CPS-R001	
												STC	Q		N2-OSP-CPS-Q001	
2CPS*SOV120	2	N	A	A	2	GL	SO	61A (E-5)	C	C	C	FC	Q		N2-OSP-CPS-Q001	Note - 02
												FE	Q		N2-OSP-CPS-Q001	
Containment N2 Makeup - Drywell												LTJ	60		N2-ISP-LRT-R@027	
												PI	2Y		N2-OSP-CPS-R001	
												STC	Q		N2-OSP-CPS-Q001	
2CPS*SOV121	2	N	A	A	2	GL	SO	61A (G-8)	C	C	C	FC	R	CPS-ROJ - 01	N2-OSP-CPS-Q001	Note - 02
Containment N2 Makeup - Suppression Chamber												FE	R	CPS-ROJ - 01	N2-OSP-CPS-Q001	
												LTJ	60		N2-ISP-LRT-R@026	
												PI	2Y		N2-OSP-CPS-R001	
												STC	R	CPS-ROJ - 01	N2-OSP-CPS-Q001	
2CPS*SOV122	2	N	A	A	2	GL	SO	61A (G-5)	C	C	C	FC	R	CPS-ROJ - 01	N2-OSP-CPS-Q001	Note - 02
Containment N2 Makeup - Drywell												FE	R	CPS-ROJ - 01	N2-OSP-CPS-Q001	
												LTJ	60		N2-ISP-LRT-R@027	
												PI	2Y		N2-OSP-CPS-R001	
												STC	R	CPS-ROJ - 01	N2-OSP-CPS-Q001	

Valve Table

CPS - Primary Containment Purge

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CPS*SOV132	2	N	A	A	1	GL	SO	61A (F-8)	C	C	C	FC	Q		N2-OSP-CPS-Q001	Note - 02
												FE	Q		N2-OSP-CPS-Q001	
IAS to 2CPS*AOV107												LTJ	60		N2-ISP-LRT-R@028	
												PI	2Y		N2-OSP-CPS-R001	
												STC	Q		N2-OSP-CPS-Q001	
2CPS*V50	2	N	A/C	A	1.5	CK	SE	61A (F-8)	OC	C	N/A	BDO	CM		N2-OSP-CPS-Q001	
												CC	CM		N2-ISP-LRT-R@028	
IAS to *AOV107												LTJ	60		N2-ISP-LRT-R@028	

Valve Table

CSH - High Pressure Core Spray

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CSH*EFV1	2	N	C	A	2	EFV	SE	33A (G-6)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2CSH*LT123; LT124												PI	2Y		N2-ISP-ISC-R003	
2CSH*EFV2	2	N	C	A	2	EFV	SE	33A (G-7)	O	C	NA	BDO	R		N2-ISP-ISC-R@002	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R@002	
Instrument Line to 2CSH*LT123; LT124												PI	2Y		N2-ISP-ISC-R@002	
2CSH*EFV3	2	N	C	A	0.75	EFV	SE	33A (H-3)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2CSH*PDT109																
2CSH*HCV120	1	N	B	P	10	GA	MAN	33A (J-2)	O	O	NA	PI	2Y		N2-OSP-CSH-R002	
RPV Maintenance Isolation																
2CSH*MOV101	2	N	B	A	10	GA	MO	33B (D-9)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-CSH-Q001	
CST Pump Suction Valve												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-CSH-Q001	
2CSH*MOV105	2	N	A	A	4	FWGTV	MO	33B (G-5)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-CSH-Q001	
Suppression Pool Min Flow												LTJ	60		N2-ISP-LRT-R@032	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-CSH-Q001	
												STO	Q		N2-OSP-CSH-Q001	
2CSH*MOV107	1	N	A	A	12	FWGTV	MO	33A (G-2)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	PIV
												FE	CS		N2-OSP-CSH-CS001	
HPCS Injection Valve												LK	2Y	GV-RR - 03	N2-OSP-CSH-R@001	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-CSH-CS001	
												STO	CS			
												STO	CS		N2-OSP-CSH-CS001	
2CSH*MOV110	2	N	B	A	10	GL	MO	33B (G-3)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-CSH-Q001	
CST Test Bypass Valve												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-CSH-Q001	
															N2-OSP-CSH-Q001	
2CSH*MOV111	2	N	A	A	12	GL	MO	33A (F-4)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-CSH-Q001	
Test Return Valve to Suppression Pool												LTJ	60		N2-ISP-LRT-R@033	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-CSH-Q001	
															N2-OSP-CSH-Q001	

Valve Table

CSH - High Pressure Core Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CSH*MOV112 CST Test Bypass Valve	2	N	B	A	10	GL	MO	33B (F-3)	C	C	As-Is	DIAG FE RPI STC	MOV 2Y MOV 2Y		S-EPM-GEN-063 N2-OSP-CSH-Q001 S-EPM-GEN-063 N2-OSP-CSH-Q001 N2-OSP-CSH-Q001	
2CSH*MOV118 Suppression Pool Pump Suction	2	N	B	A	18	FWGTV	MO	33A (J-9)	C	OC	As-Is	DIAG FE RPI STO	MOV Q MOV Q		S-EPM-GEN-063 N2-OSP-CSH-Q001 S-EPM-GEN-063 N2-OSP-CSH-Q001 N2-OSP-CSH-Q001	
2CSH*RV113 HPCS Suction Header Relief	2	N	C	A	0.75	RV	SE	33B (F-8)	C	O	NA	BE LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206	Note - 01
2CSH*RV114 HPCS Discharge Header Relief	2	N	C	A	0.75	RV	SE	33B (J-5)	C	O	NA	BE LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206	Note - 01
2CSH*RV160 HPCS Pressure Pump 2CSH*P2 Suction	3	N	C	A	0.75	RV	SE	33B (G-9)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2CSH*V108 HPCS Injection to Reactor	1	N	A/C	A	12	SWCV	SE	33A (I-2)	C	OC	NA	CC CO LK	R R 2Y	CSH-ROJ - 01 CSH-ROJ - 01 GV-RR - 03	N2-OSP-CSH-R002 N2-OSP-CSH-R002 N2-OSP-CSH-R@001	
2CSH*V16 HPCS Supp. Pool Pump Suction	2	N	C	A	20	SWCV	SE	33A (I-10)	C	OC	NA	CC CO	Q Q		N2-OSP-CSH-Q001 N2-OSP-CSH-Q@002	CKV Program
2CSH*V17 HPCS Pressure Pump *P2 Discharge Check	2	N	C	A	3	SWCV	SE	33B (J-8)	OC	C	NA	BDO CC	Q Q		N2-OSP-CSH-M001 N2-OSP-CSH-Q@002	CKV Program
2CSH*V55 HPCS Pressure Pump *P2 Discharge Check	2	N	C	A	3	SWCV	SE	33B (J-8)	OC	C	NA	BDO CC	Q Q		N2-OSP-CSH-M001 N2-OSP-CSH-Q@002	CKV Program
2CSH*V59 CST Suction Check Valve	2	N	C	A	14	SWCV	SE	33B (E-9)	OC	OC	NA	CC CO	Q Q		N2-OSP-CSH-Q001 N2-OSP-CSH-Q@002	CKV Program

Valve Table

CSH - High Pressure Core Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CSH*V7	2	N	C	A	4	SWCV	SE	33B (E-5)	C	O	NA	BDC	CM		N2-OSP-CSH-Q@002	
												CO	CM		N2-OSP-CSH-Q@002	
HPCS Min. Flow to Supp. Pool																
2CSH*V9	2	N	C	A	16	SWCV	SE	33B (I-5)	C	O	NA	CC	Q		N2-OSP-CSH-M001	CKV Program
												CO	Q		N2-OSP-CSH-Q@002	
HPCS Pump *P1 Discharge Check Valve																

Valve Table

CSL - Low Pressure Core Spray

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CSL*EFV1	2	N	C	A	0.75	EFV	SE	32A (H-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2CSL*PDT132 & 2RHS*PDT18A																
2CSL*FV114	2	N	B	A	10	GL	MO	32A (E-4)	OC	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-CSL-Q@002	
Full-Flow Test to Supp. Pool												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-CSL-Q@002	
2CSL*HCV117	1	N	B	P	12	GA	MAN	32A (J-3)	O	O	NA	PI	2Y		N2-OSP-CSL-R002	
Reactor Vessel Hand Control Valve																
2CSL*MOV104	1	N	A	A	12	FWGTV	MO	32A (H-3)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	PIV
												FE	CS		N2-OSP-CSL-CS001	
LPCS Injection Valve												LK	2Y	GV-RR - 03	N2-OSP-CSL-R@001	
												RPI	MOV		S-EPM-GEN-063	
												STO	CS			
												STO	CS		N2-OSP-CSL-CS001	
2CSL*MOV107	2	N	B	A	4	GA	MO	32A (C-5)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-CSL-Q@002	
LPCS Min. Flow to Supp. Pool (E21-FO11)												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-CSL-Q@002	
												STO	2Y		N2-OSP-CSL-Q@002	
2CSL*MOV112	2	N	B	A	20	BTF	MO	32A (G-9)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-CSL-Q@002	
LPCS Supp. Pool Suction												RPI	MOV		S-EPM-GEN-063	
2CSL*RV105	2	N	C	A	1.5	RV	SE	32A (F-2)	C	O	NA	BE	10Y-S		N2-MSP-GEN-206	Note - 01
												LA	10Y-S		N2-MSP-GEN-206	Note - 05
LPCS Discharge Header Relief												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2CSL*RV123	2	N	C	A	0.75	RV	SE	32A (F-7)	C	O	NA	BE	10Y-S		N2-MSP-GEN-206	Note - 01
												LA	10Y-S		N2-MSP-GEN-206	Note - 05
LPCS Suction Header Relief												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2CSL*RV134	3	N	C	A	0.75	RV	SE	32A (E-6)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
LPCS Pressure Pump 2CSL*P2 Suction																

Valve Table

CSL - Low Pressure Core Spray

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2CSL*V101	1	N	A/C	A	12	SWCV	SE	32A (I-3)	C	OC	NA	CC	R	CSL-ROJ - 01	N2-OSP-CSL-R002	
LPCS Injection												CO	R	CSL-ROJ - 01	N2-OSP-CSL-R002	
												LK	2Y	GV-RR - 03	N2-OSP-CSL-R@001	
2CSL*V14	2	N	C	A	2	CK	SE	32A (D-6)	OC	C	NA	BDO	Q		N2-OSP-CSL-M001	
												CC	Q		N2-OSP-CSL-Q@002	
LPCS Pressure Pump *P2 Discharge Check																
2CSL*V21	2	N	C	A	2	CK	SE	32A (D-6)	OC	C	NA	BDO	Q		N2-OSP-CSL-M001	
												CC	Q		N2-OSP-CSL-Q@002	
LPCS Pressure Pump *P2 Discharge Check																
2CSL*V4	2	N	C	A	16	SWCV	SE	32A (B-3)	C	O	NA	CC	Q		N2-OSP-CSL-M001	CKV Program
												CO	Q		N2-OSP-CSL-Q@002	
LPCS Pump *P1 Discharge Check																
2CSL*V9	2	N	C	A	12	SWCV	SE	32A (E-5)	OC	O	NA	CC	Q		N2-OSP-CSL-Q@002	CKV Program
												CO	Q		N2-OSP-CSL-Q@002	
Supp. Pool Full Flow Test Return Check																

Valve Table

DER - Drywell Equipment Drains

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2DER*EFV31	2	N	C	A	0.75	EFV	SE	67A (B-6)	O	C	N/A	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2DER-PT134; RPV Head Seal Leak Detector												PI	2Y		N2-ISP-ISC-R003	
2DER*MOV119	2	N	A	A	4	FWGTV	MO	67A (C-3)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-DER-R001	
DWED Cooler from Drywell												LTJ	60		N2-ISP-LRT-R@038	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-DER-R001	
2DER*MOV120	2	N	A	A	4	FWGTV	MO	67A (C-3)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-DER-R001	
DWED Cooler from Drywell												LTJ	60		N2-ISP-LRT-R@038	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-DER-R001	
2DER*MOV130	2	N	A	A	2	GL	MO	67A (C-2)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-DER-R001	
DWEDT Vent Line												LTJ	60		N2-ISP-LRT-R@039	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-DER-R001	
2DER*MOV131	2	N	A	A	2	GL	MO	67A (C-2)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-DER-R001	
DWEDT Vent Line												LTJ	60		N2-ISP-LRT-R@039	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-DER-R001	
2DER*RV344	3	N	A/C	A	0.75	RV	SE		C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
GL 96-06 Containment Penetration Relief												LTJ	60		N2-ISP-LRT-R@038	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	

Valve Table

DFR - Drywell Floor Drains

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2DFR*MOV120	2	N	A	A	6	FWGTV	MO	63E (E-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-DFR-R001	
DWFD Tank Line												LTJ	60		N2-ISP-LRT-R@040	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-DFR-R001	
															N2-OSP-DFR-R001	
2DFR*MOV121	2	N	A	A	6	FWGTV	MO	63E (E-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-DFR-R001	
DWFD Tank Line												LTJ	60		N2-ISP-LRT-R@040	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-DFR-R001	
2DFR*MOV139	2	N	A	A	3	GA	MO	63E (E-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-DFR-R001	
DWFDT Vent Line												LTJ	30		N2-ISP-LRT-R@041	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-DFR-R001	
2DFR*MOV140	2	N	A	A	3	GA	MO	63E (F-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-DFR-R001	
DWFDT Vent Line												LTJ	30		N2-ISP-LRT-R@041	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-DFR-R001	
2DFR*RV228	3	N	A/C	A	0.75	RV	SE		C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
GL 96-06 Containment Penetration Relief												LTJ	30		N2-ISP-LRT-R@040	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	

Valve Table

EGA - Diesel Generator Starting Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2EGA*AOV323A HPCS -- 2EGS*EG2, Air Admission Valve	N	Y	N/A	A	3	GL	AO	104A (K-6)	C	OC	O	AUG	Q		N2-OSP-EGS-M@002	Note - 07 AOV Program
2EGA*AOV323B HPCS -- 2EGS*EG2, Air Admission Valve	N	N	N/A	A	3	GL	AO	104A (K-5)	C	OC	O	AUG	Q		N2-OSP-EGS-M@002	Note - 07 AOV Program
2EGA*PCV115 HPCS -- 2EGS*EG2, AIR START	N	Y	N/A	A	2	GA	AO	104A (J-5)	C	OC	N/A	AUG	Q		N2-OSP-EGS-M@002	Note - 07 AOV Program
2EGA*PCV116 HPCS -- 2EGS*EG2, AIR START	N	Y	N/A	A	2	GA	AO	104A (J-6)	C	OC	N/A	AUG	Q		N2-OSP-EGS-M@002	Note - 07 AOV Program
2EGA*PCV25A DIV I -- 2EGS*EG1, Air Admission Valve	N	Y	N/A	A	2.5	GL	AO	104A (F-2)	C	OC	O	AUG	Q		N2-OSP-EGS-M@001	Note - 07 AOV Program
2EGA*PCV25B DIV II -- 2EGS*EG3, Air Admission Valve	N	Y	N/A	A	2.5	GL	AO	104A (F-8)	C	OC	O	AUG	Q		N2-OSP-EGS-M@001	Note - 07 AOV Program
2EGA*PCV26A DIV I -- 2EGS*EG1, Air Admission Valve	N	Y	N/A	A	2.5	GL	AO	104A (F-3)	C	OC	O	AUG	Q		N2-OSP-EGS-M@001	Note - 07 AOV Program
2EGA*PCV26B DIV II -- 2EGS*EG3, Air Admission Valve	N	Y	N/A	A	2.5	GL	AO	104A (F-9)	C	OC	O	AUG	Q		N2-OSP-EGS-M@001	Note - 07 AOV Program
2EGA*RV125 Div. I 2EGS*EG1 Exhaust Line Relief	3	N	C	A	30	RV	SE	104A (G-3)	C	O	N/A	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-EGA-3Y218 N2-MSP-EGA-3Y218 N2-MSP-EGA-3Y218 N2-MSP-EGA-3Y218	Notes - 01 & 06
2EGA*RV126 Div. II 2EGS*EG3 Exhaust Line Relief	3	N	C	A	30	RV	SE	104A (H-8)	C	O	N/A	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-EGA-3Y218 N2-MSP-EGA-3Y218 N2-MSP-EGA-3Y218 N2-MSP-EGA-3Y218	Notes - 01 & 06
2EGA*RV127 HPCS 2EGS*EG2 Exhaust Line Relief	3	N	C	A	22	RV	SE	104A (L-6)	C	O	N/A	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-EGA-3Y218 N2-MSP-EGA-3Y218 N2-MSP-EGA-3Y218 N2-MSP-EGA-3Y218	Notes - 01 & 06
2EGA*SOV328A HPCS -- 2EGS*EG2, Actuates AOV323A	N	Y	N/A	A	0.375	GA	SO	104A (J-6)	O	OC	C	AUG	Q		N2-OSP-EGS-M@002	Note - 07

Valve Table

EGA - Diesel Generator Starting Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2EGA*SOV328B	N	Y	N/A	A	0.375	GA	SO	104A (J-5)	O	OC	C	AUG	Q		N2-OSP-EGS-M@002	Note - 07
HPCS -- 2EGS*EG2, Actuates AOV323B																
2EGA*SV111	3	N	C	A	0.75	RV	SE	104A (H-6)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
HPCS -- 2EGS*EG2; Receiver 2EGS*TK3 Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2EGA*SV112	3	N	C	A	0.75	RV	SE	104A (H-5)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
HPCS -- 2EGS*EG2; Receiver 2EGS*TK4 Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2EGA*SV3A	3	N	C	A	1	RV	SE	104A (C-2)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
2EGA*TK2A Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2EGA*SV3B	3	N	C	A	1	RV	SE	104A (C-8)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
2EGA*TK2B Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2EGA*SV4A	3	N	C	A	1	RV	SE	104A (C-4)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
2EGA*TK1A Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2EGA*SV4B	3	N	C	A	1	RV	SE	104A (C-9)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
2EGA*TK1B Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2EGA*V12A	N	Y	N/A	A	2.5	SWCV	SE	104A (F-3)	OC	OC	N/A	CP	Q		N2-OSP-EGS-M@001	Notes - 07 & 08
												DI	2Y-S		N2-MSP-EGS-R001	CKV Program
DIV I -- 2EGS*EG1 Air Start Check Valve; Upside Down																
2EGA*V12B	N	Y	N/A	A	2.5	SWCV	SE	104A (F-3)	OC	OC	N/A	CP	Q		N2-OSP-EGS-M@001	Notes - 07 & 08
												DI	2Y-S		N2-MSP-EGS-R001	CKV Program
DIV I -- 2EGS*EG1 Air Start Check Valve; Upside Down																
2EGA*V14A	N	Y	N/A	A	2.5	SWCV	SE	104A (F-9)	OC	OC	N/A	CP	Q		N2-OSP-EGS-M@001	Notes - 07 & 08
												DI	2Y-S		N2-MSP-EGS-R001	CKV Program
DIV II -- 2EGS*EG3 Air Start Check Valve; Upside Down																
2EGA*V14B	N	Y	N/A	A	2.5	SWCV	SE	104A (F-8)	OC	OC	N/A	CP	Q		N2-OSP-EGS-M@001	Notes - 07 & 08
												DI	2Y-S		N2-MSP-EGS-R001	CKV Program
DIV II -- 2EGS*EG3 Air Start Check Valve; Upside Down																

Valve Table

EGA - Diesel Generator Starting Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2EGA*V29A 2EGA*TK3 Inlet	3	N	C	A	1.5	PICV	SE	104A (G-6)	OC	C	N/A	BDO CC	Q Q		N2-OSP-EGS-M@002 N2-OSP-EGA-Q001	CKV Program
2EGA*V29B 2EGA*TK4 Inlet	3	N	C	A	1.5	PICV	SE	104A (G-5)	OC	C	N/A	BDO CC	Q Q		N2-OSP-EGS-M@002 N2-OSP-EGA-Q001	CKV Program
2EGA*V62A 2EGA*TK1A Inlet	3	N	C	A	1.5	PICV	SE	104A (C-5)	OC	C	N/A	BDO CC	Q Q		N2-OSP-EGS-M@001 N2-OSP-EGA-Q001	CKV Program
2EGA*V62B 2EGA*TK2A Inlet	3	N	C	A	1.5	PICV	SE	104A (C-3)	OC	C	N/A	BDO CC	Q Q		N2-OSP-EGS-M@001 N2-OSP-EGA-Q001	CKV Program
2EGA*V63A 2EGA*TK1B Inlet	3	N	C	A	1.5	PICV	SE	104A (C-10)	OC	C	N/A	BDO CC	Q Q		N2-OSP-EGS-M@001 N2-OSP-EGA-Q001	CKV Program
2EGA*V63B 2EGA*TK1A Inlet	3	N	C	A	1.5	PICV	SE	104A (C-8)	OC	C	N/A	BDO CC	Q Q		N2-OSP-EGS-M@001 N2-OSP-EGA-Q001	CKV Program

Valve Table

EGF - Diesel Generator Fuel Oil

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2EGF*SV121	3	N	C	A	1	RV	SE	104F (D-7)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	
												LL	10Y-S		N2-MSP-GEN-206	
DIV I -- 2EGS*EG1, Pump 2EGF*P3 Discharge Safety Relief Valve												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2EGF*SV122	N	Y	N/A	A	0.75	RV	SE	104F (E-6)	C	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV I -- 2EGS*EG1; Pump 2EGF*P5 Discharge Relief; Modulate To Control Fuel Supply Header Pressure @ 35 psi																
2EGF*SV221	3	N	C	A	1	RV	SE	104F (D-7)	C	O	N/A	LA	10Y-S		N2-MSP-GEN-206	
												LL	10Y-S		N2-MSP-GEN-206	
DIV II -- 2EGS*EG3, Pump 2EGF*P4 Discharge Safety Relief Valve												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2EGF*SV222	N	Y	N/A	A	0.75	RV	SE	104F (E-6)	C	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV II -- 2EGS*EG3; Pump 2EGF*P6 Discharge Relief; Modulate To Control Fuel Supply Header Pressure @ 35 psi																
2EGF*V103	N	Y	N/A	A		CK	SE	104F (D-5)	OC	C	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV I -- 2EGS*EG1; 2EGF*P5 Bypass Check Valve																
2EGF*V104	3	N	C	A	0	CK	SE	104F (E-4)	OC	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV I -- 2EGS*EG1; Fuel Supply Header Check																
2EGF*V12	3	N	C	A	1	PICV	SE	104C (D-4)	OC	OC	N/A	CC	Q		N2-OSP-EGF-Q@001	CKV Program
												CO	Q		N2-OSP-EGF-Q@001	
Div. I Diesel, 2EGS*EG1; Fuel Oil Transfer Pump 2EGF*P1C Discharge Check																
2EGF*V120	N	Y	N/A	A		CK	SE	104F (D-7)	OC	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV I -- 2EGS*EG1; 2EGF*P3 Bypass Check																
2EGF*V13	3	N	C	A	1	PICV	SE	104C (F-5)	OC	OC	N/A	CC	Q		N2-OSP-EGF-Q@001	CKV Program
												CO	Q		N2-OSP-EGF-Q@001	
Fuel Oil Transfer Pump 2EGF*P1A Discharge Check																
2EGF*V203	N	Y	N/A	A		CK	SE	104F (D-5)	OC	C	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV II -- 2EGS*EG3; 2EGF*P6 Bypass Check Valve																
2EGF*V204	3	N	C	A	0	CK	SE	104F (E-4)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV II -- 2EGS*EG3; Fuel Supply Header Check																
2EGF*V220	N	Y	N/A	A		CK	SE	104F (D-7)	OC	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV II -- 2EGS*EG3; 2EGF*P4 Bypass Check Valve																

