NEXTera ENERGY
DUANE ARNOLD

June 15, 2016

NG-16-0128
10 CFR 50.55a

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

Duane Arnold Energy Center
Docket No. 50-331
Renewed Op. License No. DPR-49

Duane Arnold Energy Center Inservice Testing Program for the Fifth Ten-Year Interval

Pursuant to 10 CFR 50.55a(f), NextEra Energy Duane Arnold, LLC (NextEra Energy Duane Arnold) updated the Duane Arnold Energy Center (DAEC) Inservice Testing (IST) Program for the fifth ten-year interval. The IST program document identifies the inservice testing that will be performed at DAEC to meet the requirements of 10 CFR 50.55a during the fifth ten-year interval, which commenced on February 1, 2016. The ASME Code for Operation and Maintenance (OM) of Nuclear Power Plants applicable to DAEC's fifth interval IST program is the 2004 Edition through 2006 addendum. NextEra Energy Duane Arnold is submitting the attached IST program description in accordance with section ISTA-3200 of the ASME OM Code

This letter makes no new commitments or changes to existing commitments.

If you have any questions, please contact J. Michael Davis at (319) 851-7032.

P Hansen for TAV

T. A. Vehec
Vice President, Duane Arnold Energy Center
NextEra Energy Duane Arnold, LLC

Attachment

cc: Regional Administrator, USNRC, Region III
Project Manager, USNRC, Duane Arnold Energy Center
Senior Resident Inspector, USNRC, Duane Arnold Energy Center

A047
NRR

Attachment to NG-16-0128

Duane Arnold Energy Center Inservice Testing Program for the Fifth Ten-Year Interval

187 pages follow

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DUANE ARNOLD ENERGY CENTER (DAEC)

DAEC Station 5th Interval In-Service Testing (IST) Program

Commercial Service Date: February 1, 1975
(Docket no. 50-331)
3277 DAEC Road
Palo, Iowa52324

IN-SERVICE TESTING (IST) PROGRAM PREPARATION AND APPROVAL

Record the following: Date / Time: _____ / _____ Initials: _____

NOTE: User shall perform and document a Temp Issue / Rev. Check to ensure revision is current, in accordance with procedure use and adherence requirements.

Prepared By: Jonathan Osuch / Jonathan Osuch Date: 6/8/2016
Print Signature

CROSS-DISCIPLINE REVIEW (AS REQUIRED)

Reviewed By: TIM COUTURE Date: 6-1-16
Inservice Testing Engineer — Print — Signature

Reviewed By: ERIC SORENSON Date: 6-8-16
Supervisor Inspection and Materials — Print — Signature

PROCEDURE APPROVAL

Approved By: DONALD CHURCH Date: 6-8-16
Manager, Program Engineering — Print — Signature

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1.0 INTRODUCTION AND PROGRAM DESCRIPTION

1.1 Introduction

Under the provisions of 10 CFR 50.55a, inservice testing will be performed in accordance with the ASME Code for Operation and Maintenance of Nuclear Power Plants. As specified in 10 CFR 50.55a (b), the effective edition of OM Code will be utilized when program updates are conducted. The OM Code for Duane Arnold's 5th interval IST program update is the 2004 Edition through 2006 addendum. This program document identifies the in-service testing that will be performed at Duane Arnold Energy Center to comply with the requirements of 10 CFR 50.55a.

This program applies to the IST Fifth (5th) Ten-Year Interval beginning February 1, 2016 and ends on January 31, 2026.

1.2 Relationship with Technical Specifications

Based on technical specification requirements, in the event of any conflicts between the ASME OM Code requirements and the station's technical specifications, the plant technical specification shall govern if more conservative. Duane Arnold Energy Center will meet all requirements of both ASME OM and plant technical specifications unless there is a specific conflict between these documents. If any requirements of ASME OM Code cannot be met due to the provisions of the plant technical specification, relief will be requested or appropriate technical specification changes will be prepared.