Valve Table

EGF - Diesel Generator Fuel Oil

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2EGF*V304	N	Y	N/A	A		CK	SE	104F (J-2)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@002	Note - 07
HPCS -- 2EGS*EG2; Kepner Kep-O-Seal																
2EGF*V308	N	Y	N/A	A		CK	SE	104F (J-2)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@002	Note - 07
HPCS -- 2EGS*EG2; Kepner Kep-O-Seal																
2EGF*V309	N	Y	N/A	A		CK	SE	104F (J-3)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@002	Note - 07
HPCS -- 2EGS*EG2; ENGINE-DRIVEN FUEL BOOSTER PUMP *P10 PRESSURE CONTROL TO INJECTORS																
2EGF*V310	N	Y	N/A	A		CK	SE	104F (L-3)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@002	Note - 07
HPCS -- 2EGS*EG2; Fuel Oil Return to Day Tank Check Valve																
2EGF*V32	3	N	C	A	1	PICV	SE	104B (D-6)	OC	OC	N/A	CC CO	Q Q		N2-OSP-EGF-Q@001 N2-OSP-EGF-Q@001	CKV Program
Fuel oil Transfer Pump 2EGF*P1D Discharge Check																
2EGF*V33	3	N	C	A	1	PICV	SE	104B (F-7)	OC	OC	N/A	CC CO	Q Q		N2-OSP-EGF-Q@001 N2-OSP-EGF-Q@001	CKV Program
Fuel Oil Transfer Pump 2EGF*P1B Discharge Check																
2EGF*V52	3	N	C	A	1	PICV	SE	104B (D-2)	OC	OC	N/A	CC CO	Q Q		N2-OSP-EGF-Q@001 N2-OSP-EGF-Q@001	CKV Program
Fuel Oil Transfer Pump 2EGF*P2B Discharge Check																
2EGF*V53	3	N	C	A	1	PICV	SE	104B (F-2)	OC	OC	N/A	CC CO	Q Q		N2-OSP-EGF-Q@001 N2-OSP-EGF-Q@001	CKV Program
Fuel Oil Transfer Pump 2EGF*P2A Discharge Check																

Valve Table

EGO - Diesel Generator Lubricating Oil

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2EGO*RV161 DIV I - 2EGO*P1A Discharge Relief	3	Y	N/A	A	4	RV	SE	104E (D-9)	C	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
2EGO*RV186 DIV I - Strainer Outlet Line Relief	3	Y	N/A	A	6	RV	SE	104E (C-8)	C	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
2EGO*RV192 DIV I - 2EGO*P5A Discharge Relief	3	Y	N/A	A	6	RV	SE	104E (E-8)	C	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
2EGO*RV261 DIV II -- 2EGS*EG3; Pump *P1B Discharge Relief	3	Y	N/A	A	4	RV	SE	104E (D-9)	C	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
2EGO*RV286 DIV II -- 2EGS*EG3; Strainer Outlet Relief	3	Y	N/A	A	6	RV	SE	104E (C-8)	C	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
2EGO*RV292 DIV II -- 2EGS*EG3; Pump 2EGO*P5B Discharge Relief	3	Y	N/A	A	6	RV	SE	104E (E-8)	C	O	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
2EGO*TCV181 DIV I - Lube Oil Temperature Control	3	Y	N/A	A	6	TCV	AO	104E (G-8)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07 AOV Program
2EGO*TCV281 DIV II - Lube Oil Temperature Control	3	Y	N/A	A	6	TCV	AO	104E (G-8)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
2EGO*V166 DIV I - Lube Oil Heater Discharge Check	3	Y	N/A	A	3	CK	SE	104E (E-9)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
2EGO*V197 DIV I - 2EGO*P5A Inlet Check	3	Y	N/A	A	4	CK	SE	104E (C-8)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
2EGO*V266 DIV II -- 2EGS*EG3; Lube Oil Heater Discharge Check	3	Y	N/A	A	3	CK	SE	104E (E-9)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
2EGO*V297 DIV II -- 2EGS*EG3; 2EGO*P5B Inlet Check	3	Y	N/A	A	4	CK	SE	104E (C-8)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
2EGO*V366 HPCS -- 2EGS*EG2; DC Turbo Soak Back Pump 2EGO*P3 Discharge Valve	N	Y	N/A	A	.5	SWCV	SE	104E (A-4)	C	OC	N/A	AUG	M		N2-OSP-EGS-M@002	

Valve Table

EGO - Diesel Generator Lubricating Oil

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2EGO*V367	N	Y	N/A	A	.5	SWCV	SE	104E (A-4)	O	OC	N/A	AUG	M		N2-OSP-EGS-M@002	
HPCS -- 2EGS*EG2; Turbo Soak Back Pump 2EGO*P2 Discharge Valve																
2EGO*V368	N	N	N/A	A	0.5	CK	SE	104E (B-4)	C	OC	N/A	AUG	M		N2-OSP-EGS-M@002	
HPCS -- 2EGS*EG2; DC Lube Oil Pump 2EGO*P4 Discharge Check																
2EGO*V369	N	Y	N/A	A	1	CK	SE	104E (C-4)	O	OC	N/A	AUG	M		N2-OSP-EGS-M@002	
HPCS -- 2EGS*EG2; AC Lube Oil Pump 2EGO*P1 Discharge Check																
2EGO*V370	N	Y	N/A	A	1	CK	SE	104E (C-4)	C	O	N/A	AUG	M		N2-OSP-EGS-M@002	
HPCS -- 2EGS*EG2; *P1, *P4: 30 psi Relief For *EG2 Lube Oil																
2EGO*V371	N	Y	N/A	A	1	CK	SE	104E (C-3)	C	OC	N/A	AUG	M		N2-OSP-EGS-M@002	
HPCS -- 2EGS*EG2; *P2, *P3: 75 psi Relief For *EG2 Lube Oil																
2EGO*V374	N	N	N/A	A	0.5	SWCV	SE	104E (E-3)	C	OC	N/A	AUG	M		N2-OSP-EGS-M@002	
HPCS -- 2EGS*EG2, Lube Oil Cooler Check Valve																

Valve Table

EGS - Diesel Generator Jacket Cooling Water

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2EGS*TCV149	3	Y	N/A	A	6	TCV	SE	104D (F-4)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV I - Thermostatic Start-Up - Jacket Cooling Water Bypass																
2EGS*TCV150	3	Y	N/A	A	4	TCV	SE	104D (F-4)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	Note - 07
DIV I - Thermostatic 3-Way Running - Jacket Cooling Water																
2EGS*TCV249	3	Y	N/A	A	6	TCV	SE	104D (F-4)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
DIV II -- 2EGS*EG3; Thermostatic Start-Up Valve; Jacket Cooling Water Bypass																
2EGS*TCV250	3	Y	N/A	A	4	TCV	SE	104D (F-4)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
DIV II -- 2EGS*EG3; Thermostatic 3-Way Running Valve; Jacket Cooling Water																
2EGS*TCV300		N	N/A	A	1.5	TCV	SE	104D (I-8)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@002	
Div. III -- 2EGS*EG2; Thermostatic 3-Way Valve; Jacket Cooling Water																
2EGS*V143	3	Y	N/A	A	3	CK	SE	104D (E-5)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
DIV I - Jacket Water Heater Discharge - Engine Driven Pump																
2EGS*V148	3	Y	N/A	A	6	CK	SE	104D (E-4)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
DIV I - 2EGS*P2A Engine Driven Pump Check - Jacket Cooling Water																
2EGS*V243	3	Y	N/A	A	3	CK	SE	104D (E-5)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
DIV II -- 2EGS*EG3; Jacket Water Heat Exchanger Discharge Check From Motor-Driven Pump 2EGS*P1B																
2EGS*V248	3	Y	N/A	A	6	CK	SE	104D (E-4)	OC	OC	N/A	AUG	M		N2-OSP-EGS-M@001	
DIV II -- 2EGS*EG3; Jacket Water Discharge Check On Engine-Driven Pump 2EGS*P2B																

Valve Table

FPW - Fire Protection Water

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2FPW*SOV218 RCS Pump A Water Spray	2	N	A	P	2	GL	SO	43G (E-8)	C	C	C	LTJ	60		N2-ISP-LRT-R@042	Note - 09
2FPW*SOV219 RCS Pump A Water Spray	2	N	A	P	2	GL	SO	43G (E-7)	C	C	C	LTJ	60		N2-ISP-LRT-R@042	Note - 09
2FPW*SOV220 RCS Pump B Water Spray	2	N	A	P	2	GL	SO	43G (D-8)	C	C	C	LTJ	60		N2-ISP-LRT-R@043	Note - 09
2FPW*SOV221 RCS Pump B Water Spray	2	N	A	P	2	GL	SO	43G (D-7)	C	C	C	LTJ	60		N2-ISP-LRT-R@043	Note - 09

Valve Table

FWS - Feedwater

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2FWS*MOV21A	1	N	A	A	24	GA	MO	6B (E-2)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-FWS-CS001	
Feedwater Blocking Valve; Outboard CIV												LTJ	30		N2-ISP-LRT-R@045	
												RPI	MOV		S-EPM-GEN-063	
2FWS*MOV21B	1	N	A	A	24	GA	MO	6B (E-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-FWS-CS001	
Feedwater Blocking Valve; Outboard CIV												LTJ	30		N2-ISP-LRT-R@045	
												RPI	MOV		S-EPM-GEN-063	
2FWS*V12A	1	N	A/C	A	24	SWCV	SE	6B (H-2)	O	C	NA	BDO	R		Normal Ops	Note - 02
Feedwater Check Valve; Inboard CIV												CC	R	FWS-ROJ - 01	N2-ISP-LRT-R@102	
												LTJ	24		N2-ISP-LRT-R@102	
2FWS*V12B	1	N	A/C	A	24	SWCV	SE	6B (H-6)	O	C	NA	BDO	R		Normal Ops	Note - 02
Feedwater Check Valve; Inboard CIV												CC	R	FWS-ROJ - 01	N2-ISP-LRT-R@102	
												LTJ	24		N2-ISP-LRT-R@102	
2FWS*V23A	1	N	A/C	A	24	SWCV	SE	6B (G-2)	O	C	NA	BDO	R		Normal Ops	Note - 02
Feedwater Check; Outboard CIV												CC	R	FWS-ROJ - 01	N2-ISP-LRT-R@102	
												LTJ	24		N2-ISP-LRT-R@102	
2FWS*V23B	1	N	A/C	A	24	SWCV	SE	6B (G-6)	O	C	NA	BDO	R		Normal Ops	Note - 02
Feedwater Check; Outboard CIV												CC	R	FWS-ROJ - 01	N2-ISP-LRT-R@102	
												LTJ	24		N2-ISP-LRT-R@102	

Valve Table

GTS - Standby Gas Treatment

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2GSN*SOV166	2	N	A	A	1	GL	SO	105B (J-7)	O	C	C	FC	Q		N2-OSP-GSN-Q001	Note - 02
												FE	Q		N2-OSP-GSN-Q001	
TIP Purge												LTJ	60		N2-ISP-LRT-R@046	
												PI	2Y		N2-OSP-TIP-R001	
												STC	Q		N2-OSP-GSN-Q001	
2GSN*V170	2	N	A/C	A	0.5	CK	SE	105B (K-7)	OC	C	N/A	BDO	2Y		N2-PM-M008	
												CC	R		N2-ISP-LRT-R@046	
TIP Purge												LTJ	60		N2-ISP-LRT-R@046	
2GSN*V70A	3	N	A/C	A	1	CK	SE	105B (K-2)	OC	OC	N/A	CC	CS	GSN-CSJ - 01	N2-OSP-GSN-CS001	Note - 10
Receiver 2IAS*TK4 Inlet Check												CO	CS	GSN-CSJ - 01	N2-OSP-GSN-CS001	
												LK	2Y		N2-ISP-ADS-R106	
2GSN*V70B	3	N	A/C	A	1	CK	SE	105B (K-4)	OC	OC	N/A	CC	CS	GSN-CSJ - 01	N2-OSP-GSN-CS001	Note - 10
Receiver 2IAS*TK5 Inlet Check												CO	CS	GSN-CSJ - 01	N2-OSP-GSN-CS001	
												LK	2Y		N2-ISP-ADS-R106	
2GSN*V73A	3	N	B	A	1	BAL	MAN	105B (I-2)	O	C	N/A	FE	CS		N2-OSP-GSN-CS001	
N2 Supply to Receiver 2IAS*TK4 Manual Isolation																
2GSN*V73B	3	N	B	A	1	BAL	MAN	105B (I-4)	O	C	N/A	FE	CS		N2-OSP-GSN-CS001	
N2 Supply to Receiver 2IAS*TK5 Manual Isolation																
2GSN*V74A	3	N	B	A	1	GL	MAN	105B (I-2)	C	OC	N/A	FE	CS		N2-OSP-GSN-CS001	
Emergency Nitrogen Makeup																
2GSN*V74B	3	N	B	A	1	GL	MAN	105B (I-4)	C	OC	N/A	FE	CS		N2-OSP-GSN-CS001	
Emergency Nitrogen Makeup																
2GSN*V75A	3	N	C	A	1	CK	SE	105B (I-3)	C	O	N/A	BDC	CS		N2-OSP-GSN-CS001	
Emergency Nitrogen Makeup												CO	CS	GSN-CSJ - 01	N2-OSP-GSN-CS001	
2GSN*V75B	3	N	C	A	1	CK	SE	105B (I-4)	C	O	N/A	BDC	CS		N2-OSP-GSN-CS001	
Emergency Nitrogen Makeup												CO	CS	GSN-CSJ - 01	N2-OSP-GSN-CS001	
2GTS*AOV28A	N	N		A	8	BTF	AO	61B (I-8)	O	OC	O	ST-CA	Q		N2-OSP-GSN-CS001	AOV Program
CROSS-BLEED VALVE												ST-OA	Q		N2-OSP-GSN-CS001	

Valve Table

GTS - Standby Gas Treatment

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2GTS*AOV2A TRICENTRIC VALVE	N	N		A	20	BTF	AO	61B (D-8)	C	OC	C	ST-CA ST-OA	Q Q		N2-OSP-GSN-CS001 N2-OSP-GSN-CS001	AOV Program
2GTS*AOV3A TRICENTRIC VALVE; FAN DISCHARGE	N	N		A	20	BTF	AO	61B (J-8)	C	OC	C	ST-CA ST-OA	Q Q		N2-OSP-GSN-CS001 N2-OSP-GSN-CS001	AOV Program
2GTS*PSE77A	3	N	D	A	1	RD	SE	61C (F-4)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 11
2GTS*PSE77B	3	N	D	A	1	RD	SE	61C (F-8)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 11
2GTS*PSE90A	3	N	D	A	2	RD	SE	61C (K-4)	C	O	N/A	RD	5Y		N2-MPM-PSE-V001	Note - 11
2GTS*PSE90B	3	N	D	A	2	RD	SE	61C (K-7)	C	O	N/A	RD	5Y		N2-MPM-PSE-V001	Note - 11
2GTS*PV5A RX BLDG IN/OUT DIFFERENTIAL PRESSURE	N	N		A	14	BTF	AO	61B (J-8)	C	OC	NA	ST-CA ST-OA	Q Q		N2-OSP-GSN-CS001 N2-OSP-GSN-CS001	AOV Program
2GTS*PV5B RX BLDG IN/OUT DIFFERENTIAL PRESSURE	N	N		A	14	BTF	AO	61B (J-3)	C	OC	NA	ST-CA ST-OA	Q Q		N2-OSP-GSN-CS001 N2-OSP-GSN-CS001	AOV Program
2GTS*RV78A	3	N	C	A	0.75	RV	SE	61C (F-4)	C	O	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206	Note - 01
2GTS*RV78B	3	N	C	A	0.75	RV	SE	61C (F-7)	C	O	NA	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206	Note - 01
2GTS*V68A	3	N	A/C	A	1	CK	SE	61C (E-5)	OC	C	NA	BDO CC LK	Q Q 2Y		Normal Ops N2-OSP-GTS-Q002 N2-ISP-GTS-R@001	Note - 12
2GTS*V68B	3	N	A/C	A	1	CK	SE	61C (E-7)	OC	C	NA	BDO CC LK	Q Q 2Y		Normal Ops N2-OSP-GTS-Q002 N2-ISP-GTS-R@001	Note - 12

Valve Table

GTS - Standby Gas Treatment

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2GTS*V70A	3	N	B	A	1	GL	MAN	61C (B-4)	C	O	NA	FE	Q		N2-OSP-GTS-Q002	
2GTS*V70B	3	N	B	A	1	GL	MAN	61C (B-8)	C	O	NA	FE	Q		N2-OSP-GTS-Q002	
2GTS*V74A	3	N	C	A	1	CK	SE	61C (D-4)	OC	O	NA	BDC CO	Q Q		Normal Ops N2-OSP-GTS-Q002	
2GTS*V74B	3	N	C	A	1	CK	SE	61C (D-4)	OC	O	NA	BDC CO	Q Q		Normal Ops N2-OSP-GTS-Q002	
2GTS*V91A GTS Emergency Bottle Fill	3	N	B	A	1	GL	MAN	61C (B-4)	C	O	NA	FE	Q		N2-OSP-GTS-Q002	
2GTS*V91B GTS Emergency Bottle Fill	3	N	B	A	1	GL	MAN	61C (B-8)	C	O	NA	FE	Q		N2-OSP-GTS-Q002	
2GTS-RV73A	N	Y	C	A	0.75	RV	SE	61C (K-3)	C	O	N/A	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206	Note - 01
2GTS-RV73B	N	Y	C	A	0.75	RV	SE	61C (K-7)	C	O	N/A	LA LL RT VT	10Y-S 10Y-S 10Y-S 10Y-S		N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206 N2-MSP-GEN-206	Note - 01

Valve Table

HCS - Hydrogen Recombiner

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2HCS*MOV1A	2	N	A	A	3	FWGTV	MO	62A (D-8)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1A Discharge to Suppression Chamber												LTJ	60		N2-ISP-LRT-R@047	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-R001	
2HCS*MOV1B	2	N	A	A	3	FWGTV	MO	62A (I-8)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1B Discharge to Suppression Chamber												LTJ	60		N2-ISP-LRT-R@050	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-R001	
2HCS*MOV25A	2	N	B	A	3	GL	MO	62B (J-5)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-SA@001	
Recombiner 2HCS*RBNR1A Gas Inlet												RPI	MOV		S-EPM-GEN-063	
2HCS*MOV25B	2	N	B	A	3	GL	MO	62B (C-10)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-SA@001	
Recombiner 2HCS*RBNR1B Gas Inlet												RPI	MOV		S-EPM-GEN-063	
2HCS*MOV26A	2	N	B	A	0.75	GL	MO	62B (I-3)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-SA@001	
Recombiner 2HCS*RBNR1A Cooling Water Inlet												RPI	MOV		S-EPM-GEN-063	
2HCS*MOV26B	2	N	B	A	0.75	GL	MO	62B (C-7)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-SA@001	
Recombiner 2HCS*RBNR1B Cooling Water Inlet												RPI	MOV		S-EPM-GEN-063	
2HCS*MOV2A	2	N	A	A	3	GL	MO	62A (D-6)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-SA@001	
Recombiner 2HCS*RBNR1A Inlet From Suppression Chamber												LTJ	60		N2-ISP-LRT-R@048	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-SA@001	
2HCS*MOV2B	2	N	A	A	3	GL	MO	62A (I-6)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-SA@001	
Recombiner 2HCS*RBNR1B Inlet From Suppression Chamber												LTJ	60		N2-ISP-LRT-R@051	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-SA@001	
2HCS*MOV3A	2	N	A	A	3	FWGTV	MO	62A (D-4)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-SA@001	
Recombiner 2HCS*RBNR1A Inlet From Drywell												LTJ	60		N2-ISP-LRT-R@049	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-SA@001	

Valve Table

HCS - Hydrogen Recombiner

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2HCS*MOV3B	2	N	A	A	3	FWGTV	MO	62A (I-4)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-SA@001	
Recombiner 2HCS*RBNR1B Inlet From Drywell												LTJ	60		N2-ISP-LRT-R@052	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-SA@001	
2HCS*MOV4A	2	N	A	A	3	GA	MO	62A (F-8)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1A Discharge to Suppression Chamber												LTJ	60		N2-ISP-LRT-R@047	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-R001	
2HCS*MOV4B	2	N	A	A	3	GA	MO	62A (H-8)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1B Discharge to Suppression Chamber												LTJ	60		N2-ISP-LRT-R@050	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-R001	
2HCS*MOV5A	2	N	A	A	3	GL	MO	62A (F-6)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1A Inlet From Suppression Chamber												LTJ	60		N2-ISP-LRT-R@048	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-R001	
2HCS*MOV5B	2	N	A	A	3	GL	MO	62A (H-6)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1B Inlet From Suppression Chamber												LTJ	60		N2-ISP-LRT-R@051	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-R001	
2HCS*MOV6A	2	N	A	A	3	GA	MO	62A (F-4)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1A Inlet From Drywell												LTJ	60		N2-ISP-LRT-R@049	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-HCS-R001	
2HCS*MOV6B	2	N	A	A	3	GA	MO	62A (G-4)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1B Inlet From Drywell												LTJ	60		N2-ISP-LRT-R@052	
												RPI	MOV		S-EPM-GEN-063	
												ST	2Y		N2-OSP-HCS-R001	
2HCS*SOV10A	2	N	B	A	1	GL	SO	62A (A-3)	C	O	O	FE	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1A Cooling Water Inlet												FO	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
												PI	2Y		N2-OSP-HCS-R001	
												STO	R	HCS-ROJ - 01	N2-OSP-HCS-R001	

Valve Table

HCS - Hydrogen Recombiner

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2HCS*SOV10B	2	N	B	A	1	GL	SO	62A (L-3)	C	O	O	FE	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1B Cooling Water Inlet												FO	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
												PI	2Y		N2-OSP-HCS-R001	
												STO	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
2HCS*SOV11A	2	N	B	A	1	GL	SO	62A (A-8)	O	C	C	FC	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1A Cooling Water Drain												FE	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
												PI	2Y		N2-OSP-HCS-R001	
												STC	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
2HCS*SOV11B	2	N	B	A	1	GL	SO	62A (L-8)	O	C	C	FC	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
Recombiner 2HCS*RBNR1B Cooling Water Drain												FE	R	HCS-ROJ - 01	N2-OSP-HCS-R001	
												PI	2Y		N2-OSP-HCS-R001	
												STC	R	HCS-ROJ - 01	N2-OSP-HCS-R001	

Valve Table

HVK - Control Building Chilled Water

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2HVK*RV1	N	Y	C	A	0.75	RV	SE	53A (I-5)	C	O	NA	BE	10Y-S		N2-MSP-GEN-206	Note - 01
												LA	10Y-S		N2-MSP-GEN-206	
												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2HVK*RV14A	3	N	C	A	0.75	RV	SE	53A (D-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Control Bldg HVK Chiller, HVK*CHL1A; HVK Side Thermal Relief																
2HVK*RV14B	3	N	C	A	0.75	RV	SE	53A (D-8)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Control Bldg HVK Chiller, HVK*CHL1B; HVK Side Thermal Relief																
2HVK*RV2	N	Y	C	A	0.75	RV	SE	53A (I-10)	C	O	NA	BE	10Y-S		N2-MSP-GEN-206	Note - 01
												LA	10Y-S		N2-MSP-GEN-206	
												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2HVK*RV35A	3	N	C	A	0.75	RV	SE	53A (D-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Relay Room, HVC*ACU2A; HVK Side Thermal Relief																
2HVK*RV35B	3	N	C	A	0.75	RV	SE	53A (D-8)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Relay Room, HVC*ACU2B; HVK Side Thermal Relief																
2HVK*RV37A	3	N	C	A	0.75	RV	SE	53A (G-5)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Remote S/D Room, HVC*ACU3A; Thermal Relief																
2HVK*RV37B	3	N	C	A	0.75	RV	SE	53A (G-10)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Remote S/D Room, HVC*ACU3B; Thermal Relief																
2HVK*RV43A	3	N	C	A	0.75	RV	SE	53A (G-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Control Room, HVC*ACU1A; Thermal Relief																
2HVK*RV43B	3	N	C	A	0.75	RV	SE	53A (G-8)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Control Room, HVC*ACU1B; Thermal Relief																
2HVK*SOV36A	3	N	B	A	3	GL	SO	53A (F-3)	O	C	C	FC	Q		N2-OSP-HVK-Q001	
												FE	Q		N2-OSP-HVK-Q001	
2HVC-ACU4A Class Break												PI	2Y		N2-OSP-HVK-R001	
												STC	Q		N2-OSP-HVK-Q001	

Valve Table

HVK - Control Building Chilled Water

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2HVK*SOV36B	3	N	B	A	3	GL	SO	53A (F-8)	O	C	C	FC	Q		N2-OSP-HVK-Q001	
												FE	Q		N2-OSP-HVK-Q001	
2HVC-ACU4B Class Break												PI	2Y		N2-OSP-HVK-R001	
												STC	Q		N2-OSP-HVK-Q001	
2HVK*TV21A	3	N	B	A	4	GL	AO	53A (H-3)	OC	O	O	FE	Q		N2-OSP-HVK-Q001	Note - 13
												FO	Q		N2-OSP-HVK-Q001	AOV Program
Control Room Unit Cooler Temperature Control Valve												PI	2Y		N2-OSP-HVK-Q001	
												STO	Q		N2-OSP-HVK-Q001	
2HVK*TV21B	3	N	B	A	4	GL	AO	53A (H-8)	OC	O	O	FE	Q		N2-OSP-HVK-Q001	Note - 13
												FO	Q		N2-OSP-HVK-Q001	AOV Program
Control Room Unit Cooler Temperature Control Valve												PI	2Y		N2-OSP-HVK-Q001	
												STO	Q		N2-OSP-HVK-Q001	
2HVK*TV22A	3	N	B	A	4	GL	AO	53A (E-2)	OC	O	O	FE	Q		N2-OSP-HVK-Q001	Note - 13
												FO	Q		N2-OSP-HVK-Q001	AOV Program
Relay Room Unit Cooler Temperature Control Valve												PI	2Y		N2-OSP-HVK-Q001	
												STO	Q		N2-OSP-HVK-Q001	
2HVK*TV22B	3	N	B	A	4	GL	AO	53A (E-7)	OC	O	O	FE	Q		N2-OSP-HVK-Q001	Note - 13
												FO	Q		N2-OSP-HVK-Q001	AOV Program
Relay Room Unit Cooler Temperature Control Valve												PI	2Y		N2-OSP-HVK-Q001	
												STO	Q		N2-OSP-HVK-Q001	
2HVK*V105	3	N	C	A	6	CK	SE	53A (B-10)	OC	O	NA	BDC	CM		N2-OSP-HVK-Q001	
												CO	CM		N2-OSP-HVK-Q001	
2HVK*P1B Discharge Check																
2HVK*V106	3	N	C	A	6	CK	SE	53A (B-5)	OC	O	NA	BDC	CM		N2-OSP-HVK-Q001	
												CO	CM		N2-OSP-HVK-Q001	
2HVK*P1A Discharge Check																
2HVK*V158	3	N	C	A	3	CK	SE	53A (F-2)	OC	C	NA	BDO	Q		N2-OSP-HVK-Q001	
												CC	Q		N2-OSP-HVK-Q001	
2HVC-ACU4A Class Break																
2HVK*V163	3	N	C	A	3	CK	SE	53A (F-7)	OC	C	NA	BDO	Q		N2-OSP-HVK-Q001	
												CC	Q		N2-OSP-HVK-Q001	
2HVC-ACU4B Class Break																

Valve Table

IAS - Instrument Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2IAS*EFV200	2	N	C	A	0.75	EFV	SE	19E (D-5)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
2IAS*TK33 (MSS*PSV127) Instrument Line to 2IAS*PT231												PI	2Y		N2-ISP-ISC-R003	
2IAS*EFV201	2	N	C	A	0.75	EFV	SE	19E (H-10)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
2IAS*TK32 (MSS*PSV121) Instrument Line to 2IAS*PT230												PI	2Y		N2-ISP-ISC-R003	
2IAS*EFV202	2	N	C	A	0.75	EFV	SE	19E (G-5)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
2IAS*TK34 (MSS*PSV126) Instrument Line to 2IAS*PT232												PI	2Y		N2-ISP-ISC-R003	
2IAS*EFV203	2	N	C	A	0.75	EFV	SE	19F (I-8)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
2IAS*TK37 (MSS*PSV130) Instrument Line to 2IAS*PT235												PI	2Y		N2-ISP-ISC-R003	
2IAS*EFV204	2	N	C	A	0.75	EFV	SE	19F (K-4)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
2IAS*TK36 (MSS*PSV134) Instrument Line to 2IAS*PT234												PI	2Y		N2-ISP-ISC-R003	
2IAS*EFV205	2	N	C	A	0.75	EFV	SE	19F (B-4)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
2IAS*TK35 (MSS*PSV137) Instrument Line to 2IAS*PT233												PI	2Y		N2-ISP-ISC-R003	
2IAS*EFV206	2	N	C	A	0.75	EFV	SE	19F (K-9)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
2IAS*TK38 (MSS*PSV129) Instrument Line to 2IAS*PT236												PI	2Y		N2-ISP-ISC-R003	
2IAS*PSE141	3	N	D	A	1	RD	SE	19L (G-8)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK41 (MSS*AOV6A)																
2IAS*PSE142	3	N	D	A	1	RD	SE	19L (G-10)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK42 (MSS*AOV6B)																
2IAS*PSE143	3	N	D	A	1	RD	SE	19L (G-3)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK43 (MSS*AOV6C)																
2IAS*PSE144	3	N	D	A	1	RD	SE	19L (G-6)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK44 (MSS*AOV6D)																
2IAS*PSE145	3	N	D	A	1	RD	SE	19M (F-8)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK45 (MSS*AOV7A)																
2IAS*PSE146	3	N	D	A	1	RD	SE	19M (F-10)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK46 (MSS*AOV7B)																

Valve Table

IAS - Instrument Air

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2IAS*PSE147	3	N	D	A	1	RD	SE	19M (F-3)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK47 (MSS*AOV7C)																
2IAS*PSE148	3	N	D	A	1	RD	SE	19M (F-5)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK48 (MSS*AOV7D)																
2IAS*PSE19A	3	N	D	A	1	RD	SE	19D (I-3)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK4 (GSN / IAS Receiver)																
2IAS*PSE19B	3	N	D	A	1	RD	SE	19D (I-7)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 14
2IAS*TK5 (GSN / IAS Receiver)																
2IAS*SOV164	2	N	A	A	1.5	GL	SO	19D (C-10)	O	OC	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	Note - 02
IAS Nitrogen To ADS Header A; Outboard Isolation												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												LTJ	60		N2-ISP-LRT-R@053	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												STO	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*SOV165	2	N	A	A	1.5	GL	SO	19F (C-10)	O	OC	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	Note - 02
IAS Nitrogen To ADS Header B; Outboard Isolation												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												LTJ	60		N2-ISP-LRT-R@054	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												STO	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*SOV166	2	N	A	A	1.5	GL	SO	19D (C-8)	O	C	C	FC	CS	IAS-CSJ - 02	N2-OSP-IAS-Q001	Note - 02
IAS to 3 SRVs and Inboard MSIVs (NSR); Outboard Isolation												FE	CS	IAS-CSJ - 02	N2-OSP-IAS-Q001	
												LTJ	60		N2-ISP-LRT-R@055	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 02	N2-OSP-IAS-Q001	

Valve Table

IAS - Instrument Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2IAS*SOV167	2	N	A	A	1.5	GL	SO	19G (C-7)	C	C	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	Note - 02
IAS To Test Actuators for ISC and RHS												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												LTJ	30		N2-ISP-LRT-R@056	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*SOV168	2	N	A	A	1.5	GL	SO	19G (C-5)	C	C	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	Note - 02
IAS To Test Actuators for CPS and TCVs												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												LTJ	60		N2-ISP-LRT-R@057	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*SOV180	2	N	A	A	1.5	GL	SO	19G (D-5)	C	C	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	Note - 02
IAS To Test Actuators for CPS and TCVs												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												LTJ	60		N2-ISP-LRT-R@057	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*SOV184	2	N	A	A	1.5	GL	SO	19D (E-8)	O	C	C	FC	CS	IAS-CSJ - 02	N2-OSP-IAS-Q001	Note - 02
IAS to 3 SRVs and Inboard MSIVs (NSR); Inboard Isolation												FE	CS	IAS-CSJ - 02	N2-OSP-IAS-Q001	
												LTJ	60		N2-ISP-LRT-R@055	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 02	N2-OSP-IAS-Q001	
2IAS*SOV185	2	N	A	A	1.5	GL	SO	19G (E-8)	C	C	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	Note - 02
IAS To Test Actuators for ISC and RHS												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												LTJ	60		N2-ISP-LRT-R@056	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	

Valve Table

IAS - Instrument Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2IAS*SOVX181	3	N	B	A	1.5	GL	SO	19D (J-3)	OC	O	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*TK4 Outlet Control												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												STO	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*SOVX186	3	N	B	A	1.5	GL	SO	19D (J-7)	OC	O	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*TK5 Outlet Control												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												STO	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*SOVY181	3	N	B	A	0.75	GL	SO	19D (J-4)	OC	O	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*TK4 Outlet Control Bypass												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												STO	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*SOVY186	3	N	B	A	0.75	GL	SO	19D (J-8)	OC	O	C	FC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*TK5 Outlet Control Bypass												FE	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												PI	2Y		N2-OSP-IAS-R001	
												STC	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
												STO	CS	IAS-CSJ - 03	N2-OSP-IAS-Q001	
2IAS*SV19A	3	N	C	A	0.75	RV	SE	19D (I-3)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
2IAS*TK4 Outlet (400 psig)												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	

Valve Table

IAS - Instrument Air

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2IAS*SV19B	3	N	C	A	0.75	RV	SE	19D (I-7)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
2IAS*TK5 Outlet (400 psig)												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2IAS*SV20A	3	N	C	A	0.75	RV	SE	19D (K-3)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
2IAS*TK4 Outlet (225 psig)												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2IAS*SV20B	3	N	C	A	0.75	RV	SE	19D (K-7)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
2IAS*TK5 Outlet (225 psig)												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2IAS*V1601	3	N	A/C	A	1.5	CK	SE	19L (D-6)	OC	C	NA	BDO	R		N2-ISP-MSS-R@106	
												CC	R	IAS-ROJ - 01	N2-ISP-MSS-R@106	
2IAS*TK41 Inlet (MSS*AOV6A)												LK	2Y		N2-ISP-MSS-R@106	
2IAS*V1602	3	N	A/C	A	1.5	CK	SE	19L (D-9)	OC	C	NA	BDO	R		N2-ISP-MSS-R@106	
												CC	R	IAS-ROJ - 01	N2-ISP-MSS-R@106	
2IAS*TK42 Inlet (MSS*AOV6B)												LK	2Y		N2-ISP-MSS-R@106	
2IAS*V1603	3	N	A/C	A	1.5	CK	SE	19L (D-2)	OC	C	NA	BDO	R		N2-ISP-MSS-R@106	
												CC	R	IAS-ROJ - 01	N2-ISP-MSS-R@106	
2IAS*TK43 Inlet (MSS*AOV6C)												LK	2Y		N2-ISP-MSS-R@106	
2IAS*V1604	3	N	A/C	A	1.5	CK	SE	19L (D-4)	OC	C	NA	BDO	R		N2-ISP-MSS-R@106	
												CC	R	IAS-ROJ - 01	N2-ISP-MSS-R@106	
2IAS*TK44 Inlet (MSS*AOV6D)												LK	2Y		N2-ISP-MSS-R@106	
2IAS*V1605	3	N	A/C	A	1.5	CK	SE	19M (H-7)	OC	C	NA	BDO	R		N2-OSP-IAS-CS001	
												CC	CS	IAS-CSJ - 01	N2-OSP-IAS-CS001	
2IAS*TK45 Inlet (MSS*AOV7A)												LK	2Y		N2-ISP-MSS-R@106	
2IAS*V1606	3	N	A/C	A	1.5	CK	SE	19M (H-9)	OC	C	NA	BDO	R		N2-OSP-IAS-CS001	
												CC	CS	IAS-CSJ - 01	N2-OSP-IAS-CS001	
2IAS*TK46 Inlet (MSS*AOV7B)												LK	2Y		N2-ISP-MSS-R@106	
2IAS*V1607	3	N	A/C	A	1.5	CK	SE	19M (H-2)	OC	C	NA	BDO	R		N2-OSP-IAS-CS001	
												CC	CS	IAS-CSJ - 01	N2-OSP-IAS-CS001	
2IAS*TK47 Inlet (MSS*AOV7C)												LK	2Y		N2-ISP-MSS-R@106	

Valve Table

IAS - Instrument Air

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2IAS*V1608	3	N	A/C	A	1.5	CK	SE	19M (H-4)	OC	C	NA	BDO	R		N2-OSP-IAS-CS001	
												CC	CS	IAS-CSJ - 01	N2-OSP-IAS-CS001	
2IAS*TK48 Inlet (MSS*AOV7D)												LK	2Y		N2-ISP-MSS-R@106	
2IAS*V421	3	N	A/C	A	1.25	CK	SE	19E (C-4)	OC	OC	NA	CC	CM		N2-ISP-ADS-R106	
												CO	CM		N2-OSP-IAS-Q001	
2IAS*TK33 Inlet (MSS*PSV127; ADS)												LK	2Y		N2-ISP-ADS-R106	
2IAS*V431	3	N	A/C	A	1.25	CK	SE	19E (F-4)	OC	OC	NA	CC	CM		N2-ISP-ADS-R106	
												CO	CM		N2-OSP-IAS-Q001	
2IAS*TK34 Inlet (MSS*PSV126; ADS)												LK	2Y		N2-ISP-ADS-R106	
2IAS*V448	2	N	A/C	A	1.5	CK	SE	19D (E-10)	OC	OC	NA	CC	R		N2-ISP-LRT-R@053	
												CO	CM		N2-OSP-IAS-Q001	
IAS Nitrogen To ADS Header A; Inboard Isolation												LTJ	30		N2-ISP-LRT-R@053	
2IAS*V449	2	N	A/C	A	1.5	CK	SE	19F (D-10)	OC	OC	NA	CC	R		N2-ISP-LRT-R@054	
												CO	CM		N2-OSP-IAS-Q001	
IAS Nitrogen To ADS Header B; Inboard Isolation												LTJ	30		N2-ISP-LRT-R@054	
2IAS*V471	3	N	A/C	A	1.25	CK	SE	19E (G-10)	OC	OC	NA	CC	CM		N2-ISP-ADS-R106	
												CO	CM		N2-OSP-IAS-Q001	
2IAS*TK32 Inlet (MSS*PSV121; ADS)												LK	2Y		N2-ISP-ADS-R106	
2IAS*V526	3	N	A/C	A	1.25	CK	SE	19F (C-4)	OC	OC	NA	CC	CM		N2-ISP-ADS-R106	
												CO	CM		N2-OSP-IAS-Q001	
2IAS*TK35 Inlet (MSS*PSV137; ADS)												LK	2Y		N2-ISP-ADS-R106	
2IAS*V546	3	N	A/C	A	1.25	CK	SE	19F (J-4)	OC	OC	NA	CC	CM		N2-ISP-ADS-R106	
												CO	CM		N2-OSP-IAS-Q001	
2IAS*TK36 Inlet (MSS*PSV134; ADS)												LK	2Y		N2-ISP-ADS-R106	
2IAS*V571	3	N	A/C	A	1.25	CK	SE	19F (G-8)	OC	OC	NA	CC	CM		N2-ISP-ADS-R106	
												CO	CM		N2-OSP-IAS-Q001	
2IAS*TK37 Inlet (MSS*PSV130; ADS)												LK	2Y		N2-ISP-ADS-R106	
2IAS*V581	3	N	A/C	A	1.25	CK	SE	19F (J-8)	OC	OC	NA	CC	CM		N2-ISP-ADS-R106	
												CO	CM		N2-OSP-IAS-Q001	
2IAS*TK38 Inlet (MSS*PSV129; ADS)												LK	2Y		N2-ISP-ADS-R106	

Valve Table

ICS - Reactor Core Isolation Cooling

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ICS*AOV109	2	N	B	A	2	GL	AO	35B (F-8)	OC	C	C	FC	Q		N2-OSP-ICS-Q001	AOV Program
												FE	Q		N2-OSP-ICS-Q001	
Turbine Exhaust Drain Pot Isolation												PI	2Y		N2-OSP-ICS-R003	
												STC	Q		N2-OSP-ICS-Q001	
2ICS*AOV110	2	N	B	A	2	GL	AO	35B (E-8)	OC	C	C	FC	Q		N2-OSP-ICS-Q001	AOV Program
												FE	Q		N2-OSP-ICS-Q001	
Turbine Exhaust Drain Pot Isolation												PI	2Y		N2-OSP-ICS-R003	
												STC	Q		N2-OSP-ICS-Q001	
2ICS*AOV130	2	N	B	A	2	GL	AO	35C (D-10)	O	C	C	FC	Q		N2-OSP-ICS-Q001	AOV Program
												FE	Q		N2-OSP-ICS-Q001	
Steam Supply Drain Pot Isolation												PI	2Y		N2-OSP-ICS-R003	
												STC	Q		N2-OSP-ICS-Q001	
2ICS*AOV131	2	N	B	A	2	GL	AO	35C (D-10)	O	C	C	FC	Q		N2-OSP-ICS-Q001	AOV Program
												FE	Q		N2-OSP-ICS-Q001	
Steam Supply Drain Pot Isolation												PI	2Y		N2-OSP-ICS-R003	
												STC	Q		N2-OSP-ICS-Q001	
2ICS*EFV1	2	N	C	A	0.75	EFV	SE	35A (H-4)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ICS*PDT167; *PDS167; *PT167X																
2ICS*EFV2	2	N	C	A	0.75	EFV	SE	35A (H-4)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ICS*PDT167; *PT167Y																
2ICS*EFV3	2	N	C	A	0.75	EFV	SE	35A (H-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ICS*PDT168; *PT168X																
2ICS*EFV4	2	N	C	A	0.75	EFV	SE	35A (H-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ICS*PDT168; *PT168Y																
2ICS*EFV5	2	N	C	A	0.75	EFV	SE	35C (H-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ICS*PT142, *PT143; RCIC Keep-Full Mod, RFO-07																
2ICS*FV108	2	N	B	P	4	GL	MO	35D (D-2)	C	C	As-Is	PI	2Y		N2-OSP-ICS-R003	
RCIC Flow Test to CST																
2ICS*HYV151	N	Y	N/A	A	4	GA	HO	35B (I-8)	O	N/A	NA	AUG	Q		N2-OSP-ICS-Q@002	Note - 17
RCIC Turbine Governor Valve																
2ICS*MOV116	2	N	B	A	2	GL	MO	35C (D-4)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-ICS-Q@002	
Lube Oil Cooler Cooling Water Inlet												RPI	MOV		S-EPM-GEN-063	

Valve Table

ICS - Reactor Core Isolation Cooling

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ICS*MOV120	2	N	B	A	4	GL	MO	35C (C-9)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 15
												FE	Q		N2-OSP-ICS-Q@002	
Turbine Steam Supply Valve (F045)												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-ICS-Q@002	
2ICS*MOV121	1	N	A	A	10	FWGTV	MO	35A (C-4)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
RCIC Turbine Steam Supply (F063); Outboard Isolation												LTJ	60		N2-ISP-LRT-R@059	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-ICS-Q001	
2ICS*MOV122	2	N	A	A	12	FWGTV	MO	35A (G-7)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
Turbine Exhaust to Supp. Pool (F068); Outboard Isolation												LTJ	60		N2-ISP-LRT-R@060	
												RPI	MOV		S-EPM-GEN-063	
2ICS*MOV124	2	N	B	A	4	GA	MO	35D (C-3)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
RCIC Flow Test to CST (F022)												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-ICS-Q001	
2ICS*MOV126	1	N	A	A	6	FWGTV	MO	35C (G-3)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-ICS-CS001	
RCIC Injection Valve (F013); Outboard Isolation												LTJ	60		N2-ISP-LRT-R@058	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-ICS-CS001	
												STO	CS		N2-OSP-ICS-CS001	
2ICS*MOV128	1	N	A	A	10	GA	MO	35A (D-4)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
RCIC Turbine Steam Supply (F064); Inboard Isolation												LTJ	60		N2-ISP-LRT-R@059	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-ICS-Q001	
2ICS*MOV129	2	N	B	A	6	GA	MO	35D (I-5)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
Pump Suction From CST												RPI	MOV		S-EPM-GEN-063	
2ICS*MOV136	2	N	B	A	6	FWGTV	MO	35A (I-10)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
Pump Suction From Supp. Pool (F031)												RPI	MOV		S-EPM-GEN-063	
												STO	2Y		N2-OSP-ICS-Q001	
2ICS*MOV143	2	N	A	A	2	GL	MO	35A (F-7)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
Min. Flow to Supp. Pool (F019); Outboard Isolation												LTJ	60		N2-ISP-LRT-R@062	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-ICS-Q001	
												STO	2Y		N2-OSP-ICS-Q001	

Valve Table

ICS - Reactor Core Isolation Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ICS*MOV148	2	N	A	A	1.5	GL	MO	35A (I-7)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
RCIC Turbine Exhaust Vac. Brkr Isolation Valve												LTJ	60		N2-ISP-LRT-R@063	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-ICS-Q001	
2ICS*MOV150	N	Y	N/A	P	4	GA	MO	35B (I-8)	O	O	NA	AUG	Q		N2-OSP-ICS-Q@002	Note - 17
RCIC Trip/Throttle Valve																
2ICS*MOV164	2	N	A	A	1.5	GL	MO	35A (H-6)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
RCIC Turbine Exhaust Vac. Brkr Isolation Valve												LTJ	60		N2-ISP-LRT-R@063	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-ICS-Q001	
2ICS*MOV170	2	N	A	A	1	GL	MO	35A (D-5)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-ICS-Q001	
RCIC Steam Line Warm-up Bypass (F076); Inboard Isolation												LTJ	60		N2-ISP-LRT-R@059	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-ICS-Q001	
2ICS*PCV115	2	N	B	A	2	GL	AO	35C (D-4)	OC	O	O	FE	Q		N2-OSP-ICS-Q@002	AOV Program
												FO	Q		N2-OSP-ICS-Q@002	
Lube Oil Cooler Temperature Control												STO	Q		N2-OSP-ICS-Q@002	
2ICS*PSE117	2	N	D	A	10	RD	SE	35B (F-5)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 18
Turbine Exhaust Rupture Disk (D001)																
2ICS*PSE118	2	N	D	A	10	RD	SE	35B (F-5)	C	O	NA	RD	5Y		N2-MPM-PSE-V001	Note - 18
Turbine Exhaust Rupture Disk (D002)																
2ICS*RV112	2	N	C	A	0.75	RV	SE	35C (C-3)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
Cooling Water to Lube Oil Cooler (F018)												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2ICS*RV114	2	N	C	A	0.75	RV	SE	35D (D-5)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
RCIC Pump *P1 Suction (F017)												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2ICS*V156	1	N	A/C	A	6	SWCV	SE	35C (G-3)	C	OC	NA	CC	R	ICS-ROJ - 01	N2-ISP-LRT-R@058	Notes - 03 & 15 CKV Program
RCIC Injection (F066); Outboard Isolation												CO	CS	ICS-CSJ - 01	N2-OSP-RHS-CS003	
												LK	2Y	GV-RR - 03	N2-OSP-ICS-R@001	
												PI	2Y		N2-OSP-RHS-CS003	