1.3 Qualification of Test Personnel

Personnel performing testing to satisfy the ASME OM Code will be qualified in accordance with the Duane Arnold Energy Center's Quality Assurance Program.

1.4 Program Development

In-service testing (IST) of Class 1, 2, and 3 components is performed at Duane Arnold Energy Center in accordance with the provisions of 10 CFR 50.55a, "Codes and Standards". Where possible, testing is performed which at a minimum meets the requirements of the latest Code edition, 2004 Edition of Code through 2006 Addendum, adopted in 10 CFR 50.55a one year prior to the start of the current interval.

The scope of the program is that defined by subsection ISTA-1100(a), ISTA-1100(b) and ISTA-1100(c) of 2004 Edition through 2006Addendum of ASME OM code. 10 CFR50.55a required the use of the previously mentioned ASME OM Code edition and addenda, which will here-in be referred to as the Code.

In accordance with the Code, the following are required to be included in the testing program:

- Pumps and Valves that are required to perform a specific function in:
  1) Shutting down the reactor to the cold shutdown condition;
  2) Maintaining the cold shutdown condition; or
  3) Mitigating the consequences of an accident.
- Pressure relief devices that protect systems or portions of systems which perform one or more required function in:
  1) Shutting down the reactor to the cold shutdown condition;
  2) Maintaining the cold shutdown condition; or
  3) Mitigating the consequences of an accident.
- Dynamic restraints (snubbers) that protect systems or portions of systems which perform one or more required function in:
  1) Shutting down the reactor to the cold shutdown condition;
  2) Maintaining the cold shutdown condition; or
  3) Mitigating the consequences of an accident.

In addition to the general Code requirements outlined above, there are other interpretations and positions that have come about as a result of past regulatory and licensee actions as listed in Section 5, Reference Documents.

1.5 Initial Program Scope

In the course of developing the Program scope, each of the significant safety systems (included within the ISI-class boundaries) were evaluated with respect to the function of each component and the need for its operability as it relates to the scope of the OM Code. Supporting documents used include Final Safety Analysis Report (FSAR); Technical Specifications; Past program correspondence; Operating Procedures (Normal, Emergency and Off-Normal); and Plant System Descriptions.

The sequence followed during the development effort was as follows:

1. Each of the plant systems was subjected to an overview to determine any potential active safety function as described in the scope statement. Those systems with no obvious safety functions were then excluded from further consideration. Plant documents as well as operating staff inputs were utilized in this phase.

2. For the remaining systems, flow diagrams were studied and any component that could possibly have an active or passive safety function (other than simply maintaining the pressure boundary) were identified for further evaluation.
3. The function of each component identified in 2, above, was determined based on available documentation, staff input or general experience of the evaluator. Testing requirements were derived based on the component function(s) and the applicable rule(s).
4. Available documents were reviewed and specific or implied component operational requirements were compared to the information derived in 3, above.
5. The results of Steps 1 through 4, above, were reviewed by several knowledgeable members of the plant staff and evaluated for accuracy and consistency. Based on this review, the final program scope was derived and the IST Program Plan developed.

The list of equipment in the IST program is enclosed as Attachments 1 & 3. The technical bases for the inclusion of these equipment into the IST program is retained in the DAEC's work management system (NAMS).

1.6 Program Update

It is expected that the IST Program will be revised, as needed, to ensure continued compliance with the Code requirements relating to the scope of the test program.

The procedures controlling the plant design change development process contain requirements to conduct a review for determination of potential impact on the IST Program. If the results of that review indicate the potential for impact on the IST Program, the change package shall be submitted to the responsible engineer assigned to the IST program.

Additionally, the plant administrative procedures which control changes to plant documents, including procedures, require that changes potentially affecting the IST Program be reviewed by the responsible IST Engineer. Should a change require a program revision, the IST Engineer/Specialist would then implement the change to the program plan and the appropriate test procedure(s) in a timely manner.