Valve Table

ICS - Reactor Core Isolation Cooling

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ICS*V157	1	N	A/C	A	6	SWCV	SE	35C (J-3)	C	OC	NA	CC	R	ICS-ROJ - 01	N2-ISP-LRT-R@096	Notes - 03 & 15 CKV Program
RCIC Injection (F065); Inboard Isolation												CO	CS	ICS-ROJ - 01	N2-OSP-RHS-CS003	
												LK	2Y	GV-RR - 03	N2-OSP-ICS-R@001	
2ICS*V220	2	N	C	A	4	SWCV	SE	35A (H-10)	OC	C	NA	DI	CM		N2-MPM-GEN-V205	
RCIC Pressure Pump Suction From Supp. Pool																
2ICS*V249	2	N	C	A	6	SWCV	SE	35D (I-5)	OC	OC	NA	CC	Q		N2-OSP-ICS-Q@002	Note - 15
												CO	Q		N2-OSP-ICS-Q@002	
RCIC Pump Suction From CST																
2ICS*V27	2	N	C	A	6	SWCV	SE	35D (F-5)	OC	O	NA	BDC	CM		N2-OSP-ICS-Q@002	
												CO	CM		N2-OSP-ICS-Q@002	
CST Suction Line Check Valve																
2ICS*V28	2	N	C	A	6	SWCV	SE	35A (H-10)	OC	OC	NA	DI	CM		N2-MPM-GEN-V205	
RCIC Pump Suction From Supp. Pool																
2ICS*V288	1	N	A	A	0.75	GL	MAN	35C (F-5)	OC	C	NA	FE	CS		N2-OSP-ICS-CS001	
												LTJ	60		N2-ISP-LRT-R@058	
RCIC Keep-Full Manual Isolation Valve																
2ICS*V29	2	N	C	A	12	SWCV	SE	35A (F-7)	OC	O	NA	CP	Q		N2-OSP-ICS-Q@002	
												DI	CM		N2-MPM-GEN-V205	
RCIC Turbine Exhaust Check to Supp. Pool																
2ICS*V38	2	N	C	A	2	CK	SE	35A (E-7)	OC	O	NA	BDC	CM		N2-OSP-ICS-Q@002	
												CO	CM		N2-OSP-ICS-Q@002	
Min. Flow to Supp. Pool																
2ICS*V39	2	N	C	A	1.5	VRV	SE	35A (I-6)	C	OC	NA	CC	Q		N2-OSP-ICS-Q003	Note - 16
												CO	Q		N2-OSP-ICS-Q003	
Turbine Exhaust Vacuum Breaker (F082)																
2ICS*V40	2	N	C	A	1.5	VRV	SE	35A (I-6)	C	OC	NA	CC	Q		N2-OSP-ICS-Q003	Note - 16
												CO	Q		N2-OSP-ICS-Q003	
Turbine Exhaust Vacuum Breaker (F084)																

Valve Table

ISC - Reactor Vessel Instrumentation

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ISC*EFV1	2	N	C	A	0.75	EFV	SE	28A (I-2)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line To 2ISC*PDT110; LT105																
2ISC*EFV10	2	N	C	A	0.75	EFV	SE	28B (I-8)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line To 2ISC*LT8C; LT8D; LT9B; LT9D; LT11B; LT112; PDI31B																
2ISC*EFV11	2	N	C	A	0.75	EFV	SE	28C (I-2)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@002	
												PI	10Y-S		N2-ISP-ISC-R@002	
Instrument Line to 2ISC*FT47K; *FT48B																
2ISC*EFV12	2	N	C	A	0.75	EFV	SE	28C (I-4)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2ISC*PT15B; 17B; 17D												PI	2Y		N2-ISP-ISC-R003	
2ISC*EFV13	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@002	Note - 21
												PI	10Y-S		N2-ISP-ISC-R@002	
Instrument Line to 2ISC*FT47H																
2ISC*EFV14	2	N	C	A	0.75	EFV	SE	28C (I-8)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@002	
												PI	10Y-S		N2-ISP-ISC-R@002	
Instrument Line to 2ISC*PDI103; 2ISC-FT47s in RCS Loop A																
2ISC*EFV15	2	N	C	A	0.75	EFV	SE	28B (D-3)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ISC*LT10C; LT10A; LT11C																
2ISC*EFV16	2	N	C	A	0.75	EFV	SE	28B (D-5)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2ISC*PT15A; 16A; 16C												PI	2Y		N2-ISP-ISC-R003	
2ISC*EFV17	2	N	C	A	0.75	EFV	SE	28B (D-8)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ISC*PDI31A; LT11D; LT101; LT9A; LT9C; LT8A; LT8B																
2ISC*EFV18	2	N	C	A	0.75	EFV	SE	28C (D-2)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@002	
												PI	10Y-S		N2-ISP-ISC-R@002	
Instrument Line to 2ISC-FT47J; FT48A																
2ISC*EFV19	2	N	C	A	0.75	EFV	SE	28C (D-4)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2ISC*PT15D; 17A; 17C												PI	2Y		N2-ISP-ISC-R003	
2ISC*EFV2	2	N	C	A	0.75	EFV	SE	28A (I-4)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ISC*PT113; PT115; PT4B;PI3B; PT2C; PT2D; PT6B																
2ISC*EFV20	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@002	Note - 21
												PI	10Y-S		N2-ISP-ISC-R@002	
Instrument Line to 2ISC-FT47E																

Valve Table

ISC - Reactor Vessel Instrumentation

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ISC*EFV21	2	N	C	A	0.75	EFV	SE	28C (D-8)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@001 N2-ISP-ISC-R@001	
Instrument Line to 2ISC-PDT114; 2CSH*PDT109; 2RDS-PDT114; PDT117																
2ISC*EFV22	2	N	C	A	0.75	EFV	SE	28C (D-9)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	
Instrument Line to 2ISC-PDT114; FT47B; 2WCS-FT134; 2ISC-FT47s, RCS Loop B																
2ISC*EFV23	2	N	C	A	0.75	EFV	SE	28C (D-6)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	
Instrument Line to 2ISC-FT48C																
2ISC*EFV24	2	N	C	A	0.75	EFV	SE	28C (I-6)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	
Instrument Line to 2ISC-FT48D																
2ISC*EFV25	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47L																
2ISC*EFV26	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47C																
2ISC*EFV27	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47A																
2ISC*EFV28	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47R																
2ISC*EFV29	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47G																
2ISC*EFV3	2	N	C	A	0.75	EFV	SE	28A (I-5)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@001 N2-ISP-ISC-R@001	
Instrument Line to 2ISC*LT7C; PDT14C; PT4C; PT122																
2ISC*EFV30	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47N																
2ISC*EFV31	2	N	C	A	0.75	EFV	SE	28C (D-5)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	
Instrument Line to 2ISC-FT48A																
2ISC*EFV32	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47T																

Valve Table

ISC - Reactor Vessel Instrumentation

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ISC*EFV33	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47V; 2ISC-FT48C																
2ISC*EFV34	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47B																
2ISC*EFV35	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47D																
2ISC*EFV36	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47F																
2ISC*EFV37	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47S																
2ISC*EFV38	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47M																
2ISC*EFV39	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47P																
2ISC*EFV4	2	N	C	A	0.75	EFV	SE	28A (I-7)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@001 N2-ISP-ISC-R@001	
Instrument Line to 2ISC*LT7C; PDT14C; LT12B; LT7B; PDT14B; LT105; PDT110																
2ISC*EFV40	2	N	C	A	0.75	EFV	SE	28C (I-5)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	
Instrument Line to 2ISC-FT48B																
2ISC*EFV41	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47U																
2ISC*EFV42	2	N	C	A	0.75	EFV	SE	28C (CHR1)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@002 N2-ISP-ISC-R@002	Note - 21
Instrument Line to 2ISC-FT47W; 2ISC-FT48D																
2ISC*EFV5	2	N	C	A	0.75	EFV	SE	28A (D-4)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@001 N2-ISP-ISC-R@001	
Instrument Line to 2ISC*PT102; PT5A; PT2B; PT2A; PI3A; PT4D; PT5D; PT6A																
2ISC*EFV6	2	N	C	A	0.75	EFV	SE	28A (D-5)	O	C	NA	FE PI	10Y-S 10Y-S	GV-RR - 08	N2-ISP-ISC-R@001 N2-ISP-ISC-R@001	
Instrument Line to 2ISC*PT4A; PT109; PT108; PDT14A; LT7A; LT115																

Valve Table

ISC - Reactor Vessel Instrumentation

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ISC*EFV7	2	N	C	A	0.75	EFV	SE	28A (D-6)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ISC*LT7D; LT12A; PDT14A; LT7A; LT115																
2ISC*EFV8	2	N	C	A	0.75	EFV	SE	28B (I-3)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2ISC*LT11A; LT10B; LT10D																
2ISC*EFV9	2	N	C	A	0.75	EFV	SE	28B (I-5)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2ISC*PT15C; 16B; 16D												PI	2Y		N2-ISP-ISC-R003	
2ISC*RV33A	2	N	C	A	24	VRV	SE	28A (B-9)	C	OC	NA	LK	2Y		N2-ISP-CNT-R@008	Notes - 19 & 20
												LL	2Y		N2-ESP-ISC-R@533	
Drywell-To-Suppression Chamber Vacuum Breaker												RT	2Y		N2-ESP-ISC-R@533	
												VP	2Y		N2-ESP-ISC-R@533	
												VR	2Y		N2-ESP-ISC-R@533	
2ISC*RV33B	2	N	C	A	24	VRV	SE	28A (B-9)	C	OC	NA	LK	2Y		N2-ISP-CNT-R@008	Notes - 19 & 20
												LL	2Y		N2-ESP-ISC-R@533	
Drywell-To-Suppression Chamber Vacuum Breaker												RT	2Y		N2-ESP-ISC-R@533	
												VP	2Y		N2-ESP-ISC-R@533	
												VR	2Y		N2-ESP-ISC-R@533	
2ISC*RV34A	2	N	C	A	24	VRV	SE	28A (C-9)	C	OC	NA	LK	2Y		N2-ISP-CNT-R@008	Notes - 19 & 20
												LL	2Y		N2-ESP-ISC-R@533	
Drywell-To-Suppression Chamber Vacuum Breaker												RT	2Y		N2-ESP-ISC-R@533	
												VP	2Y		N2-ESP-ISC-R@533	
												VR	2Y		N2-ESP-ISC-R@533	
2ISC*RV34B	2	N	C	A	24	VRV	SE	28A (C-9)	C	OC	NA	LK	2Y		N2-ISP-CNT-R@008	Notes - 19 & 20
												LL	2Y		N2-ESP-ISC-R@533	
Drywell-To-Suppression Chamber Vacuum Breaker												RT	2Y		N2-ESP-ISC-R@533	
												VP	2Y		N2-ESP-ISC-R@533	
												VR	2Y		N2-ESP-ISC-R@533	
2ISC*RV35A	2	N	C	A	24	VRV	SE	28A (D-9)	C	OC	NA	LK	2Y		N2-ISP-CNT-R@008	Notes - 19 & 20
												LL	2Y		N2-ESP-ISC-R@533	
Drywell-To-Suppression Chamber Vacuum Breaker												RT	2Y		N2-ESP-ISC-R@533	
												VP	2Y		N2-ESP-ISC-R@533	
												VR	2Y		N2-ESP-ISC-R@533	
2ISC*RV35B	2	N	C	A	24	VRV	SE	28A (D-9)	C	OC	NA	LK	2Y		N2-ISP-CNT-R@008	Notes - 19 & 20
												LL	2Y		N2-ESP-ISC-R@533	
Drywell-To-Suppression Chamber Vacuum Breaker												RT	2Y		N2-ESP-ISC-R@533	
												VP	2Y		N2-ESP-ISC-R@533	
												VR	2Y		N2-ESP-ISC-R@533	

Valve Table

ISC - Reactor Vessel Instrumentation

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ISC*RV36A Drywell-To-Suppression Chamber Vacuum Breaker	2	N	C	A	24	VRV	SE	28A (E-9)	C	OC	NA	LK	2Y		N2-ISP-CNT-R@008	Notes - 19 & 20
												LL	2Y		N2-ESP-ISC-R@533	
												RT	2Y		N2-ESP-ISC-R@533	
												VP	2Y		N2-ESP-ISC-R@533	
												VR	2Y		N2-ESP-ISC-R@533	
2ISC*RV36B Drywell-To-Suppression Chamber Vacuum Breaker	2	N	C	A	24	VRV	SE	28A (E-9)	C	OC	NA	LK	2Y		N2-ISP-CNT-R@008	Notes - 19 & 20
												LL	2Y		N2-ESP-ISC-R@533	
												RT	2Y		N2-ESP-ISC-R@533	
												VP	2Y		N2-ESP-ISC-R@533	
												VR	2Y		N2-ESP-ISC-R@533	
2ISC*SOV119 Jet Pump PASS Isolation	2	N	B	P	0.5	GL	SO	28C (C-6)	C	C	C	PI	2Y		N2-OSP-LIQ-R006	
2ISC*SOV120 Jet Pump PASS Isolation	2	N	B	P	0.5	GL	SO	28C (C-6)	C	C	C	PI	2Y		N2-OSP-LIQ-R006	
2ISC*SOV123 Jet Pump PASS Isolation	2	N	B	P	0.5	GL	SO	28C (B-6)	C	C	C	PI	2Y		N2-OSP-LIQ-R006	
2ISC*SOV124 Jet Pump PASS Isolation	2	N	B	P	0.5	GL	SO	28C (K-6)	C	C	C	PI	2Y		N2-OSP-LIQ-R006	
2ISC*V200A Reference Leg Keep-Fill	N	Y	N/A	A	0.375	CK	SE	28A (K-9)	OC	C	NA	CC	R		N2-ISP-ISC-2Y001	Note - 22
												LK	R		N2-ISP-ISC-2Y001	
2ISC*V200B Reference Leg Keep-Fill	N	Y	N/A	A	0.375	CK	SE	28A (K-10)	OC	C	NA	CC	R		N2-ISP-ISC-2Y001	Note - 22
												LK	R		N2-ISP-ISC-2Y001	
2ISC*V200C Reference Leg Keep-Fill	N	Y	N/A	A	0.375	CK	SE	28A (K-11)	OC	C	NA	CC	R		N2-ISP-ISC-2Y001	Note - 22
												LK	R		N2-ISP-ISC-2Y001	
2ISC*V200D Reference Leg Keep-Fill	N	Y	N/A	A	0.375	CK	SE	28A (K-9)	OC	C	NA	CC	R		N2-ISP-ISC-2Y001	Note - 22
												LK	R		N2-ISP-ISC-2Y001	
2ISC*V204A Reference Leg Keep-Fill	N	Y	N/A	A	0.375	CK	SE	28A (K-9)	OC	C	NA	CC	R		N2-ISP-ISC-2Y001	Note - 22
												LK	R		N2-ISP-ISC-2Y001	
2ISC*V204B Reference Leg Keep-Fill	N	Y	N/A	A	0.375	CK	SE	28A (K-10)	OC	C	NA	CC	R		N2-ISP-ISC-2Y001	Note - 22
												LK	R		N2-ISP-ISC-2Y001	

Valve Table

ISC - Reactor Vessel Instrumentation

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2ISC*V204C Reference Leg Keep-Fill	N	Y	N/A	A	0.375	CK	SE	28A (K-11)	OC	C	NA	CC LK	R R		N2-ISP-ISC-2Y001 N2-ISP-ISC-2Y001	Note - 22
2ISC*V204D Reference Leg Keep-Fill	N	Y	N/A	A	0.375	CK	SE	28A (K-9)	OC	C	NA	CC LK	R R		N2-ISP-ISC-2Y001 N2-ISP-ISC-2Y001	Note - 22

Valve Table

LMS - Containment Leakage Monitoring

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2LMS*SOV152	2	N	A	A	0.75	GL	SO	81A (D-4)	C	C	C	FC	R	LMS-ROJ - 01	N2-OSP-LMS-Q001	
ILRT Drywell Pressure; Inboard Isolation												FE	R	LMS-ROJ - 01	N2-OSP-LMS-Q001	
												LTJ	60		N2-ISP-LRT-R@064	
												PI	2Y		N2-OSP-LMS-R001	
												STC	R	LMS-ROJ - 01	N2-OSP-LMS-Q001	
2LMS*SOV153	2	N	A	A	0.75	GL	SO	81A (F-4)	C	C	C	FC	Q		N2-OSP-LMS-Q001	
												FE	Q		N2-OSP-LMS-Q001	
ILRT Drywell Pressure; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@064	
												PI	2Y		N2-OSP-LMS-R001	
												STC	Q		N2-OSP-LMS-Q001	
2LMS*SOV156	2	N	A	A	0.75	GL	SO	81A (D-9)	C	C	C	FC	R	LMS-ROJ - 01	N2-OSP-LMS-Q001	
ILRT Supp. Chamber Pressure; Inboard Isolation												FE	R	LMS-ROJ - 01	N2-OSP-LMS-Q001	
												LTJ	60		N2-ISP-LRT-R@065	
												PI	2Y		N2-OSP-LMS-R001	
												STC	R	LMS-ROJ - 01	N2-OSP-LMS-Q001	
2LMS*SOV157	2	N	A	A	0.75	GL	SO	81A (F-9)	C	C	C	FC	Q		N2-OSP-LMS-Q001	
												FE	Q		N2-OSP-LMS-Q001	
ILRT Supp. Chamber Pressure; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@065	
												PI	2Y		N2-OSP-LMS-R001	
												STC	Q		N2-OSP-LMS-Q001	

Valve Table

MSS - Main Steam System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*AOV6A	1	N	A	A	26	GL	AO	1E (C-7)	O	C	C	FC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	Note - 02 AOV Program
Main Steam Isolation Valve; Inboard Isolation												FE	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
												LJ	AJ		N2-ISP-MSS-R@003	
												LJ	AJ		N2-ISP-MSS-R002	
												PI	2Y		N2-ISP-RPS-R107	
												STC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
2MSS*AOV6B	1	N	A	A	26	GL	AO	1E (C-9)	O	C	C	FC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	Note - 02 AOV Program
Main Steam Isolation Valve; Inboard Isolation												FE	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
												LJ	AJ		N2-ISP-MSS-R@003	
												LJ	AJ		N2-ISP-MSS-R002	
												PI	2Y		N2-ISP-RPS-R107	
												STC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
2MSS*AOV6C	1	N	A	A	26	GL	AO	1E (C-3)	O	C	C	FC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	Note - 23 AOV Program
Main Steam Isolation Valve; Inboard Isolation												FE	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
												LJ	AJ		N2-ISP-MSS-R@003	
												LJ	AJ		N2-ISP-MSS-R002	
												PI	2Y		N2-ISP-RPS-R107	
												STC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
2MSS*AOV6D	1	N	A	A	26	GL	AO	1E (C-5)	O	C	C	FC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	Note - 02 AOV Program
Main Steam Isolation Valve; Inboard Isolation												FE	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
												LJ	AJ		N2-ISP-MSS-R@003	
												LJ	AJ		N2-ISP-MSS-R002	
												PI	2Y		N2-ISP-RPS-R107	
												STC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*AOV7A	1	N	A	A	26	GL	AO	1F (B-5)	O	C	C	FC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	Note - 23 AOV Program
Main Steam Isolation Valve; Outboard Isolation												FE	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
												LJ	AJ		N2-ISP-MSS-R@003	
												LJ	AJ		N2-ISP-MSS-R002	
												PI	2Y		N2-ISP-RPS-R107	
												STC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
2MSS*AOV7B	1	N	A	A	26	GL	AO	1F (B-7)	O	C	C	FC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	Note - 02 AOV Program
Main Steam Isolation Valve; Outboard Isolation												FE	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
												LJ	AJ		N2-ISP-MSS-R@003	
												LJ	AJ		N2-ISP-MSS-R002	
												PI	2Y		N2-ISP-RPS-R107	
												STC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
2MSS*AOV7C	1	N	A	A	26	GL	AO	1F (B-2)	O	C	C	FC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	Note - 02 AOV Program
Main Steam Isolation Valve; Outboard Isolation												FE	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
												LJ	AJ		N2-ISP-MSS-R@003	
												LJ	AJ		N2-ISP-MSS-R002	
												PI	2Y		N2-ISP-RPS-R107	
												STC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
2MSS*AOV7D	1	N	A	A	26	GL	AO	1F (B-4)	O	C	C	FC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	Note - 02 AOV Program
Main Steam Isolation Valve; Outboard Isolation												FE	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
												LJ	AJ		N2-ISP-MSS-R002	
												LJ	AJ		N2-ISP-MSS-R@003	
												PI	2Y		N2-ISP-RPS-R107	
												STC	CS	MSS-CSJ - 01	N2-OSP-MSS-CS001	
2MSS*EFV1A	2	N	C	A	0.75	EFV	SE	1J (H-7)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT14A; FT15A																
2MSS*EFV1B	2	N	C	A	0.75	EFV	SE	1J (H-9)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT14B; FT15B																

Valve Table

MSS - Main Steam System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*EFV1C	2	N	C	A	0.75	EFV	SE	1J (H-2)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT14C; FT15C																
2MSS*EFV1D	2	N	C	A	0.75	EFV	SE	1J (H-4)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT14D; FT15D																
2MSS*EFV2A	2	N	C	A	0.75	EFV	SE	1J (H-7)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT11A; FT12A; FT13A																
2MSS*EFV2B	2	N	C	A	0.75	EFV	SE	1J (H-10)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT11B; FT12B; FT13B																
2MSS*EFV2C	2	N	C	A	0.75	EFV	SE	1J (H-2)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT11C; FT12C; FT13C																
2MSS*EFV2D	2	N	C	A	0.75	EFV	SE	1J (H-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT11D; FT12D; FT13D																
2MSS*EFV3A	2	N	C	A	0.75	EFV	SE	1J (H-7)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT11A; FT12A; FT13A																
2MSS*EFV3B	2	N	C	A	0.75	EFV	SE	1J (H-10)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT11B; FT12B; FT13B																
2MSS*EFV3C	2	N	C	A	0.75	EFV	SE	1J (H-3)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT11C; FT12C; FT13C																
2MSS*EFV3D	2	N	C	A	0.75	EFV	SE	1J (H-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT11D; FT12D; FT13D																
2MSS*EFV4A	2	N	C	A	0.75	EFV	SE	1J (H-8)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT14A; FT15A																
2MSS*EFV4B	2	N	C	A	0.75	EFV	SE	1J (H-10)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT14B; FT15B																
2MSS*EFV4C	2	N	C	A	0.75	EFV	SE	1J (H-3)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT14C; FT15C																

Valve Table

MSS - Main Steam System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*EFV4D	2	N	C	A	0.75	EFV	SE	1J (H-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2MSS*FT14D; FT15D																
2MSS*MOV111	1	N	A	A	6	GL	MO	1E (G-2)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-MSS-R001	
Main Steam Line Drain; Inboard Isolation												LTJ	30		N2-ISP-LRT-R@066	
												PI	2Y		N2-OSP-MSS-R001	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-MSS-R001	
2MSS*MOV112	1	N	A	A	6	GL	MO	1E (H-2)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-MSS-R001	
Main Steam Line Drain; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@066	
												PI	2Y		N2-OSP-MSS-R001	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-MSS-R001	
2MSS*MOV118	1	N	B	P	2	GL	MO	1A (J-4)	C	C	As-Is	PI	2Y		N2-OSP-MSS-R001	
Reactor Vessel Head Vent Inboard Blocking Valve																
2MSS*MOV119	1	N	B	P	2	GL	MO	1A (J-4)	C	C	As-Is	PI	2Y		N2-OSP-MSS-R001	
Reactor Vessel Head Vent Outboard Blocking Valve																
2MSS*MOV208	1	N	A	A	2	GL	MO	1F (F-9)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	2Y		N2-OSP-MSS-R001	
Main Steam Line Drain; Outboard Isolation												LTJ	30		N2-ISP-LRT-R@067	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-MSS-R001	
2MSS*PSV120	1	N	C	A	8	RV	SE	1A (D-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	

Valve Table

MSS - Main Steam System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*PSV121	1	N	C	A	8	RV	SE	1A (E-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV (ADS)												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV122	1	N	C	A	8	RV	SE	1A (G-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV123	1	N	C	A	8	RV	SE	1A (H-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	

Valve Table

MSS - Main Steam System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*PSV124	1	N	C	A	8	RV	SE	1B (D-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV125	1	N	C	A	8	RV	SE	1B (E-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV126	1	N	C	A	8	RV	SE	1B (G-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV (ADS)												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	

Valve Table

MSS - Main Steam System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*PSV127	1	N	C	A	8	RV	SE	1B (H-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV (ADS)												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV128	1	N	C	A	8	RV	SE	1B (I-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV129	1	N	C	A	8	RV	SE	1C (D-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV (ADS)												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	

Valve Table

MSS - Main Steam System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*PSV130	1	N	C	A	8	RV	SE	1C (E-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV (ADS)												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV131	1	N	C	A	8	RV	SE	1C (G-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV132	1	N	C	A	8	RV	SE	1C (H-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	

Valve Table

MSS - Main Steam System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*PSV133	1	N	C	A	8	RV	SE	1C (J-4)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV134	1	N	C	A	8	RV	SE	1D (D-5)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV (ADS)												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV135	1	N	C	A	8	RV	SE	1D (F-5)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	

Valve Table

MSS - Main Steam System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2MSS*PSV136	1	N	C	A	8	RV	SE	1D (H-5)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
2MSS*PSV137	1	N	C	A	8	RV	SE	1D (J-5)	C	O	NA	AO	6Y	MSS-VR - 01	N2-MMP-SRV-100	Note - 23 AOV Program
MAIN STEAM SRV (ADS)												LA	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												LL	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												RT	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												SO	6Y	MSS-VR - 01	N2-MMP-SRV-100	
												VT	6Y	MSS-VR - 01	N2-MMP-SRV-100	

Valve Table

NMS - Neutron Monitoring System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2NMS*SOV1A	2	N	A	A	0.375	BAL	SO	EM38A (F-7)	C	C	C	FC	Q		N2-OSP-TIP-Q001	
												FE	Q		N2-OSP-TIP-Q001	
TIP Ball Valve; Outboard Isolation												LTJ	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-OSP-TIP-R001	
												STC	Q		N2-OSP-TIP-Q001	
2NMS*SOV1B	2	N	A	A	0.375	BAL	SO	EM38A (F-7)	C	C	C	FC	Q		N2-OSP-TIP-Q001	
												FE	Q		N2-OSP-TIP-Q001	
TIP Ball Valve; Outboard Isolation												LTJ	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-OSP-TIP-R001	
												STC	Q		N2-OSP-TIP-Q001	
2NMS*SOV1C	2	N	A	A	0.375	BAL	SO	EM38A (G-6)	C	C	C	FC	Q		N2-OSP-TIP-Q001	
												FE	Q		N2-OSP-TIP-Q001	
TIP Ball Valve; Outboard Isolation												LTJ	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-OSP-TIP-R001	
												STC	Q		N2-OSP-TIP-Q001	
2NMS*SOV1D	2	N	A	A	0.375	BAL	SO	EM38A (G-6)	C	C	C	FC	Q		N2-OSP-TIP-Q001	
												FE	Q		N2-OSP-TIP-Q001	
TIP Ball Valve; Outboard Isolation												LTJ	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-OSP-TIP-R001	
												STC	Q		N2-OSP-TIP-Q001	
2NMS*SOV1E	2	N	A	A	0.375	BAL	SO	EM38A (H-5)	C	C	C	FC	Q		N2-OSP-TIP-Q001	
												FE	Q		N2-OSP-TIP-Q001	
TIP Ball Valve; Outboard Isolation												LTJ	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-ISP-LRT-R@068	
												PI	2Y		N2-OSP-TIP-R001	
												STC	Q		N2-OSP-TIP-Q001	
2NMS*VEX1A	2	N	D	A	0.375	EXV	EX	EM38A (F-7)	O	C	NA	EX	20% / 2Y		N2-ISP-TIP-R001	Note - 24
TIP Explosive Shear Valve																
2NMS*VEX1B	2	N	D	A	0.375	EXV	EX	EM38A (F-7)	O	C	NA	EX	20% / 2Y		N2-ISP-TIP-R001	Note - 24
TIP Explosive Shear Valve																
2NMS*VEX1C	2	N	D	A	0.375	EXV	EX	EM38A (G-6)	O	C	NA	EX	20% / 2Y		N2-ISP-TIP-R001	Note - 24
TIP Explosive Shear Valve																

Valve Table

NMS - Neutron Monitoring System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2NMS*VEX1D TIP Explosive Shear Valve	2	N	D	A	0.375	EXV	EX	EM38A (G-6)	O	C	NA	EX	20% / 2Y		N2-ISP-TIP-R001	Note - 24
2NMS*VEX1E TIP Explosive Shear Valve	2	N	D	A	0.375	EXV	EX	EM38A (H-5)	O	C	NA	EX	20% / 2Y		N2-ISP-TIP-R001	Note - 24

Valve Table

RCS - Reactor Coolant System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RCS*EFV44A	2	N	C	A	0.75	EFV	SE	29B (D-2)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2RCS*PT84A												PI	2Y		N2-ISP-ISC-R003	
2RCS*EFV44B	2	N	C	A	0.75	EFV	SE	29C (D-2)	O	C	NA	BDO	R		N2-ISP-ISC-R003	
												CC	R	GV-ROJ - 01	N2-ISP-ISC-R003	
Instrument Line to 2RCS*PT84B												PI	2Y		N2-ISP-ISC-R003	
2RCS*EFV45A	2	N	C	A	0.75	EFV	SE	29B (D-3)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*FT7A; FT9A																
2RCS*EFV45B	2	N	C	A	0.75	EFV	SE	29C (D-3)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*FT7B; FT9B																
2RCS*EFV46A	2	N	C	A	0.75	EFV	SE	29B (D-4)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*FT7A; FT9A																
2RCS*EFV46B	2	N	C	A	0.75	EFV	SE	29C (D-4)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*FT7B; FT9B																
2RCS*EFV47A	2	N	C	A	0.75	EFV	SE	29B (D-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*FT6A; FT8A																
2RCS*EFV47B	2	N	C	A	0.75	EFV	SE	29C (D-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*FT6B; FT8B																
2RCS*EFV48A	2	N	C	A	0.75	EFV	SE	29B (D-6)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*FT6A; FT8A																
2RCS*EFV48B	2	N	C	A	0.75	EFV	SE	29C (D-6)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*FT6B; FT8B																
2RCS*EFV52A	2	N	C	A	0.75	EFV	SE	29B (I-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*PDT15A																
2RCS*EFV52B	2	N	C	A	0.75	EFV	SE	29C (I-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*PDT15B																
2RCS*EFV53A	2	N	C	A	0.75	EFV	SE	29B (H-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*PDT15A																

Valve Table

RCS - Reactor Coolant System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RCS*EFV53B	2	N	C	A	0.75	EFV	SE	29C (H-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*PDT15B																
2RCS*EFV62A	2	N	C	A	0.75	EFV	SE	29B (J-9)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*PI44A																
2RCS*EFV62B	2	N	C	A	0.75	EFV	SE	29C (J-9)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*PI44B																
2RCS*EFV63A	2	N	C	A	0.75	EFV	SE	29B (J-9)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*PI42A																
2RCS*EFV63B	2	N	C	A	0.75	EFV	SE	29C (J-9)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RCS*PI42B																
2RCS*SOV104	2	N	A	A	0.75	GL	SO	29B (H-3)	O	C	C	FC	R	RCS-ROJ - 01	N2-OSP-RCS-Q001	
RCS Sample Line; Inboard Isolation												FE	R	RCS-ROJ - 01	N2-OSP-RCS-Q001	
												LTJ	30		N2-ISP-LRT-R@069	
												PI	2Y		N2-OSP-RCS-R002	
												STC	R	RCS-ROJ - 01	N2-OSP-RCS-Q001	
2RCS*SOV105	2	N	A	A	0.75	GL	SO	29B (H-3)	O	C	C	FC	Q		N2-OSP-RCS-Q001	
												FE	Q		N2-OSP-RCS-Q001	
RCS Sample Line; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@069	
												PI	2Y		N2-OSP-RCS-R002	
												STC	Q		N2-OSP-RCS-Q001	
2RCS*SOV65A	2	N	B	A	2	GL	SO	29A (A-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve A												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	

Valve Table

RCS - Reactor Coolant System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RCS*SOV65B	2	N	B	A	2	GL	SO	29A (H-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve B												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV66A	2	N	B	A	1	GL	SO	29A (B-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve A												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV66B	2	N	B	A	1	GL	SO	29A (I-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve B												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV67A	2	N	B	A	2	GL	SO	29A (D-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve A												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV67B	2	N	B	A	2	GL	SO	29A (H-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve B												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV68A	2	N	B	A	0.75	GL	SO	29A (E-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU from RCS Flow Control Valve A												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	

Valve Table

RCS - Reactor Coolant System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RCS*SOV68B	2	N	B	A	0.75	GL	SO	29A (K-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU from RCS Flow Control Valve B												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV79A	2	N	B	A	2	GL	SO	29A (A-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve A												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV79B	2	N	B	A	2	GL	SO	29A (H-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve B												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV80A	2	N	B	A	1	GL	SO	29A (B-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve A												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV80B	2	N	B	A	1	GL	SO	29A (I-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve B												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV81A	2	N	B	A	2	GL	SO	29A (D-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve A												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	

Valve Table

RCS - Reactor Coolant System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RCS*SOV81B	2	N	B	A	2	GL	SO	29A (H-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU to RCS Flow Control Valve B												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV82A	2	N	B	A	0.75	GL	SO	29A (E-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU from RCS Flow Control Valve A												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*SOV82B	2	N	B	A	0.75	GL	SO	29A (K-6)	O	C	C	FC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
HPU from RCS Flow Control Valve B												FE	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
												PI	2Y		N2-OSP-RCS-R002	
												STC	CS	RCS-CSJ - 01	N2-OSP-RCS-CS001	
2RCS*V59A	2	N	A/C	A	0.75	CK	SE	29B (H-10)	OC	C	NA	BDO	CM		N2-OP-29	
												CC	CM		N2-ISP-LRT-R@070	
RDS to RCS Pump A Seal; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@070	
2RCS*V59B	2	N	A/C	A	0.75	CK	SE	29C (G-10)	OC	C	NA	BDO	CM		N2-OP-29	
												CC	CM		N2-ISP-LRT-R@071	
RDS to RCS Pump B Seal; Outboard Isolation												LTJ	30		N2-ISP-LRT-R@071	
2RCS*V60A	2	N	A/C	A	0.75	CK	SE	29B (F-10)	OC	C	NA	BDO	CM		N2-OP-29	
												CC	CM		N2-ISP-LRT-R@070	
RDS to RCS Pump A Seal; Inboard Isolation												LTJ	60		N2-ISP-LRT-R@070	
2RCS*V60B	2	N	A/C	A	0.75	CK	SE	29C (F-10)	OC	C	NA	BDO	CM		N2-OP-29	
												CC	CM		N2-ISP-LRT-R@071	
RDS to RCS Pump B Seal; Inboard Isolation												LTJ	60		N2-ISP-LRT-R@071	
2RCS*V90A	2	N	A/C	A	0.75	CK	SE	29B (G-10)	OC	C	NA	BDO	CM		N2-OP-29	
												CC	CM		N2-ISP-LRT-R@070	
RDS to RCS Pump A Seal; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@070	
2RCS*V90B	2	N	A/C	A	0.75	CK	SE	29C (G-10)	OC	C	NA	BDO	CM		N2-OP-29	
												CC	CM		N2-ISP-LRT-R@071	
RDS to RCS Pump B Seal; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@071	

Valve Table

RDS - Control Rod Drive Hydraulics

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RDS*AOV123	2	N	A	A	2	GL	AO	30C (C-10)	O	C	C	FC	Q		N2-OSP-RDS-Q001	AOV Program
												FE	Q		N2-OSP-RDS-Q001	
Scram Discharge Volume Inboard Drain												LTJ	60		N2-ISP-LRT-R@072	
												PI	2Y		N2-OSP-RDS-R001	
												STC	Q		N2-OSP-RDS-Q001	
2RDS*AOV124	2	N	A	A	1	GL	AO	30C (F-5)	O	C	C	FC	Q		N2-OSP-RDS-Q001	AOV Program
												FE	Q		N2-OSP-RDS-Q001	
Scram Discharge Volume Inboard Vent												LTJ	60		N2-ISP-LRT-R@072	
												PI	2Y		N2-OSP-RDS-R001	
												STC	Q		N2-OSP-RDS-Q001	
2RDS*AOV126	N	Y	N/A	A	0.5	GL	AO	30B (D-8)	C	O	O	AUG	TS		N2-RESP-11	Note - 25
Scram Inlet Valve (Typical of 185)																
2RDS*AOV127	N	Y	N/A	A	0.75	GL	AO	30B (B-9)	C	O	O	AUG	TS		N2-RESP-11	Note - 25
Scram Outlet Valve (Typical of 185)																
2RDS*AOV130	2	N	A	A	2	GL	AO	30C (B-10)	O	C	C	FC	Q		N2-OSP-RDS-Q001	AOV Program
												FE	Q		N2-OSP-RDS-Q001	
Scram Discharge Volume Outboard Drain												LTJ	60		N2-ISP-LRT-R@072	
												PI	2Y		N2-OSP-RDS-R001	
												STC	Q		N2-OSP-RDS-Q001	
2RDS*AOV132	2	N	A	A	1	GL	AO	30C (F-5)	O	C	C	FC	Q		N2-OSP-RDS-Q001	AOV Program
												FE	Q		N2-OSP-RDS-Q001	
Scram Discharge Volume Outboard Vent												LTJ	60		N2-ISP-LRT-R@072	
												PI	2Y		N2-OSP-RDS-R001	
												STC	Q		N2-OSP-RDS-Q001	
2RDS*SOV137	N	Y	N/A	A	0.5	GA	SO	30C (H-2)	O	C	O	AUG	R		N2-OSP-RPS-R301	Note - 26
Backup Scram Air Pilot (Backup Scram Valve)																
2RDS*SOV138	N	Y	N/A	A	0.5	GA	SO	30C (H-2)	O	C	O	AUG	R		N2-OSP-RPS-R301	Note - 26
Backup Scram Air Pilot (Backup Scram Valve)																
2RDS*SOV139	N	Y	N/A	A	0.5	GL	SO	30B (A-8)	O	C	C	AUG	TS		N2-OSP-RMC-@001	Note - 25
Scram Pilot Valve; Actuates AOV126 and AOV127 (Typical of 185)																
2RDS*SOV154	N	Y	N/A	A	0.5	GL	SO	30C (C-4)	C	O	O	AUG	Q		N2-OSP-RDS-Q001	Note - 27
SDV Instrument Air Isolation Valve; SOVX154, SOVY154																

Valve Table

RDS - Control Rod Drive Hydraulics

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RDS*SOV155 SDV Instrument Air Isolation Valve; SOVX155, SOVY155	N	Y	N/A	A	0.5	GL	SO	30C (C-2)	C	O	O	AUG	Q		N2-OSP-RDS-Q001	Note - 27
2RDS*SOV156 Alternate Rod Insertion	N	Y	N/A	A	0.5	GA	SO	30C (J-7)	C	O	C	FC FE PI	R R 2Y		N2-ISP-RRC-R001 N2-ISP-RRC-R001 N2-ISP-RRC-R001	Note - 28
2RDS*SOV157 Alternate Rod Insertion	N	Y	N/A	A	0.5	GL	SO	30C (J-8)	C	O	C	FC FE PI	R R 2Y		N2-ISP-RRC-R001 N2-ISP-RRC-R001 N2-ISP-RRC-R001	Note - 28
2RDS*SOV158 Alternate Rod Insertion	N	Y	N/A	A	0.5	GL	SO	30C (K-8)	C	O	C	FC FE PI	R R 2Y		N2-ISP-RRC-R001 N2-ISP-RRC-R001 N2-ISP-RRC-R001	Note - 28
2RDS*SOV159 Alternate Rod Insertion	N	Y	N/A	A	0.5	GL	SO	30C (K-7)	C	O	C	FC FE PI	R R 2Y		N2-ISP-RRC-R001 N2-ISP-RRC-R001 N2-ISP-RRC-R001	Note - 28
2RDS*SOV160 Alternate Rod Insertion	N	Y	N/A	A	0.5	GL	SO	30C (A-5)	C	O	C	FC FE PI	R R 2Y		N2-ISP-RRC-R001 N2-ISP-RRC-R001 N2-ISP-RRC-R001	Note - 28
2RDS*SOV161 Alternate Rod Insertion	N	Y	N/A	A	0.5	GL	SO	30C (A-3)	C	O	C	FC FE PI	R R 2Y		N2-ISP-RRC-R001 N2-ISP-RRC-R001 N2-ISP-RRC-R001	Note - 28
2RDS*SOV162 Alternate Rod Insertion	N	Y	N/A	A	0.5	GL	SO	30C (E-2)	C	O	C	FC FE PI	R R 2Y		N2-ISP-RRC-R001 N2-ISP-RRC-R001 N2-ISP-RRC-R001	Note - 28
2RDS*SOV163 Alternate Rod Insertion	N	Y	N/A	A	0.5	GL	SO	30C (G-2)	C	O	C	FC FE PI	R R 2Y		N2-ISP-RRC-R001 N2-ISP-RRC-R001 N2-ISP-RRC-R001	Note - 28
2RDS*V114 Scram Discharge Riser Check	N	Y	N/A	A	0.5	BLCV	SE	30B (B-9)	OC	OC	NA	AUG	TS		N2-OSP-RMC-@001	Note - 25
2RDS*V115 HCU Accumulator Charging Water Check (Typical of 185)	N	Y	N/A	A	0.5	BLCV	SE	30B (D-7)	OC	C	NA	AUG	R		N2-OSP-RDS-R004	Note - 29
2RDS*V137 Drive Water Check (Typical of 185)	N	Y	N/A	A	0.5	BLCV	SE	30B (B-7)	OC	C	NA	AUG	TS		N2-OSP-RMC-W@001	Note - 25
2RDS*V138 Cooling Water Check (Typical of 185)	N	Y	N/A	A	0.5	BLCV	SE	30B (C-7)	O	C	NA	AUG	TS		N2-OSP-RMC-W@001	Note - 25

Valve Table

RHS - Residual Heat Removal

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*AOV126	3	N	B	A	0.75	BAL	AO	31E (C-9)	O	C	C	FC	Q		N2-OSP-RHS-Q@002	
												FE	Q		N2-OSP-RHS-Q@002	
RHS / SWP Cross-Tie Drain Valve												PI	2Y		N2-OSP-RHS-R005	
												STC	Q		N2-OSP-RHS-Q@002	
2RHS*AOV150	2	N	C	A	16	TSWCV	SE	31E (B-8)	C	OC	NA	CC	Q		N2-OSP-RHS-Q@002	CKV Program
												CO	Q		N2-OSP-RHS-Q@002	
SWP Intertie to RHS																
2RHS*EFV5	2	N	C	A	0.75	EFV	SE	31B (B-8)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RHS*PDT18B																
2RHS*EFV6	2	N	C	A	0.75	EFV	SE	31B (B-7)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RHS*PDT18B																
2RHS*EFV7	2	N	C	A	0.75	EFV	SE	31A (C-6)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2RHS*PDT18A																
2RHS*FV38A	2	N	B	A	14	GL	MO	31C (B-6)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-RHS-Q@001	
RHR 'A' Test Return to Supp. Pool												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-RHS-Q@001	
												STO	Q		N2-OSP-RHS-Q@001	
2RHS*FV38B	2	N	B	A	14	GL	MO	31B (J-9)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-RHS-Q@002	
RHR 'B' Test Return to Supp. Pool												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-RHS-Q@002	
												STO	Q		N2-OSP-RHS-Q@002	
2RHS*FV38C	2	N	B	A	14	GL	MO	31B (H-7)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-Q@002	
RHR 'C' Test Return to Supp. Pool												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-Q@002	
												STO	2Y		N2-OSP-RHS-Q@002	
2RHS*HCV131	1	N	B	P	20	GA	MAN	31A (H-11)	LO	O	NA	PI	2Y		N2-OSP-RHS-R004	
Manual Blocking and Boundary Valve																
2RHS*HCV53A	1	N	B	P	12	GA	MAN	31A (G-5)	LO	O	NA	PI	2Y		N2-OSP-RHS-R004	
Manual Blocking and Boundary Valve																
2RHS*HCV53B	1	N	B	P	12	GA	MAN	31A (I-6)	LO	O	NA	PI	2Y		N2-OSP-RHS-R005	
Manual Blocking and Boundary Valve																

Valve Table

RHS - Residual Heat Removal

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*HCV53C Manual Blocking and Boundary Valve	1	N	B	P	12	GA	MAN	31A (I-4)	LO	O	NA	PI	2Y		N2-OSP-RHS-R005	
2RHS*HCV54A Manual Blocking and Boundary Valve	1	N	B	P	12	GA	MAN	31A (G-9)	LO	O	NA	PI	2Y		N2-OSP-RHS-R004	
2RHS*HCV54B Manual Blocking and Boundary Valve	1	N	B	P	12	GA	MAN	31A (I-9)	LO	O	NA	PI	2Y		N2-OSP-RHS-R005	
2RHS*MOV104 RHR Head Spray; Outboard Isolation; PIV	1	N	A	A	6	GL	MO	31B (D-2)	C	OC	As-Is	DIAG FE LK LTJ RPI STC STO	MOV 2Y 2Y AJ MOV 2Y 2Y	 GV-RR - 03	S-EPM-GEN-063 N2-OSP-RHS-R005 N2-OSP-RHS-R@002 N2-ISP-LRT-R@058 S-EPM-GEN-063 N2-OSP-RHS-R005 N2-OSP-RHS-R005	Note - 03 PIV
2RHS*MOV112 Shutdown Cooling Supply; PIV	1	N	A	A	20	FWGTV	MO	31A (H-11)	C	OC	As-Is	DIAG FE LK RPI STC	MOV 2Y 2Y MOV 2Y	 GV-RR - 03	S-EPM-GEN-063 N2-OSP-RHS-R004 N2-OSP-RHS-R@012 S-EPM-GEN-063 N2-OSP-RHS-R004	PIV
2RHS*MOV113 Shutdown Cooling Supply; PIV	1	N	A	A	20	FWGTV	MO	31A (E-10)	C	OC	As-Is	DIAG FE LK RPI STC	MOV 2Y 2Y MOV 2Y	 GV-RR - 03	S-EPM-GEN-063 N2-OSP-RHS-R004 N2-OSP-RHS-R@012 S-EPM-GEN-063 N2-OSP-RHS-R004	PIV
2RHS*MOV115 RHR / Service Water Cross Tie	2	N	B	A	16	GA	MO	31E (C-8)	C	OC	As-Is	DIAG FE RPI	MOV Q MOV		S-EPM-GEN-063 N2-OSP-RHS-Q@002 S-EPM-GEN-063	
2RHS*MOV116 RHR / Service Water Cross Tie	3	N	B	A	16	GA	MO	31E (B-9)	C	OC	As-Is	DIAG FE RPI	MOV Q MOV		S-EPM-GEN-063 N2-OSP-RHS-Q@002 S-EPM-GEN-063	
2RHS*MOV12A RHR Heat Exchanger Outlet	2	N	B	A	18	BTF	MO	31D (I-6)	O	O	As-Is	DIAG FE RPI	MOV 2Y MOV		S-EPM-GEN-063 N2-OSP-RHS-R004 S-EPM-GEN-063	
2RHS*MOV12B RHR Heat Exchanger Outlet	2	N	B	A	18	BTF	MO	31E (D-7)	O	OC	As-Is	DIAG FE RPI	MOV 2Y MOV		S-EPM-GEN-063 N2-OSP-RHS-R005 S-EPM-GEN-063	