2.0 PUMP TESTING PROGRAM DESCRIPTON

2.1 Code Compliance

This IST Program for pumps meets the requirements of ASME OM Code 2004 Edition (including 2006 Addenda),Subsection ISTB and any applicable interpretations or additional requirements imposed by 10 CFR 50.55a. Paragraph and table references in this section refer to specific paragraphs and tables in the ASME OM Code. Where these requirements have been determined to be impractical, conformance would cause unreasonable hardship without any compensating increase in safety, or an alternative test provides an acceptable level of quality and safety, relief from Code requirements is requested pursuant to the requirements of 10 CFR 50.55a(f)(5)(iii). Refer to Attachment 1.

The 10 CFR 50.55a specification of Class 1, 2, and 3 components has been used as criteria for including pumps in this program. Non-class pumps judged important to safety are also listed. Testing of non-class pumps will be electively performed (in some cases) in accordance with the ASME OM Code, Subsection ISTB to the extent practical. Relief requests will not be submitted for non-class pumps if the Code requirements cannot be met.

2.2 Allowable Ranges of Test Quantities

The allowable ranges for test parameters as specified in the Code, Subsection ISTB, Table ISTB-3510-1 will be used for all measurements of pressure, flow, speed, differential pressure and vibration except as provided for in specific relief requests for Class 1, 2, and 3 pumps. Allowable ranges for test parameters of non-class pumps will be as specified in ASME OM Code, Subsection ISTB, Table ISTB-3500-1 to the extent practical.

2.3 Testing Intervals

The test frequency for pumps included in the Program will be as set forth in the Code, Subsection 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 Duane Arnold Energy Center Technical Specifications to provide operational flexibility. Note the +25 percent surveillance interval may be applied to testing frequencies doubled as required by the ASME OM Code, Subsection ISTB-6200, to also provide operational flexibility, as this surveillance interval was added to DAEC's improved technical specifications.

2.4 Pump Program Tables

Attachment 1 lists those pumps included in the IST Program with references to parameters to be measured and applicable requests for relief. A table legend at the end of Attachment 1 provides information on how to use the drawing coordinates to help locate valves on flow diagrams.

2.5 Relief Requests for Pump Testing

Relief requests are initiated per 10 CFR 50.55a where appropriate and are included in Attachment 2.

3.0 VALVE TESTING PROGRAM DESCRIPTON

3.1 Code Compliance

This IST Program for valves meets the requirements of ASME OM Code 2004 Edition (including 2006 Addenda), Subsection ISTC, Mandatory Appendix I, Mandatory Appendix II and any appropriate interpretations or additional requirements imposed by 10 CFR 50.55a. Paragraph and table references in this section refer to specific paragraphs and tables in the ASME OM Code. Where these requirements have been determined to be impractical, conformance would cause unreasonable hardship without any compensating increase in safety, or an alternative test provides an acceptable level of quality and safety, relief from Code requirements is requested pursuant to the requirements of 10 CFR 50.55a(f)(5)(iii).

Non-class valves judged important to safety are also listed. Testing of non-class valves will be performed in accordance with ASME OM Code, Subsection ISTC and Mandatory Appendix I, to the extent practical. Relief requests will not be submitted for non-class valves if Code requirements cannot be met.

3.2 Stroke Time Acceptance Criteria

When required, the acceptance criteria for the stroke times of power-operated valves will be as set forth in the ASME OM Code, Subsection ISTC.

3.3 Check Valve Testing

Where required, full-stroke exercising of check valves to the open position using system flow requires that a test be performed whereby the predicted full accident condition flow through the valve be verified and measured or full stroke of the obturator is verified by appropriate methods as discussed in ISTC-5220.

As an alternative to the testing or examination requirements of ISTC-3510, ISTC-3520, ISTC-3530 ISTC-3550, AND ISTC-5221, check valves will be tested per the Condition Monitoring Program under the provisions of Mandatory Appendix II (Check Valve Condition Monitoring Program – or CVCM). The purpose of this program is both to improve valve performance and to optimize testing, examination, and preventative maintenance activities in order to maintain the continued acceptable performance of those selected check valves. DAEC may elect to implement the Condition Monitoring Program on a valve or a group of similar valves. If the CVCM program for a valve or valve group is discontinued, then the testing or examination requirements of ISTC-3510, ISTC-3520, ISTC-3530, ISTC-3550 and IST-5221 shall apply.