Valve Table

RHS - Residual Heat Removal

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*MOV142	2	N	A	A	3	GL	MO	31F (I-3)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR Discharge to Liquid Rad Waste												LK	2Y		N2-OSP-RHS-R@005	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R005	
2RHS*MOV149	2	N	A	A	3	GA	MO	31F (I-3)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR Discharge to Liquid Rad Waste												LK	2Y		N2-OSP-RHS-R@005	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R005	
2RHS*MOV15A	2	N	A	A	16	FWGTV	MO	31A (B-2)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
Containment Spray to Drywell; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@081	
												RPI	MOV		S-EPM-GEN-063	
												STO	2Y		N2-OSP-RHS-R004	
2RHS*MOV15B	2	N	A	A	16	FWGTV	MO	31B (F-4)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-RHS-R005	
Containment Spray to Drywell; Outboard Isolation												LTJ	30		N2-ISP-LRT-R@082	
												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-RHS-R005	
2RHS*MOV1A	2	N	B	A	24	BTF	MO	31C (F-9)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
RHR Pump Suppression Pool Suction; Outboard Isolation												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV1B	2	N	B	A	24	BTF	MO	31F (F-2)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR Pump Suppression Pool Suction; Outboard Isolation												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV1C	2	N	B	A	24	BTF	MO	31G (D-10)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR Pump Suppression Pool Suction; Outboard Isolation												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV24A	1	N	A	A	12	FWGTV	MO	31A (D-5)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	PIV
												FE	CS		N2-OSP-RHS-R004	
LPCI Injection; PIV												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@001	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-RHS-R004	
												STO	CS		N2-OSP-RHS-R004	
2RHS*MOV24B	1	N	A	A	12	FWGTV	MO	31B (D-7)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	PIV
												FE	2Y		N2-OSP-RHS-R005	
LPCI Injection; PIV												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@002	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R005	
												STO	2Y		N2-OSP-RHS-R005	

Valve Table

RHS - Residual Heat Removal

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*MOV24C	1	N	A	A	12	FWGTV	MO	31B (C-5)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	PIV
												FE	2Y		N2-OSP-RHS-R005	
LPCI Injection; PIV												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@003	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R005	
												STO	2Y		N2-OSP-RHS-R005	
2RHS*MOV25A	2	N	A	A	16	FWGTV	MO	31A (E-2)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
RHR 'A' CT Spray to Drywell; Inboard Isolation												RPI	MOV		S-EPM-GEN-063	
												STO	2Y		N2-OSP-RHS-R004	
2RHS*MOV25B	2	N	A	A	16	FWGTV	MO	31B (B-3)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR 'B' CT Spray to Drywell; Inboard Isolation												RPI	MOV		S-EPM-GEN-063	
												STO	2Y		N2-OSP-RHS-R005	
2RHS*MOV26A	2	N	B	A	1	GL	MO	31D (D-3)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
RHR Heat Exchanger 'A' Vent to Suppression Pool; Outboard Isolation												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV26B	2	N	B	A	1	GL	MO	31E (H-5)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR Heat Exchanger 'B' Vent to Suppression Pool; Outboard Isolation												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV27A	2	N	B	A	1	GL	MO	31D (D-2)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
RHR Heat Exchanger 'A' Vent to Suppression Pool; Inboard Isolation												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV27B	2	N	B	A	1	GL	MO	31E (H-4)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR Heat Exchanger 'B' Vent to Suppression Pool; Inboard Isolation												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV2A	2	N	B	A	18	BTF	MO	31F (H-9)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
SDC Suction to RHR Pump 'A'												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV2B	2	N	B	A	18	BTF	MO	31F (G-3)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
SDC Suction to RHR Pump 'B'												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV30A	2	N	A	A	18	BTF	MO	31C (D-6)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
RHR 'A' Test Return to Suppression Pool; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@085	
												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV30B	2	N	A	A	18	BTF	MO	31C (J-7)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR 'B' Test Return to Suppression Pool; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@086	
												RPI	MOV		S-EPM-GEN-063	

Valve Table

RHS - Residual Heat Removal

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*MOV33A	2	N	A	A	4	GL	MO	31C (C-2)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
RHR 'A' Supp. Pool Spray; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@087	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R004	
												STO	2Y		N2-OSP-RHS-R004	
2RHS*MOV33B	2	N	A	A	4	GL	MO	31C (I-3)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR 'B' Supp. Pool Spray; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@088	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R005	
												STO	2Y		N2-OSP-RHS-R005	
2RHS*MOV40A	1	N	A	A	12	GL	MO	31A (D-9)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 03
												FE	2Y		N2-OSP-RHS-R004	PIV
RHR HX 'A' Shutdown Cooling Return; Outboard Isolation; PIV												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@001	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R004	
2RHS*MOV40B	1	N	A	A	12	GL	MO	31B (C-10)	C	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 03
												FE	2Y		N2-OSP-RHS-R005	PIV
RHR HX 'B' Shutdown Cooling Return; Outboard Isolation; PIV												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@002	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R005	
2RHS*MOV4A	2	N	B	A	6	GA	MO	31F (E-5)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
RHR Pump 1A Min. Flow Valve												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R004	
2RHS*MOV4B	2	N	B	A	6	GA	MO	31E (D-4)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR Pump 1B Min. Flow Valve												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R005	
2RHS*MOV4C	2	N	B	A	6	GA	MO	31B (I-9)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR Pump 1C Min. Flow Valve												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R005	
2RHS*MOV67A	1	N	A	A	2	GL	MO	31A (F-10)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 03
												FE	2Y		N2-OSP-RHS-R004	PIV
RHR A Shutdown Cooling Inboard Check Valve V39A Bypass; PIV												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@001	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R004	

Valve Table

RHS - Residual Heat Removal

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*MOV67B	1	N	A	A	2	GL	MO	31A (K-10)	C	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 03
												FE	2Y		N2-OSP-RHS-R005	PIV
RHR B Shutdown Cooling Inboard Check Valve V39B Bypass; PIV												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@002	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-RHS-R005	
2RHS*MOV8A	2	N	B	A	18	BTF	MO	31F (B-3)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-RHS-Q@004	
RHR HX 'A' Bypass												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV8B	2	N	B	A	18	BTF	MO	31E (B-5)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-RHS-Q@005	
RHR HX 'B' Bypass												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV9A	2	N	B	A	18	BTF	MO	31F (B-2)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R004	
RHR Heat Exchanger A Inlet Flow Control												RPI	MOV		S-EPM-GEN-063	
2RHS*MOV9B	2	N	B	A	18	BTF	MO	31E (C-5)	O	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-RHS-R005	
RHR Heat Exchanger B Inlet Flow Control												RPI	MOV		S-EPM-GEN-063	
2RHS*RV110	2	N	C	A	0.75	RV	SE	31F (I-8)	C	O	NA	BE	10Y-S		N2-MSP-GEN-206	Note - 01
												LA	10Y-S		N2-MSP-GEN-206	Note - 30
SDC to RHS Pump Suction												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2RHS*RV117	3	N	C	A	0.75	RV	SE	31G (E-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2RHS*P2 Discharge Thermal Relief																
2RHS*RV139	2	N	C	A	0.75	RV	SE	31F (G-10)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
RHR Header Flush to LWS												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2RHS*RV152	2	N	A/C	A	0.75	RV	SE	31A (G-10)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	Note - 31
SDC from RCS; Thermal overpressure protection for 2-RHS-020-159-1; Inboard Isolation												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2RHS*RV20A	2	N	C	A	0.75	RV	SE	31C (A-5)	C	O	NA	BE	10Y-S		N2-MSP-GEN-206	Note - 01
												LA	10Y-S		N2-MSP-GEN-206	Note - 30
RHS RV Discharge to Suppression Pool												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	

Valve Table

RHS - Residual Heat Removal

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*RV20B	2	N	C	A	0.75	RV	SE	31B (F-10)	C	O	NA	BE	10Y-S		N2-MSP-GEN-206	Note - 01
												LA	10Y-S		N2-MSP-GEN-206	Note - 30
RHS RV Discharge to Suppression Pool												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2RHS*RV20C	2	N	C	A	0.75	RV	SE	31B (H-6)	C	O	NA	BE	10Y-S		N2-MSP-GEN-206	Note - 01
												LA	10Y-S		N2-MSP-GEN-206	Note - 30
RHS RV Discharge to Suppression Pool												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2RHS*RV42A	3	Y	C	P	0.75	RV	SE	31D (E-7)	C	C	NA	RVTh	15Y		N2-MSP-GEN-206	
RHS*E1A Tube Side Thermal Relief																
2RHS*RV42B	3	Y	C	P	0.75	RV	SE	31E (I-7)	C	C	NA	RVTh	15Y		N2-MSP-GEN-206	
RHS*E1B Tube Side Thermal Relief																
2RHS*RV56A	3	Y	C	P	0.75	RV	SE	31D (F-4)	C	C	NA	RVTh	15Y		N2-MSP-GEN-206	
RHS*E1A Shell Side Thermal Relief																
2RHS*RV56B	3	Y	C	P	0.75	RV	SE	31E (F-4)	C	C	NA	RVTh	15Y		N2-MSP-GEN-206	
RHS*E1B Shell Side Thermal Relief																
2RHS*RV57A	2	N	A/C	A	0.75	RV	SE	31A (C-2)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LJ	AJ		N2-ISP-LRT-R@081	Note - 32
Bonnet Relief for Pressure-Locking Mod; installed on 2RHS*MOV15A.												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2RHS*RV57B	2	N	A/C	A	0.75	RV	SE	31B (F-4)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LJ	AJ		N2-ISP-LRT-R@082	Note - 32
Bonnet Relief for Pressure-Locking Mod; installed on 2RHS*MOV15B.												LL	10Y-S		N2-MSP-GEN-206	
												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2RHS*RV61A	2	N	C	A	0.75	RV	SE	31F (F-9)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
RHS RV Discharge to Suppression Pool												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2RHS*RV61B	2	N	C	A	0.75	RV	SE	31F (H-2)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
RHS RV Discharge to Suppression Pool												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	

Valve Table

RHS - Residual Heat Removal

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*RV61C	2	N	C	A	0.75	RV	SE	31G (C-3)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
RHS RV Discharge to Suppression Pool												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2RHS*RVV35A	2	N	C	A	10	VRV	SE	31C (D-4)	C	OC	NA	LL	2Y		N2-MSP-RHS-@001	Note - 01
												RT	2Y		N2-MSP-RHS-@001	Note - 30
RHS Vacuum Breaker												VR	2Y		N2-MSP-RHS-@001	
2RHS*RVV35B	2	N	C	A	10	VRV	SE	31C (I-5)	C	OC	NA	LL	2Y		N2-MSP-RHS-@001	Note - 01
												RT	2Y		N2-MSP-RHS-@001	Note - 30
RHS Vacuum Breaker												VR	2Y		N2-MSP-RHS-@001	
2RHS*RVV36A	2	N	C	A	10	VRV	SE	31C (D-4)	C	OC	NA	LL	2Y		N2-MSP-RHS-@001	Note - 01
												RT	2Y		N2-MSP-RHS-@001	Note - 30
RHS Vacuum Breaker												VR	2Y		N2-MSP-RHS-@001	
2RHS*RVV36B	2	N	C	A	10	VRV	SE	31C (J-5)	C	OC	NA	LL	2Y		N2-MSP-RHS-@001	Note - 01
												RT	2Y		N2-MSP-RHS-@001	Note - 30
RHS Vacuum Breaker												VR	2Y		N2-MSP-RHS-@001	
2RHS*SOV120	2	N	B	P	0.75	GL	SO	31C (C-7)	C	C	C	PI	2Y		N2-OSP-RHS-R004	
PASS To RHS; Sample Return to Supp. Pool																
2RHS*SOV35A	2	N	B	A	0.75	GL	SO	31D (G-7)	C	C	C	FC	Q		N2-OSP-RHS-Q@001	
												FE	Q		N2-OSP-RHS-Q@001	
RHR A Reactor Sample												PI	2Y		N2-OSP-RHS-R004	
												STC	Q		N2-OSP-RHS-Q@001	
2RHS*SOV35B	2	N	B	A	0.75	GL	SO	31E (D-8)	C	C	C	FC	Q		N2-OSP-RHS-Q@002	
												FE	Q		N2-OSP-RHS-Q@002	
RHR B Reactor Sample												PI	2Y		N2-OSP-RHS-R005	
												STC	Q		N2-OSP-RHS-Q@002	
2RHS*SOV36A	2	N	B	A	0.75	GL	SO	31D (G-6)	C	C	C	FC	Q		N2-OSP-RHS-Q@001	
												FE	Q		N2-OSP-RHS-Q@001	
RHR A Reactor Sample												PI	2Y		N2-OSP-RHS-R004	
												STC	Q		N2-OSP-RHS-Q@001	
2RHS*SOV36B	2	N	B	A	0.75	GL	SO	31E (D-7)	C	C	C	FC	Q		N2-OSP-RHS-Q@002	
												FE	Q		N2-OSP-RHS-Q@002	
RHR B Reactor Sample												PI	2Y		N2-OSP-RHS-R005	
												STC	Q		N2-OSP-RHS-Q@002	
2RHS*V1	2	N	C	A	18	SWCV	SE	31F (C-5)	C	OC	NA	CC	Q		N2-OSP-RHS-M001	CKV Program
												CO	Q		N2-OSP-RHS-Q@004	
2RHS*P1A Discharge Check Valve																

Valve Table

RHS - Residual Heat Removal

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*V143	1	N	C	A	6	SWCV	SE	31B (C-2)	C	O	NA	BDC	CS		N2-OSP-RHS-CS003	CKV Program
RHR Head Spray												CO	CS	RHS-CSJ - 01	N2-OSP-RHS-CS003	
2RHS*V16A	1	N	A/C	A	12	SWCV	SE	31A (F-5)	C	OC	NA	CC	R	RHS-ROJ - 01	N2-OSP-RHS-R004	
LPCI Injection Inboard Check												CO	R	RHS-ROJ - 01	N2-OSP-RHS-R004	
												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@001	
2RHS*V16B	1	N	A/C	A	12	SWCV	SE	31A (J-6)	C	OC	NA	CC	R	RHS-ROJ - 01	N2-OSP-RHS-R005	
LPCI Injection Inboard Check												CO	R	RHS-ROJ - 01	N2-OSP-RHS-R005	
												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@002	
2RHS*V16C	1	N	A/C	A	12	SWCV	SE	31A (J-4)	C	OC	NA	CC	R	RHS-ROJ - 01	N2-OSP-RHS-R005	
LPCI Injection Inboard Check												CO	R	RHS-ROJ - 01	N2-OSP-RHS-R005	
												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@003	
2RHS*V17	2	N	C	A	2	SCK	SE	31G (D-3)	OC	C	NA	BDO	Q		N2-OSP-RHS-M001	Note - 33
Pressure Pump Header Discharge Check												CC	Q		N2-OSP-RHS-Q@006	
2RHS*V18	2	N	C	A	2	CK	SE	31G (D-9)	OC	C	NA	BDO	Q		N2-OSP-RHS-M001	Note - 33
Pressure Pump Header Discharge Check												CC	Q		N2-OSP-RHS-Q@006	
2RHS*V192	2	N	A	P	0.75	GL	MAN	31E (J-2)	LC	C	NA	LTJ	60		N2-ISP-LRT-R@063	
RCIC/RHS Vacuum Breaker; Outboard Isolation																
2RHS*V2	2	N	C	A	18	SWCV	SE	31E (C-4)	C	O	NA	CC	Q		N2-OSP-RHS-M001	CKV Program
2RHS*P1B Discharge Check Valve												CO	Q		N2-OSP-RHS-Q@005	
2RHS*V3	2	N	C	A	18	SWCV	SE	31G (B-3)	C	O	NA	CC	Q		N2-OSP-RHS-M001	CKV Program
2RHS*P1C Discharge Check Valve												CO	Q		N2-OSP-RHS-Q@006	
2RHS*V39A	1	N	A/C	A	12	SWCV	SE	31A (F-9)	C	OC	NA	CC	R	RHS-ROJ - 02	N2-OSP-RHS-R004	Note - 03 PIV
Shutdown Cooling Return to Reactor; Inboard Check												CO	R	RHS-ROJ - 02	N2-OSP-RHS-R004	
												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@001	

Valve Table

RHS - Residual Heat Removal

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2RHS*V39B	1	N	A/C	A	12	SWCV	SE	31A (K-9)	C	OC	NA	CC	R	RHS-ROJ - 02	N2-OSP-RHS-R005	Note - 03 PIV
Shutdown Cooling Return to Reactor; Outboard Check												CO	R	RHS-ROJ - 02	N2-OSP-RHS-R005	
												LK	2Y	GV-RR - 03	N2-OSP-RHS-R@002	
2RHS*V449	2	N	B	A	2	CK	SE	31C (K-8)	Closed	Closed	NA	CC	Q		N2-OSP-RHS-Q@005	
												CO	Q		N2-OSP-RHS-Q@005	
RHS pressure line check valve																
2RHS*V450	2	N	B	A	2	CK	SE	31C (C-8)	Closed	Closed	NA	CC	Q		N2-OSP-CSL-Q@002	
												CO	Q		N2-OSP-CSL-Q@002	
RHS pressure line check valve																
2RHS*V462	2	N	B	A	2	CK	SE	31C (K-8)	Closed	Closed	NA	CC	Q		N2-OSP-RHS-Q@005	
												CO	Q		N2-OSP-RHS-Q@005	
RHS pressure line check valve																
2RHS*V463	2	N	B	A	2	CK	SE	31C (C-8)	Closed	Closed	NA	CC	Q		N2-OSP-CSL-Q@002	
												CO	Q		N2-OSP-CSL-Q@002	
RHS pressure line check valve																
2RHS*V47	2	N	C	A	2	SCK	SE	31F (C-4)	OC	C	NA	BDO	Q		N2-OSP-RHS-M001	Note - 33
												CC	Q		N2-OSP-RHS-Q@004	
Pressure Pump Header Discharge Check																
2RHS*V48	2	N	C	A	2	CK	SE	31F (D-4)	OC	C	NA	BDO	Q		N2-OSP-RHS-M001	Note - 33
												CC	Q		N2-OSP-RHS-Q@004	
Pressure Pump Header Discharge Check																
2RHS*V60	2	N	C	A	2	CK	SE	31G (E-2)	OC	C	NA	BDO	Q		N2-OSP-RHS-M001	Note - 33
												CC	Q		N2-OSP-RHS-Q@005	
Pressure Pump Header Discharge Check																
2RHS*V61	2	N	C	A	2	SCK	SE	31G (E-1)	OC	C	NA	BDO	Q		N2-OSP-RHS-M001	Note - 33
												CC	Q		N2-OSP-RHS-Q@005	
Pressure Pump Header Discharge Check																

Valve Table

SAS - Service Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SAS*HCV160	2	N	A	P	2	GL	MAN	19J (H-6)	LC	C	NA	LTJ	60		N2-ISP-LRT-R@090	
												PI	2Y		N2-OSP-SAS-R001	
Service Air To Drywell; Outboard Isolation																
2SAS*HCV161	2	N	A	P	2	GL	MAN	19J (H-4)	LC	C	NA	LTJ	60		N2-ISP-LRT-R@091	
												PI	2Y		N2-OSP-SAS-R001	
Service Air To Drywell; Outboard Isolation																
2SAS*HCV162	2	N	A	P	2	GL	MAN	19J (I-6)	LC	C	NA	LTJ	60		N2-ISP-LRT-R@090	
												PI	2Y		N2-OSP-SAS-R001	
Service Air To Drywell; Inboard Isolation																
2SAS*HCV163	2	N	A	P	2	GL	MAN	19J (I-4)	LC	C	NA	LTJ	60		N2-ISP-LRT-R@091	
												PI	2Y		N2-OSP-SAS-R001	
Service Air To Drywell; Inboard Isolation																

Valve Table

SFC - Spent Fuel Pool Cooling

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SFC*AOV153	3	N	B	A	8	BTF	AO	38A (I-10)	O	C	C	FC	Q		N2-OSP-SFC-Q001	AOV Program
												FE	Q		N2-OSP-SFC-Q001	
Filter Header Inlet Isolation												PI	2Y		N2-OSP-SFC-2Y001	
												STC	Q		N2-OSP-SFC-Q001	
2SFC*AOV154	3	N	B	A	8	BTF	AO	38A (J-10)	O	C	C	FC	Q		N2-OSP-SFC-Q001	AOV Program
												FE	Q		N2-OSP-SFC-Q001	
Filter Header Inlet Isolation												PI	2Y		N2-OSP-SFC-2Y001	
												STC	Q		N2-OSP-SFC-Q001	
2SFC*AOV19A	3	N	B	A	8	BTF	AO	38C (D-7)	O	C	C	FC	Q		N2-OSP-SFC-Q001	AOV Program
												FE	Q		N2-OSP-SFC-Q001	
Filter To Heat Exchanger A Outlet Header Valve												PI	2Y		N2-OSP-SFC-2Y001	
												STC	Q		N2-OSP-SFC-Q001	
2SFC*AOV19B	3	N	B	A	8	BTF	AO	38C (D-6)	O	C	C	FC	Q		N2-OSP-SFC-Q001	AOV Program
												FE	Q		N2-OSP-SFC-Q001	
Filter To Heat Exchanger B Outlet Header Valve												PI	2Y		N2-OSP-SFC-2Y001	
												STC	Q		N2-OSP-SFC-Q001	
2SFC*HV115	3	N	B	P	4	BTF	AO	38A (E-3)	C	C	C	PI	2Y		N2-OSP-SFC-2Y001	AOV Program
Cask Area Fill																
2SFC*HV116	3	N	B	P	4	BTF	AO	38A (D-4)	C	C	C	PI	2Y		N2-OSP-SFC-2Y001	AOV Program
Cask Holding Transfer Pump Suction																
2SFC*HV121	3	N	B	P	4	BTF	AO	38A (B-4)	C	C	C	PI	2Y		N2-OSP-SFC-2Y001	AOV Program
Cask Holding Transfer Pump Discharge																
2SFC*HV17A	3	N	B	A	8	BTF	AO	38B (J-3)	C	O	O	FE	Q		N2-OSP-SFC-Q001	AOV Program
												FO	Q		N2-OSP-SFC-Q001	
Filter FLT1A Bypass												PI	2Y		N2-OSP-SFC-2Y001	
												STO	Q		N2-OSP-SFC-Q001	
2SFC*HV17B	3	N	B	A	8	BTF	AO	38A (J-10)	C	O	O	FE	Q		N2-OSP-SFC-Q001	AOV Program
												FO	Q		N2-OSP-SFC-Q001	
Filter FLT1B Bypass												PI	2Y		N2-OSP-SFC-2Y001	
												STO	Q		N2-OSP-SFC-Q001	
2SFC*HV18A	3	N	B	A	8	BTF	AO	38B (J-4)	O	OC	C	FC	Q		N2-OSP-SFC-Q001	AOV Program
												FE	Q		N2-OSP-SFC-Q001	
SFC Pump 1A Discharge Inter-Connection Valve												PI	2Y		N2-OSP-SFC-2Y001	
												STC	Q		N2-OSP-SFC-Q001	
												STO	Q		N2-OSP-SFC-Q001	

Valve Table

SFC - Spent Fuel Pool Cooling

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SFC*HV18B SFC Pump 1B Discharge Inter-Connection Valve	3	N	B	A	8	BTF	AO	38A (H-10)	O	OC	C	FC FE PI STC STO	Q Q 2Y Q Q		N2-OSP-SFC-Q001 N2-OSP-SFC-Q001 N2-OSP-SFC-2Y001 N2-OSP-SFC-Q001 N2-OSP-SFC-Q001	AOV Program
2SFC*HV35A Skimmer Surge Tank TK1A Inlet	3	N	B	P	10	BTF	AO	38B (E-8)	O	O	O	PI	2Y		N2-OSP-SFC-2Y001	AOV Program
2SFC*HV35B Skimmer Surge Tank TK1B Inlet	3	N	B	P	10	BTF	AO	38A (F-2)	O	O	O	PI	2Y		N2-OSP-SFC-2Y001	AOV Program
2SFC*HV37A SFC Heat Exchanger Outlet Cross-Connect	3	N	B	A	8	BTF	AO	38C (B-3)	O	C	C	FE PI	2Y 2Y		N2-OSP-SFC-Q001 N2-OSP-SFC-2Y001	AOV Program - See ECP-18-000187
2SFC*HV37B SFC Heat Exchanger Outlet Cross-Connect	3	N	B	A	8	BTF	AO	38C (C-3)	O	C	C	FE PI	2Y 2Y		N2-OSP-SFC-Q001 N2-OSP-SFC-2Y001	AOV Program - See ECP-18-000187
2SFC*HV54A Skimmer Surge Tank TK1A Outlet	3	N	B	P	10	BTF	AO	38B (H-10)	O	O	O	PI	2Y		N2-OSP-SFC-2Y001	AOV Program
2SFC*HV54B Skimmer Surge Tank TK1B Outlet	3	N	B	P	10	BTF	AO	38A (H-4)	O	O	O	PI	2Y		N2-OSP-SFC-2Y001	AOV Program
2SFC*HV6A SFC Pump Suction Cross-Connect	3	N	B	A	10	BTF	AO	38B (J-10)	O	C	C	FE PI	2Y 2Y		N2-OSP-SFC-Q001 N2-OSP-SFC-2Y001	AOV Program - See ECP-18-000187
2SFC*HV6B SFC Pump Suction Cross-Connect	3	N	B	A	10	BTF	AO	38A (J-5)	O	C	C	FE PI	2Y 2Y		N2-OSP-SFC-Q001 N2-OSP-SFC-2Y001	AOV Program - See ECP-18-000187
2SFC*V11 Heat Exchanger *E1A to Pool Sparger	3	N	C	A	8	CK	SE	38B (C-10)	OC	O	NA	BDC CO	CM CM		N2-OSP-SFC-Q001 N2-OSP-SFC-Q001	
2SFC*V203 Inner Refuel Seal Leak Detection Line; Outboard Isolation	2	N	A	P	1.5	GL	MAN	38C (F-7)	LC	C	NA	LTJ	60		N2-ISP-LRT-R@092	
2SFC*V204 Inner Refuel Seal Leak Detection Line; Inboard Isolation	2	N	A	P	1.5	GL	MAN	38C (F-8)	LC	C	NA	LTJ	60		N2-ISP-LRT-R@092	