3.4 Testing Intervals

The test frequency for valves included in the Program will be as set forth in the ASME OM Code, Subsection ISTC-3510, Mandatory Appendix I and Mandatory Appendix II. An allowable extension, as specified in Valve Relief Request VR-03, may be applied to the test schedule as allowed by the Duane Arnold Energy Center Technical Specifications to provide operational flexibility, except for the relief valve sample testing schedules discussed in Mandatory Appendix I.

3.5 Valve Program Tables

Attachment 3 lists those valves included in the IST Program along with references to ISI Class, required testing, respective test intervals, applicable requests for relief as well as other relevant information. A table legend at the end of Attachment 3 provides information on how to use the drawing coordinates to help locate valves on flow diagrams.

3.6 Deferred Testing

Where quarterly testing of valves is impractical or otherwise undesirable, testing may be deferred and performed during cold shutdown or refueling periods as permitted by ASME OM Code, Subsections ISTC-3521 and ISTC-3522. The valve program table identifies those valves to which deferred testing apply and the respective Deferred Test Justification for each is provided in Attachment 5.

3.7 Relief Requests for Valve Testing

Relief requests are initiated per 10 CFR 50.55a where appropriate and are included in Attachment 4.

4.0 SNUBBER TESTING PROGRAM DESCRIPTION

4.1 Purpose

The intent of the ISTD – Snubber Program is to demonstrate and ensure snubber operational readiness through periodic examinations, testing and service life monitoring. The IST Submittal Plan will establish the requirements for the visual examinations, testing and service life monitoring of snubbers at DAEC Station. Title 10CFR50.55a invokes preservice and inservice testing of snubbers per ASME OM Code and establishes the requirements that each nuclear power plant must develop and implement a preservice and inservice examinations and testing program for snubbers. Details on the DAEC Snubber Program may be found in Fleet procedure ER-AA-119 (Snubber Program) and DAEC site procedure Part G (Snubber Examination/Testing Administrative Document).

4.2 Scope

The Snubber Program includes all snubbers installed at DAEC Station. Those snubbers tested in the program are selected and tested in accordance with the ASME Code for Operations and Maintenance of Nuclear Power Plants, 2004 Editions of ISTA and ISTD up through the 2006 Addenda. The scope of snubbers tested will be submitted to the NRC for review and approval of examinations, testing (or alternative testing) to those requirements of the ASME Code. If the examination and testing on the snubber cannot be performed due to plant configuration, plant safety, equipment limitations, type, or hazards to personnel, relief from the ASME Code will be requested.

5.0 REFERENCE DOCUMENTS

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

5.1 Title 10, Code of Federal Regulations, Part 50.55a (10-1-04 Ed.).

5.2 NRC Regulatory Guides - Division 1

5.3 Standard Review Plan 3.9.6, "Inservice Testing of Pumps and Valves"

5.4 Updated Final Safety Analysis Report, Duane Arnold Energy Center

5.5 Duane Arnold Energy Center Technical Specifications

5.6 ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition, No Addenda

5.7 NRC Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"

5.8 ASME OM Code-2001 through 2003 addendum "Code for Operation and Maintenance of Nuclear Power Plants".

5.9 NUREG-1482 rev. 1, Guidelines for Inservice Testing at Nuclear Power Plants

5.10 OI-692 "Turbine Steam Seal System" Operating Instructions

5.11 General Electric Service Information Letter 477

5.12 NRC Information Notice 85-84 "Inadequate Inservice Testing of Main Steam Isolation Valves"

5.13 NRC Generic Letter 89-16 "Installation of a Hardened Wetwell Vent"

5.14 10CFR50 Appendix J

6.0 AUGMENTED REQUIREMENTS RELOCATED FROM OTHER PROGRAMS

The following items represent IST Program augmented testing. This testing will be performed as described, and will not be subject to the rules and requirements of the Code, unless the testing is also used to fulfill a Code requirement.