Valve Table

SFC - Spent Fuel Pool Cooling

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SFC*V20A	3	N	C	A	8	CK	SE	38B (G-3)	OC	OC	NA	CC	Q		N2-OSP-SFC-Q001	
												CO	Q		N2-OSP-SFC-Q001	
Spent Fuel Cooling Pump P1A Discharge Check																
2SFC*V20B	3	N	C	A	8	CK	SE	38A (F-10)	OC	OC	NA	CC	Q		N2-OSP-SFC-Q001	
												CO	Q		N2-OSP-SFC-Q001	
Spent Fuel Cooling Pump P1B Discharge Check																
2SFC*V9	3	N	C	A	8	CK	SE	38A (D-1)	OC	O	NA	BDC	CM		N2-OSP-SFC-Q001	
												CO	CM		N2-OSP-SFC-Q001	
Heat Exchanger *E1B to Pool Sparger																

Valve Table

SLS - Standby Liquid Injection

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SLS*HCV111	2	N	B	P	3	GA	MAN	36A (F-2)	LC	C	NA	PI	2Y		N2-OSP-SLS-R003	
SLS Test Tank Isolation																
2SLS*HCV114	1	N	B	P	2	GL	MAN	36A (K-1)	LO	O	NA	PI	2Y		N2-OSP-SLS-R003	
SLS Injection Line Isolation																
2SLS*HCV116	2	N	B	P	0.75	GL	MAN	36A (I-3)	LC	C	NA	PI	2Y		N2-OSP-SLS-R003	
SLS Test Throttle Valve																
2SLS*MOV1A	2	N	B	A	3	GL	MO	36A (E-5)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SLS-Q002	
SLC Pump 1A Suction												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SLS-Q002	
2SLS*MOV1B	2	N	B	A	3	GL	MO	36A (E-9)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SLS-Q002	
SLC Pump 1B Suction												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SLS-Q002	
2SLS*MOV5A	1	N	A/C	A	2	SCK	MO	36A (K-3)	C	OC	NA	CO	R	SLS-ROJ - 01	N2-OSP-SLS-R001	Note - 34
SLC Pump 1A Injection Valve; Outboard Isolation												DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SLS-Q002	
												LTJ	60		N2-ISP-LRT-R@093	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-SLS-Q002	
2SLS*MOV5B	1	N	A/C	A	2	SCK	MO	36A (J-3)	C	OC	NA	CO	R	SLS-ROJ - 01	N2-OSP-SLS-R001	Note - 34
SLC Pump 1B Injection Valve; Outboard Isolation												DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SLS-Q002	
												LTJ	60		N2-ISP-LRT-R@093	
												RPI	MOV		S-EPM-GEN-063	
												STC	2Y		N2-OSP-SLS-Q002	
2SLS*RV2A	2	N	C	A	0.75	RV	SE	36A (H-4)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	
												LL	10Y-S		N2-MSP-GEN-206	
2SLS*P1A Pump Discharge Relief Valve												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2SLS*RV2B	2	N	C	A	0.75	RV	SE	36A (H-7)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	
												LL	10Y-S		N2-MSP-GEN-206	
2SLS*P1B Pump Discharge Relief Valve												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	

Valve Table

SLS - Standby Liquid Injection

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SLS*V10 SLCS Injection Valve; Inboard Isolation	1	N	A/C	A	2	CK	SE	36A (J-1)	OC	OC	NA	CC CO LTJ	CM CM 60		N2-OSP-SLS-CS001 N2-OSP-SLS-R001 N2-ISP-LRT-R@093	
2SLS*V12 Pump Discharge Check	2	N	C	A	1.5	CK	SE	36A (H-5)	OC	OC	NA	CC CO	CM CM		N2-OSP-SLS-Q002 N2-OSP-SLS-Q001	
2SLS*V14 Pump Discharge Check	2	N	C	A	1.5	CK	SE	36A (H-8)	OC	OC	NA	CC CO	CM CM		N2-OSP-SLS-Q002 N2-OSP-SLS-Q001	
2SLS*VEX3A Explosive-Actuated Injection Valve	2	N	D	A	1.5	EXV	EX	36A (J-5)	C	O	NA	EX	20% / 2Y		N2-OSP-SLS-R001	
2SLS*VEX3B Explosive-Actuated Injection Valve	2	N	D	A	1.5	EXV	EX	36A (J-8)	C	O	NA	EX	20% / 2Y		N2-OSP-SLS-R001	

Valve Table

SVV - Main Steam Line SRV Vacuum Breakers

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SVV*RVV101	3	N	C	A	10	VRV	SE	1A (D-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV102	3	N	C	A	10	VRV	SE	1C (D-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV103	3	N	C	A	10	VRV	SE	1D (D-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV104	3	N	C	A	10	VRV	SE	1B (D-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV105	3	N	C	A	10	VRV	SE	1C (F-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV106	3	N	C	A	10	VRV	SE	1D (F-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV107	3	N	C	A	10	VRV	SE	1A (F-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV108	3	N	C	A	10	VRV	SE	1B (E-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV109	3	N	C	A	10	VRV	SE	1C (G-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV110	3	N	C	A	10	VRV	SE	1D (H-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV111	3	N	C	A	10	VRV	SE	1A (G-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV112	3	N	C	A	10	VRV	SE	1B (G-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV113	3	N	C	A	10	VRV	SE	1C (I-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	

Valve Table

SVV - Main Steam Line SRV Vacuum Breakers

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SVV*RVV114	3	N	C	A	10	VRV	SE	1D (J-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV115	3	N	C	A	10	VRV	SE	1A (I-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV116	3	N	C	A	10	VRV	SE	1B (H-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV117	3	N	C	A	10	VRV	SE	1C (J-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV118	3	N	C	A	10	VRV	SE	1B (J-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV201	3	N	C	A	10	VRV	SE	1A (D-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV202	3	N	C	A	10	VRV	SE	1C (D-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV203	3	N	C	A	10	VRV	SE	1D (D-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV204	3	N	C	A	10	VRV	SE	1B (D-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV205	3	N	C	A	10	VRV	SE	1C (F-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV206	3	N	C	A	10	VRV	SE	1D (F-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV207	3	N	C	A	10	VRV	SE	1A (F-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV208	3	N	C	A	10	VRV	SE	1B (E-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	

Valve Table

SVV - Main Steam Line SRV Vacuum Breakers

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SVV*RVV209	3	N	C	A	10	VRV	SE	1C (G-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV210	3	N	C	A	10	VRV	SE	1D (H-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV211	3	N	C	A	10	VRV	SE	1A (G-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV212	3	N	C	A	10	VRV	SE	1B (G-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV213	3	N	C	A	10	VRV	SE	1C (I-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV214	3	N	C	A	10	VRV	SE	1D (J-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV215	3	N	C	A	10	VRV	SE	1A (I-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV216	3	N	C	A	10	VRV	SE	1B (H-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV217	3	N	C	A	10	VRV	SE	1C (J-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV218	3	N	C	A	10	VRV	SE	1B (J-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV301	3	N	C	A	2.5	VRV	SE	1A (D-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV302	3	N	C	A	2.5	VRV	SE	1C (D-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV303	3	N	C	A	2.5	VRV	SE	1D (E-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	

Valve Table

SVV - Main Steam Line SRV Vacuum Breakers

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SVV*RVV304	3	N	C	A	2.5	VRV	SE	1B (D-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV305	3	N	C	A	2.5	VRV	SE	1C (F-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV306	3	N	C	A	2.5	VRV	SE	1D (G-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV307	3	N	C	A	2.5	VRV	SE	1A (F-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV308	3	N	C	A	2.5	VRV	SE	1B (E-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV309	3	N	C	A	2.5	VRV	SE	1C (G-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV310	3	N	C	A	2.5	VRV	SE	1D (I-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV311	3	N	C	A	2.5	VRV	SE	1A (G-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV312	3	N	C	A	2.5	VRV	SE	1B (G-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV313	3	N	C	A	2.5	VRV	SE	1C (I-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV314	3	N	C	A	2.5	VRV	SE	1D (K-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV315	3	N	C	A	2.5	VRV	SE	1A (I-6)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV316	3	N	C	A	2.5	VRV	SE	1B (I-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	

Valve Table

SVV - Main Steam Line SRV Vacuum Breakers

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SVV*RVV317	3	N	C	A	2.5	VRV	SE	1C (J-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	
2SVV*RVV318	3	N	C	A	2.5	VRV	SE	1B (J-5)	C	OC	NA	LL	10Y-S		N2-MSP-SVV-@001	
												RT	10Y-S		N2-MSP-SVV-@001	
Main Steam SRV Vacuum Breaker												VR	10Y-S		N2-MSP-SVV-@001	

Valve Table

SWP - Service Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*AOV154A	3	N	B	A	1.5	PGV	AO	11F (H-9)	OC	O	O	FE	Q		N2-OSP-SWP-Q@001	AOV Program
												FO	Q		N2-OSP-SWP-Q@001	
Unit Cooler 2HVC*UC101A												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*AOV154B	3	N	B	A	1	PGV	AO	11F (D-8)	OC	O	O	FE	Q		N2-OSP-SWP-Q004	AOV Program
												FO	Q		N2-OSP-SWP-Q004	
Unit Cooler 2HVC*UC101B												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*AOV20A	3	N	B	A	1.5	GA	AO	11C (F-4)	C	O	O	FE	Q		N2-OSP-SWP-Q@001	AOV Program
												FO	Q		N2-OSP-SWP-Q@001	
SWP To RHR Pump 2RHS*P1A Seal Cooler												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*AOV20B	3	N	B	A	2	GA	AO	11P (G-7)	C	O	O	FE	Q		N2-OSP-SWP-Q004	AOV Program
												FO	Q		N2-OSP-SWP-Q004	
SWP To RHR Pumps 2RHS*P1B, C Seal Cooler												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*AOV22A	3	N	B	A	1.5	GA	AO	11C (H-3)	C	O	O	FE	Q		N2-OSP-SWP-Q@001	AOV Program
												FO	Q		N2-OSP-SWP-Q@001	
SWP From RHR Pump 2RHS*P1A Seal Cooler												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*AOV22B	3	N	B	A	2	GA	AO	11P (J-10)	C	O	O	FE	Q		N2-OSP-SWP-Q004	AOV Program
												FO	Q		N2-OSP-SWP-Q004	
SWP From RHR Pumps 2RHS*P1B, C Seal Cooler												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*AOV571	3	N	B	A	1.5	PGV	AO	11F (E-4)	OC	O	O	FE	Q		N2-OSP-SWP-Q004	AOV Program
												FO	Q		N2-OSP-SWP-Q004	
Unit Cooler 2HVC*UC105												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*AOV572	3	N	B	A	2.5	PGV	AO	11P (A-5)	OC	O	O	FE	Q		N2-OSP-SWP-Q@001	AOV Program
												FO	Q		N2-OSP-SWP-Q@001	
Unit Cooler 2HVC*UC104												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*AOV573	3	N	B	A	2	PGV	AO	11F (J-9)	OC	O	O	FE	Q		N2-OSP-SWP-Q@001	AOV Program
												FO	Q		N2-OSP-SWP-Q@001	
Unit Cooler 2HVC*UC106												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*AOV574	3	N	B	A	2	PGV	AO	11F (F-9)	OC	O	O	FE	Q		N2-OSP-SWP-Q004	AOV Program
												FO	Q		N2-OSP-SWP-Q004	
Unit Cooler 2HVC*UC107												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q004	

Valve Table

SWP - Service Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*AOV581	3	N	B	A	1.5	PGV	AO	11F (B-9)	OC	O	O	FE	Q		N2-OSP-SWP-Q005	AOV Program
												FO	Q		N2-OSP-SWP-Q005	
Unit Cooler 2HVC*UC102												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q005	
2SWP*AOV78A	3	N	B	A	2	PGV	AO	11Q (E-9)	OC	O	O	FE	Q		N2-OSP-SWP-Q@001	AOV Program
												FO	Q		N2-OSP-SWP-Q@001	
Unit Cooler 2HVC*UC108A												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*AOV78B	3	N	B	A	2	PGV	AO	11Q (J-9)	OC	O	O	FE	Q		N2-OSP-SWP-Q004	AOV Program
												FO	Q		N2-OSP-SWP-Q004	
Unit Cooler 2HVC*UC108B												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*AOV97A	3	N	B	A	6	PGV	AO	11E (D-6)	C	O	O	FE	Q		N2-OSP-SWP-Q@001	AOV Program
												FO	Q		N2-OSP-SWP-Q@001	
Unit Cooler 2HVC*UC413A												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*AOV97B	3	N	B	A	6	PGV	AO	11F (I-5)	C	O	O	FE	Q		N2-OSP-SWP-Q004	AOV Program
												FO	Q		N2-OSP-SWP-Q004	
Unit Cooler 2HVC*UC413B												PI	2Y		N2-OSP-SWP-R002	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*FV47A	3	N	B	A	30	BTF	AO	11H (G-7)	O	C	C	FC	Q		N2-OSP-SWP-Q@001	
												FE	Q		N2-OSP-SWP-Q@001	
SWP Header A to CWS Isolation												STC	Q		N2-OSP-SWP-Q@001	
2SWP*FV47B	3	N	B	A	30	BTF	AO	11H (E-7)	O	C	C	FC	Q		N2-OSP-SWP-Q004	
												FE	Q		N2-OSP-SWP-Q004	
SWP Header B to CWS Isolation												STC	Q		N2-OSP-SWP-Q004	
2SWP*FV54A	3	N	B	A	30	BTF	AO	11H (G-8)	O	C	C	FC	Q		N2-OSP-SWP-Q@001	
												FE	Q		N2-OSP-SWP-Q@001	
Flow Control Valve For SWP Header A												STC	Q		N2-OSP-SWP-Q@001	
2SWP*FV54B	3	N	B	A	30	BTF	AO	11H (D-9)	O	C	C	FC	Q		N2-OSP-SWP-Q004	
												FE	Q		N2-OSP-SWP-Q004	
Flow Control Valve For SWP Header ¿B¿												STC	Q		N2-OSP-SWP-Q004	
2SWP*MOV15A	3	N	B	P	2.5	GA	MO	11P (G-2)	O	O	As-Is	PI	2Y		N2-OSP-SWP-R002	
Unit Cooler 2HVR*UC403A																
2SWP*MOV15B	3	N	B	P	2	GA	MO	11G (B-7)	O	O	As-Is	PI	2Y		N2-OSP-SWP-R002	
Unit Cooler 2HVR*UC403B																

Valve Table

SWP - Service Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*MOV17A	3	N	B	A	12	GA	MO	11P (J-3)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	R		N2-OSP-SWP-R002	
SWP to SFC Heat Exchanger 1A												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV17B	3	N	B	A	12	GA	MO	11G (J-8)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	R		N2-OSP-SWP-R002	
SWP to SFC Heat Exchanger 1B												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV18A	3	N	B	A	12	GA	MO	11P (J-4)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	R		N2-OSP-SWP-R002	
SWP from SFC Heat Exchanger 1A												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV18B	3	N	B	A	12	GA	MO	11G (I-9)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	R		N2-OSP-SWP-R002	
SWP from SFC Heat Exchanger 1B												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV19A	3	N	B	A	20	BTF	MO	11D (B-3)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-SWP-CS001	
SWP to CCP Heat Exchangers 1A, 1B, 1C												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-SWP-CS001	
2SWP*MOV19B	3	N	B	A	20	BTF	MO	11D (C-3)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-SWP-CS001	
SWP to CCP Heat Exchangers 1A, 1B, 1C												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-SWP-CS001	
2SWP*MOV1A	3	N	B	A	4	BAL	MO	11B (E-5)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q@001	
SWP Pump Strainer Flush												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV1B	3	N	B	A	4	BAL	MO	11A (J-2)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q004	
SWP Pump Strainer Flush												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV1C	3	N	B	A	4	BAL	MO	11A (J-7)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q@001	
SWP Pump Strainer Flush												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV1D	3	N	B	A	4	BAL	MO	11A (F-2)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q004	
SWP Pump Strainer Flush												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV1E	3	N	B	A	4	BAL	MO	11B (K-5)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q@001	
SWP Pump Strainer Flush												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV1F	3	N	B	A	4	BAL	MO	11A (F-7)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q004	
SWP Pump Strainer Flush												RPI	MOV		S-EPM-GEN-063	

Valve Table

SWP - Service Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*MOV21A	3	N	B	A	3	GA	MO	11E (H-3)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q@001	
SFC Makeup Isolation												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV21B	3	N	B	A	3	GA	MO	11F (H-2)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q004	
SFC Makeup Isolation												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV30A	3	N	B	A	72	ROGTV	MO	11H (D-4)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q@001	
North Intake Bay Shaft Isolation												PI	2Y		N2-OSP-SWP-R002	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-SWP-Q@001	
2SWP*MOV30B	3	N	B	A	72	ROGTV	MO	11H (D-4)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q004	
South Intake Bay Shaft Isolation												PI	2Y		N2-OSP-SWP-R002	
												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-SWP-Q004	
2SWP*MOV33A	3	N	B	A	18	BTF	MO	11C (K-6)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q@001	
RHR Heat Exchanger 1A Outlet Isolation.												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*MOV33B	3	N	B	A	18	BTF	MO	11P (E-10)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q004	
RHR Heat Exchanger 1B Outlet Isolation.												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*MOV3A	3	N	B	A	30	BTF	MO	11B (K-3)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-SWP-CS001	
Turbine Bldg. Non-Essential Loads Isolation												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-SWP-CS001	
2SWP*MOV3B	3	N	B	A	30	BTF	MO	11B (K-3)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-SWP-CS001	
Turbine Bldg. Non-Essential Loads Isolation												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-SWP-CS001	
2SWP*MOV50A	3	N	B	A	36	BTF	MO	11A (H-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-SWP-CS001	
Header Cross-Connect Isolation												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-SWP-CS001	
2SWP*MOV50B	3	N	B	A	36	BTF	MO	11A (G-6)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-SWP-CS001	
Header Cross-Connect Isolation												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-SWP-CS001	

Valve Table

SWP - Service Water System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*MOV599	3	N	B	A	30	BTF	MO	11H (B-8)	OC	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q004	
SWP to CWS Isolation												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-SWP-Q004	
2SWP*MOV66A	3	N	B	A	8	GA	MO	11L (B-6)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q@001	
SWP From Diesel Generator Cooler, EG1												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*MOV66B	3	N	B	A	8	GA	MO	11L (E-6)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q004	
SWP From Diesel Generator Cooler, EG3												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*MOV67A	3	N	B	A	4	GA	MO	11J (I-2)	OC	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q@001	
SWP Inlet to Chiller HVK*CHL1A												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV67B	3	N	B	A	4	GA	MO	11J (D-2)	OC	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	2Y		N2-OSP-SWP-Q004	
SWP Inlet to Chiller HVK*CHL1B												RPI	MOV		S-EPM-GEN-063	
2SWP*MOV74A	3	N	B	A	18	BTF	MO	11B (E-3)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q@001	
Pump Discharge Valve												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-SWP-Q@001	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*MOV74B	3	N	B	A	18	BTF	MO	11A (J-2)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q004	
Pump Discharge Valve												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-SWP-Q004	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*MOV74C	3	N	B	A	18	BTF	MO	11A (J-7)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q@001	
Pump Discharge Valve												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-SWP-Q@001	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*MOV74D	3	N	B	A	18	BTF	MO	11A (E-2)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q004	
Pump Discharge Valve												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-SWP-Q004	
												STO	Q		N2-OSP-SWP-Q004	

Valve Table

SWP - Service Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*MOV74E	3	N	B	A	18	BTF	MO	11B (J-4)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q@001	
Pump Discharge Valve												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-SWP-Q@001	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*MOV74F	3	N	B	A	18	BTF	MO	11A (E-7)	OC	OC	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q004	
Pump Discharge Valve												RPI	MOV		S-EPM-GEN-063	
												STC	Q		N2-OSP-SWP-Q004	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*MOV77A	3	N	B	A	54	ROGTV	MO	11H (D-3)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q@001	
Traveling Screen Bypass												PI	2Y		N2-OSP-SWP-R002	
												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*MOV77B	3	N	B	A	54	ROGTV	MO	11H (D-3)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q004	
Traveling Screen Bypass												PI	2Y		N2-OSP-SWP-R002	
												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*MOV90A	3	N	B	A	18	BTF	MO	11C (K-4)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q@001	
RHR Heat Exchanger 1A Inlet												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SWP-Q@001	
2SWP*MOV90B	3	N	B	A	18	BTF	MO	11P (E-8)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q004	
RHR Heat Exchanger 1B Inlet												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SWP-Q004	
2SWP*MOV93A	3	N	B	A	24	BTF	MO	11H (J-10)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-SWP-CS001	
SWP to CWS Isolation												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-SWP-CS001	
2SWP*MOV93B	3	N	B	A	24	BTF	MO	11H (I-10)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-SWP-CS001	
SWP to CWS Isolation												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-SWP-CS001	
2SWP*MOV94A	3	N	B	A	8	GA	MO	11L (I-8)	C	O	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	Q		N2-OSP-SWP-Q005	
SWP from HPCS Diesel Cooler Outlet												RPI	MOV		S-EPM-GEN-063	
												STO	Q		N2-OSP-SWP-Q005	

Valve Table

SWP - Service Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*MOV94B SWP from HPCS Diesel Cooler Outlet	3	N	B	A	8	GA	MO	11L (H-7)	C	O	As-Is	DIAG FE RPI STO	MOV Q MOV Q		S-EPM-GEN-063 N2-OSP-SWP-Q005 S-EPM-GEN-063 N2-OSP-SWP-Q005	
2SWP*MOV95A Div. I -- SWP to HPCS Diesel Cooler Inlet	3	N	B	A	8	GA	MO	11L (C-2)	O	C	As-Is	DIAG FE RPI	MOV 2Y MOV		S-EPM-GEN-063 N2-OSP-SWP-Q005 S-EPM-GEN-063	
2SWP*MOV95B Div. II SWP to HPCS Diesel Cooler Inlet	3	N	B	A	8	GA	MO	11L (F-3)	O	C	As-Is	DIAG FE RPI	MOV 2Y MOV		S-EPM-GEN-063 N2-OSP-SWP-Q005 S-EPM-GEN-063	
2SWP*RV10A 2HVR*UC402A Thermal Relief	3	N	C	A	0.75	RV	SE	11C (F-6)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV10B 2HVR*UC402B Thermal Relief	3	N	C	A	0.75	RV	SE	11C (F-5)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV11A Switchgear Room; 2HVR*UC409A Thermal Relief	3	N	C	A	0.75	RV	SE	11F (C-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV11B Switchgear Room; 2HVR*UC409B Thermal Relief	3	N	C	A	0.75	RV	SE	11F (B-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV155A RCIC Pump Room; 2HVR*UC412A Thermal Relief	3	N	C	A	0.75	RV	SE	11P (F-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV155B RCIC Pump Room; 2HVR*UC412B Thermal Relief	3	N	C	A	0.75	RV	SE	11G (K-8)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV202A 2HVP*UC1A Thermal Relief	3	N	C	A	0.75	RV	SE	11L (B-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV202B 2HVP*UC1B Thermal Relief	3	N	C	A	0.75	RV	SE	11L (E-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV203 2HVP*UC2 Thermal Relief	3	N	C	A	0.75	RV	SE	11L (I-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	

Valve Table

SWP - Service Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*RV27A	3	N	C	A	0.75	RV	SE	11L (C-5)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
Division I Diesel Cooler Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2SWP*RV27B	3	N	C	A	0	RV	SE	11L (F-5)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
Division II Diesel Cooler Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2SWP*RV34A	3	N	C	A	4	RV	SE	11C (L-5)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
Heat Exchanger 2RHS*E1A Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2SWP*RV34B	3	N	C	A	4	RV	SE	11P (E-8)	C	O	NA	LA	10Y-S		N2-MSP-GEN-206	Note - 01
												LL	10Y-S		N2-MSP-GEN-206	
Heat Exchanger 2RHS*EBA Relief												RT	10Y-S		N2-MSP-GEN-206	
												VT	10Y-S		N2-MSP-GEN-206	
2SWP*RV515	3	Y	C	A	0.75	RV	SE	11F (B-7)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
CSH Switchgear Room; 2HVC*UC102 Thermal Relief																
2SWP*RV518	3	Y	C	A	0.75	RV	SE	11L (J-5)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
HPCS Generator Cooler, 2EGS*EG2 Thermal Relief																
2SWP*RV53A	3	Y	C	A	0.75	RV	SE	11Q (B-7)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HCV*UC108A Thermal Relief																
2SWP*RV53B	3	N	C	A	0.75	RV	SE	11Q (H-7)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HCV*UC108B Thermal Relief																
2SWP*RV556	3	Y	C	A	0.75	RV	SE	11L (E-9)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
RHS Heat Exchanger Room; 2HVR*UC405 Thermal Relief																
2SWP*RV558	3	Y	C	A	0.75	RV	SE	11P (G-8)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
RHS Heat Exchanger Room; 2HVR*UC406 Thermal Relief																
2SWP*RV564	3	Y	C	A	0.75	RV	SE	11P (B-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Electrical Tunnel; 2HVC*UC104 Thermal Relief																
2SWP*RV566	3	Y	C	A	0.75	RV	SE	11F (E-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
Electrical Tunnel; 2HVC*UC105 Thermal Relief																

Valve Table

SWP - Service Water System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*RV575 2HVC*UC106 Thermal Relief	3	Y	C	A	0.75	RV	SE	11F (J-7)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV576 2HVC*UC107 Thermal Relief	3	Y	C	A	0.75	RV	SE	11F (F-7)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV58A Control & Relay Room Chiller; 2HVK*CHL1A Thermal Relief	3	Y	C	A	0.75	RV	SE	11J (H-6)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV58B Control & Relay Room Chiller; 2HVK*CHL1B Thermal Relief	3	N	C	A	0.75	RV	SE	11J (D-6)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV68A 2HVR*UC414A Thermal Relief	3	Y	C	A	0.75	RV	SE	11E (K-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV68B 2HVR*UC414B Thermal Relief	3	N	C	A	0.75	RV	SE	11G (I-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV72A 2HVR*UC415A Thermal Relief	3	Y	C	A	0.75	RV	SE	11M (J-8)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV72B 2HVR*UC415B Thermal Relief	3	N	C	A	0.75	RV	SE	11F (I-2)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV80A RHS Pump Room; 2HVR*UC401A Thermal Relief	3	Y	C	A	0.75	RV	SE	11L (B-9)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV80B RHS Pump Room; 2HVR*UC401B Thermal Relief	3	N	C	A	0.75	RV	SE	11G (C-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV80C RHS Pump Room; 2HVR*UC401C Thermal Relief	3	N	C	A	0.75	RV	SE	11P (G-9)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV80D RHS Pump Room; 2HVR*UC401D Thermal Relief	3	N	C	A	0.75	RV	SE	11L (C-9)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV80E RHS Pump Room; 2HVR*UC401E Thermal Relief	3	N	C	A	0.75	RV	SE	11G (D-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	

Valve Table

SWP - Service Water System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*RV80F	3	N	C	A	0.75	RV	SE	11B (H-9)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
RHS Pump Room; 2HVR*UC401F Thermal Relief																
2SWP*RV81A	3	Y	C	A	0.75	RV	SE	11P (H-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
CSH Pump Room; 2HVR*UC403A Thermal Relief																
2SWP*RV81B	3	N	C	A	0.75	RV	SE	11G (D-8)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
CSH Pump Room; 2HVR*UC403B Thermal Relief																
2SWP*RV82A	3	Y	C	A	0.75	RV	SE	11P (E-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC404A Thermal Relief																
2SWP*RV82B	3	N	C	A	0.75	RV	SE	11P (C-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC404B Thermal Relief																
2SWP*RV82C	3	N	C	A	0.75	RV	SE	11P (B-10)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC404C Thermal Relief																
2SWP*RV82D	3	N	C	A	0.75	RV	SE	11G (G-8)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC404D Thermal Relief																
2SWP*RV83A	3	Y	C	A	0.75	RV	SE	11P (L-6)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC407A Thermal Relief																
2SWP*RV83B	3	N	C	A	0.75	RV	SE	11P (M-6)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC407B Thermal Relief																
2SWP*RV83C	3	N	C	A	0.75	RV	SE	11P (J-6)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC407C Thermal Relief																
2SWP*RV83D	3	N	C	A	0.75	RV	SE	11F (A-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC407D Thermal Relief																
2SWP*RV83E	3	N	C	A	0.75	RV	SE	11G (E-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC407E Thermal Relief																
2SWP*RV84A	3	Y	C	A	0.75	RV	SE	11M (L-8)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2HVR*UC410A Thermal Relief																

Valve Table

SWP - Service Water System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*RV84B 2HVR*UC410B Thermal Relief	3	N	C	A	0.75	RV	SE	11F (E-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV84C 2HVR*UC410C Thermal Relief	3	N	C	A	0.75	RV	SE	11G (G-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV85A 2HVR*UC411A Thermal Relief	3	Y	C	A	0.75	RV	SE	11E (I-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV85B 2HVR*UC411B Thermal Relief	3	N	C	A	0.75	RV	SE	11F (D-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV85C 2HVR*UC411C Thermal Relief	3	N	C	A	0.75	RV	SE	11G (J-4)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV87A Standby Switchgear Room; 2HVR*UC101A Thermal Relief	3	Y	C	A	0.75	RV	SE	11F (I-7)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV87B Standby Switchgear Room; 2HVR*UC101B Thermal Relief	3	N	C	A	0.75	RV	SE	11F (D-7)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV89A Chiller Room; 2HVC*UC103A Thermal Relief	3	Y	C	A	0.75	RV	SE	11J (G-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV89B Chiller Room; 2HVC*UC103B Thermal Relief	3	N	C	A	0.75	RV	SE	11J (B-2)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV9A 2HVR*UC408A Thermal Relief	3	Y	C	A	0.75	RV	SE	11C (C-6)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RV9B 2HVR*UC408B Thermal Relief	3	N	C	A	0.75	RV	SE	11C (C-6)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RVX157A SWP Pump Bay; 2HVY*UC2A Thermal Relief	3	Y	C	A	0.75	RV	SE	11M (C-5)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RVX157B SWP Pump Bay; 2HVY*UC2B Thermal Relief	3	N	C	A	0.75	RV	SE	11M (G-5)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	

Valve Table

SWP - Service Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*RVX46A Reactor Bldg Recirc; 2HVR*UC413A Thermal Relief	3	Y	C	A	0.75	RV	SE	11E (D-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RVX46B Reactor Bldg Recirc; 2HVR*UC413A Thermal Relief	3	N	C	A	0.75	RV	SE	11F (K-2)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RVY157A SWP Pump Bay; 2HVY*UC2C Thermal Relief	3	Y	C	A	0.75	RV	SE	11M (B-5)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RVY157B SWP Pump Bay; 2HVY*UC2D Thermal Relief	3	N	C	A	0.75	RV	SE	11M (E-5)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RVY46A Reactor Bldg Recirc; 2HVR*UC413B Thermal Relief	3	Y	C	A	0.75	RV	SE	11E (B-3)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*RVY46B Reactor Bldg Recirc; 2HVR*UC413B Thermal Relief	3	N	C	A	0.75	RV	SE	11F (J-2)	C	O	NA	RVTh	10Y		N2-MSP-GEN-206	
2SWP*TV35A Control and Relay Room Chiller 2HVK*CHL1A Service Water Temperature Control Valve	3	N	B	A	4	FCV	EH	11J (G-7)	OC	O	NA	FE FO STO	Q Q Q		N2-OSP-SWP-Q@001 N2-OSP-SWP-Q@001 N2-OSP-SWP-Q@001	
2SWP*TV35B Control and Relay Room Chiller 2HVK*CHL1A Service Water Temperature Control Valve	3	N	B	A	4	FCV	EH	11J (C-7)	OC	O	NA	FE FO STO	Q Q Q		N2-OSP-SWP-Q004 N2-OSP-SWP-Q004 N2-OSP-SWP-Q004	
2SWP*V1002A Cross-Connect to SFC; no HVR*UC	3	N	C	A	3	CK	SE	11E (H-2)	OC	O	NA	BDC CP DI	CM CM CM		N2-OSP-SWP-Q@001 N2-OSP-SWP-Q@001 N2-MPM-GEN-V205	
2SWP*V1002B Cross-Connect to SFC; no HVR*UC	3	N	C	A	3	CK	SE	11F (H-2)	OC	O	NA	BDC CP DI	CM CM CM		N2-OSP-SWP-Q004 N2-OSP-SWP-Q004 N2-MPM-GEN-V205	
2SWP*V1024 Header Supply to RB; 2HVR*UC413A & MOV21A to SFC	3	N	C	A	6	SWCV	SE	11E (H-2)	OC	OC	NA	CC CP DI	CM CM CM		N2-OSP-SWP-Q@001 N2-OSP-SWP-Q@001 N2-MPM-GEN-V205	CKV Program
2SWP*V1025 SWP To RB Recirc; 2HVR*UC413B	3	N	C	A	6	SWCV	SE	11F (I-1)	OC	OC	NA	CP DI PE-F	CM CM CM		N2-OSP-SWP-Q004 N2-MPM-GEN-V205 N2-OSP-SWP-Q004	CKV Program

Valve Table

SWP - Service Water System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*V1027	3	N	C	A	30	TDCV	SE	11A (B-7)	OC	OC	NA	CC	CS	SWP-CSJ - 01	N2-OSP-SWP-CS002	CKV Program
Header Check												CO	CS	SWP-CSJ - 01	N2-OSP-SWP-CS002	
2SWP*V1A	3	N	C	A	18	TDCV	SE	11B (E-8)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q@001 N2-OSP-SWP-Q002	CKV Program
Pump Discharge Check																
2SWP*V1B	3	N	C	A	18	TDCV	SE	11A (J-5)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q004 N2-OSP-SWP-Q002	CKV Program
Pump Discharge Check																
2SWP*V1C	3	N	C	A	18	TDCV	SE	11A (J-9)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q@001 N2-OSP-SWP-Q002	CKV Program
Pump Discharge Check																
2SWP*V1D	3	N	C	A	18	TDCV	SE	11A (F-4)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q004 N2-OSP-SWP-Q002	CKV Program
Pump Discharge Check																
2SWP*V1E	3	N	C	A	18	TDCV	SE	11B (J-8)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q@001 N2-OSP-SWP-Q002	CKV Program
Pump Discharge Check																
2SWP*V1F	3	N	C	A	18	TDCV	SE	11A (F-10)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q004 N2-OSP-SWP-Q002	CKV Program
Pump Discharge Check																
2SWP*V202A	3	N	C	A	30	TDCV	SE	11B (D-2)	OC	OC	NA	CC	CS	SWP-CSJ - 01	N2-OSP-SWP-CS002	
Header Check												CO	CS	SWP-CSJ - 01	N2-OSP-SWP-CS002	
2SWP*V202B	3	N	C	A	30	TDCV	SE	11H (C-8)	OC	C	NA	BDO CC	Q Q		N2-OSP-SWP-Q004 N2-OSP-SWP-Q004	CKV Program
Non-Essential Return to CWS																
2SWP*V219A	3	N	C	A	4	SWCV	SE	11J (I-3)	OC	O	NA	CO DI	CM CM		N2-OSP-SWP-Q@001 N2-MPM-GEN-V205	
Supply to Control Room Chiller; HVK*CHL1A																
2SWP*V219B	3	N	C	A	4	SWCV	SE	11J (D-3)	OC	O	NA	CO DI	CM CM		N2-OSP-SWP-Q004 N2-MPM-GEN-V205	
Supply to Control Room Chiller; HVK*CHL1B																
2SWP*V240A	3	N	C	A	4	CK	SE	11J (J-5)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q@001 N2-OSP-SWP-Q@001	
Control Room Chiller Temperature Control Recirc; HVK*CHL1A																

Valve Table

SWP - Service Water System

Valve ID Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2SWP*V240B	3	N	C	A	4	CK	SE	11J (E-5)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q004 N2-OSP-SWP-Q004	
Control Room Chiller Temperature Control Recirc; HVK*CHL1B																
2SWP*V259	3	N	C	A	8	SWCV	SE	11L (I-3)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q005 N2-OSP-SWP-Q005	CKV Program
Supply to HPCS Diesel HX & HVP*UC2																
2SWP*V260	3	N	C	A	8	SWCV	SE	11L (I-3)	OC	OC	NA	CC CO	Q Q		N2-OSP-SWP-Q005 N2-OSP-SWP-Q005	CKV Program
Supply to HPCS Diesel HX & HVP*UC2																

Valve Table

WCS - Reactor Water Cleanup System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
2WCS*EFV221	2	N	C	A	0.75	EFV	SE	37A (G-7)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@002	
												PI	10Y-S		N2-ISP-ISC-R@002	
Instrument Line to 2WCS-FT134																
2WCS*EFV222	2	N	C	A	0.75	EFV	SE	37A (G-5)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2WCS*FT67X; PDS115																
2WCS*EFV223	2	N	C	A	0.75	EFV	SE	37A (H-4)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2WCS*FT67Y																
2WCS*EFV224	2	N	C	A	0.75	EFV	SE	37A (H-3)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2WCS*FT67Y																
2WCS*EFV300	2	N	C	A	0.75	EFV	SE	37A (G-6)	O	C	NA	FE	10Y-S	GV-RR - 08	N2-ISP-ISC-R@001	
												PI	10Y-S		N2-ISP-ISC-R@001	
Instrument Line to 2WCS*FT67X; PDS115																
2WCS*MOV102	1	N	A	A	8	GL	MO	37A (F-5)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	CS		N2-OSP-WCS-CS001	
RWCU Inlet from RCS; Inboard Isolation												LTJ	60		N2-ISP-LRT-R@094	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-WCS-CS001	
2WCS*MOV112	1	N	A	A	8	GL	MO	37A (G-5)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	Note - 02
												FE	CS		N2-OSP-WCS-CS001	
RWCU Inlet from RCS; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@094	
												RPI	MOV		S-EPM-GEN-063	
												STC	CS		N2-OSP-WCS-CS001	
2WCS*MOV200	1	N	A	A	8	GL	MO	37B (D-9)	O	C	As-Is	DIAG	MOV		S-EPM-GEN-063	
												FE	CS		N2-OSP-WCS-CS001	
RWCU Return to FWS; Outboard Isolation												LTJ	60		N2-ISP-LRT-R@045	
												RPI	MOV		S-EPM-GEN-063	

Attachment 16 – Unit 2

Check Valve Condition Monitoring Plan Index

CVCM PLAN NUMBER	REV #	TITLE
CPS-001	0	IAS Containment Isolation Check Valves (Supply to CPS AOVs) CVCM Program
CSH-001	0	HPCS Pump Min Flow Check Valve CVCM Program
GSN-001	0	TIP Purge CIV Check Valve CVCM Program
HVK-001		Chilled Water Pump Discharge Check Valves CVCM Program
IAS-001	0	ADS SRV Accumulator Supply Check Valves ADS SRV Accumulator Supply Check Valves CVCM Program
IAS-002	0	ADS N2 Header CIV Check Valves CVCM Program
ICS-001	0	RCIC Pump and Pressure Pump Suction from Suppression Pool Check Valves CVCM Program
ICS-002	0	RCIC Pump Suction from CST Check Valve CVCM Program
ICS-003	0	RCIC Min Flow Check Valve CVCM Program
ICS-004	0	RCIC Turbine Exhaust Check Valve CVCM Program
RCS-001	0	Recirc Pump Seal Water C Recirc Pump Seal Water Containment Isolation Check Valves Check Valves CVCM Program
SFC-001	0	SFC Header Check Valves CVCM Program
SLS-001	0	SLS Injection CIV Check Valve CVCM Program
SLS-002	0	SLS Pump Discharge Check Valves CVCM Program
SWP-001	0	SWP Emergency Supply to SFC Check Valves
SWP-002	0	SWP to Control Room Chiller Check Valves
SWP-003	0	Service Water Supply Header to Reactor Building Check Valves

ATTACHMENT 2

Nine Mile Point Nuclear Station Unit 2
Snubber Inservice Testing Program Plan for the Fourth 10-Year Interval

NINE MILE POINT NUCLEAR STATION
P.O. Box 63
Lake Road
Lycoming, NY 13093

SNUBBER INSERVICE TESTING PROGRAM PLAN

UNIT 2
FOURTH 10-YEAR INTERVAL

Commercial Service Date:	April 5, 1988
NRC Docket Number:	50-410
Fourth Interval:	March 1, 2019 to December 31, 2028

Document Number:	**ER-NM-330-1008-2**
Revision Number:	**00**

PREPARED BY:	Danielle Mainardi Snubber Program Engineer	DATE:	2/25/2019
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APPROVED BY:	[signature] Engineering Programs Manager	DATE:	2/26/19

REVISION LOG

This re-written program plan is the initial issue of the Snubber Program Plan after transition from the ASME ISI Code, Section XI to the ASME OM Code, Section IST. The NMPNS Unit 2 Third ISI Interval was extended by (330) days as permitted by Paragraph IWA-2430(c)(1) in order to align the snubber program with the start of the Fourth IST Interval. Beginning March 1, 2019, the snubber program for Unit 2 will be under the OM Code, Section IST and will thereafter be aligned with the IST Interval, which is scheduled to end December 31, 2028.

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1.0 **General**:

1.1 The examination, service life monitoring and testing of all safety related snubbers shall be implemented and performed in accordance with ER-NM-330-1007 “Snubber Inservice Testing Program” to ensure the required operability of these snubbers during a seismic or other event, initiating dynamic loads.

1.2 The Snubber program, as defined within ER-NM-330-1007, establishes visual examination, functional testing and service life monitoring requirements, pertaining to mechanical and hydraulic snubbers that are required for safe shutdown of the reactor, maintaining the safe shutdown condition, mitigating the consequences of an accident, or to ensure the integrity of the reactor coolant pressure boundary.

1.2.1 The examination boundaries shall include the snubber assembly from pin to pin inclusive. Coordination with the ISI program owner will be required to complete the surveillance requirements for piping and structural attachments.

1.2.2 Those snubbers included in this program are identified within ER-NM-330-1007, Attachments 2, 3 and 4.

1.3 The Snubber Program described in ER-NM-330-1007 adheres to the requirements of ASME OM Code, Section IST, 2012 Edition, as required by 10CFR50.55a(b)(3)(v)(B).

1.4 The snubber program document (ER-NM-330-1007) establishes a visual examination program, an operational readiness testing program and a Snubber Service Life Monitoring program for hydraulic and mechanical snubbers which adhere to the requirements of Subsections ISTD-4000, ISTD-5000 and ISTD-6000 respectively.

2.0 **Examination, Testing and Monitoring Requirements**:

2.1 Visual Examinations and Operational Readiness Testing shall be performed to the extent specified within ER-NM-330-1007 and in accordance with fleet administrative procedures ER-AA-330-004 and ER-AA-330-010.

2.2 Snubbers are grouped into Defined Test Plan Groups, (DTPG’s) by design type, in accordance with ISTD-5252 for testing purposes. The DTPG’s at Nine Mile Point Unit 2 are specified in ER-NM-330-1007.

2.3 The service life of all snubbers in this program shall be monitored and snubbers replaced or reconditioned as specified in ER-NM-330-1007 and required by Exelon fleet administrative procedure ER-AA-330-011 to ensure that the service life is not exceeded between surveillance inspections, or during a period when the snubber is required to be operable. The replacement or reconditioning shall be documented, and records retained in accordance with NMP Procedures.

3.0 **Examination and Testing Methods**:

3.1 Visual Examinations shall be performed by qualified individuals in accordance with ISTA-1500(e). Visual Examinations and Operational Readiness Testing shall be performed to verify the requirements specified within ER-NM-330-1007 in accordance with the requirements of Subsection ISTD.

4.0 **Examination and Testing Frequency**:

4.1 Visual Examinations and Operational Readiness Testing shall be performed at the frequency specified within ER-NM-330-1007. NMP currently performs 100% accessible and inaccessible snubber visual examinations every 10 years per ASME OM Code Case OMN-13 Rev 2.

4.2 Visual Examinations shall be performed whenever new snubber locations are installed, or after system replacements or modifications in accordance with Subsection ISTD-4100.

5.0 **ASME OM Code Case, OMN-13**

5.1 Code Case OMN-13, which allows the extension of the visual examination interval, has been implemented for snubber inspections during this interval. Code Case OMN-13 Rev 2 applies to the 1995 OM Code Edition through 2011 addenda and is approved for use by the NRC in Regulatory Guide 1.192 (March 2017). Relief request ML18318A422 has approved the use of Code Case OMN-13 at Nine Mile Point Units 1 and 2 using the 2012 Edition of the OM Code.

6.0 **Examination, Testing and Monitoring Evaluation**:

6.1 Snubbers that do not appear to conform to the Visual Examination requirements of the ER-NM-330-1007 and procedure ER-AA-330-004, shall be reported for evaluation and appropriate corrective action.

6.2 Snubbers that do not appear to conform with the visual examination acceptance requirements and are later confirmed as operable as a result of operational readiness testing may be declared operable for the purpose of establishing the next visual inspection interval, providing that the unacceptable condition did not affect operational readiness of the snubber.

6.3 Snubbers that do not meet the operational readiness testing acceptance criteria in ER-NM-330-1007 and procedure N2-MSP-GEN-V351 shall be evaluated to determine the cause of the failure and appropriate corrective action taken.

6.4 The service life of a snubber is evaluated at least once each fuel cycle using

manufacturing input and engineering information gained through consideration of the snubber service conditions and inservice operational readiness test results in accordance with ER-NM-330-1007.

7.0 **Repair, Replacement and Modification Requirements**:

7.1 Repairs, Replacements and Modifications performed on snubbers under this program shall conform, as applicable, to the requirements specified within the Repair and Replacement Program.

8.0 **Scheduling**:

8.1 The Visual Examinations and Operational Readiness Testing schedules shall be established, tracked and maintained within the Corporate Programs Engineering Department.

8.2 The Snubber Testing Program shall identify and track expanded or additional testing and/or examinations as specified and required by ER-NM-330-1007 and, in accordance with Subsection ISTD.

9.0 **Reports and Records**:

9.1 Reports and records for the Visual Examinations and Functional Testing shall be maintained on all snubbers in the scope of the program.

9.2 Applicable records and reports, as required for Repair and Replacements, shall be maintained for all snubbers.

9.3 Records of the service life of all hydraulic and mechanical snubbers listed in this program, including the date at which the service life commences, and associated installation and maintenance records will be maintained.