Requirement	Discussion
Each Emergency Service Water pump shall deliver at least that flow determined from UFSAR for the river water temperature of 95 Degrees F.	The requirement to verify UFSAR flow capability based on river water temperature of 95 Degrees F. for the ESW pumps will augment the Code required testing discussed in the IST Program.
Operating Pump Flow Rate Demonstration. Each operating River Water Supply System Pump shall deliver at least 6000 gpm.	This requirement for a daily confirmation that each operating river water pump can deliver 6000 gpm will augment the Code required testing described previously in the IST Program.
Each river water supply system pump shall deliver at least 6000 gpm at TDH of 46 ft. or more.	A quarterly verification that each operable river water pump can supply 6000 gpm at 46 ft head will augment the Code required testing describe previously in the IST Program
Flow Rate Test-Each RHR service water pump shall deliver at least 2040 gpm at a TDH of 610 ft. or more.	A quarterly verification that each operable RHRSW pump can deliver a 2040 gpm at TDH of 610 ft or more will augment the Code required testing described previously in the IST Program.
The ADS Nitrogen Accumulator check valves will be leak tested for a maximum acceptable system leakage rate of 25 scc/minute.	The ADS nitrogen accumulator check valves seat leakage will be tested to verify it is below 25 scc/minute. This acceptance criteria will augment the Code required testing previously described in the IST Program.

7.0 TECHNICAL POSITIONS

Position Paper No. 1

Subject: ASME OM ISTC-3310 ISTC-3310 "Effect of Valve or Actuator Replacement, Repair, Replacement, and/or Maintenance on Reference Values"

Effect of Valve or Actuator Replacement, Repair, and Maintenance on seat leakage for containment isolation and pressure isolation valve (PIVs).

Position: The performance of valve maintenance requires confirmation of acceptable operation prior to declaration of operability. The purpose of post-maintenance testing is to ensure that performance parameters that can be affect by maintenance are within acceptable limits, packing adjustments are examples of maintenance that could impact stroke times or seal leakage.

Inquiries against ASME Section XI Subsection IWV-3200 (IN-91—045 and IN-92-031)) have stated that confirmation of valve stroke times or tests to verify seat leakage subsequent to packing adjustments are not necessary if the licensee establishes that these parameters are not affected. This guidance can be inferred to be applicable to ASME/ANSI OM-PART 10ASME OM ISTC.

Post-maintenance testing requirements for MOVs are contained in MD-024 for specific maintenance activities. These tests are required to be performed unless a detailed analysis supports waiving the activity. When an analysis is performed to waive post-maintenance testing for valve maintenance the System Engineer, IST Engineer and App. J Coordinator must concur with the technical evaluation. Evaluations may be performed for any power-operated valve.

A summary of all reviewed and approved evaluations is provided in Attachment 1.

References:

1) ASME/ANSI OM Part 10 (OMqa-1988) ASME OM ISTC 2001 Edition thru 2003 addenda
2) NUREG-1482
3) ASME Code Interpretation No. IN91-045
4) ASME Code Interpretation No. IN92-031

SUPPLEMENT TO IST PROGRAM

POSITION PAPER No. 1

Technical position or Evaluation No.	Valve No. or Valve Type		Evaluation Summary
A. NG-91-3503	CV-4412 CV-4415 CV-4418 CV-4420	CV-4413 CV-4416 CV-4419 CV-4421	Stroke time nor seat leakage measurements are affected if stem friction is not changed. a) Increasing the as-left torque to greater than the as-left torque of the previous testing requires verification of stroke time and seat leakage measurements. b) Increasing the as-found torque up to the as-left torque of the previous stroke timing does not require verification of these parameters.
B. NG-95-1022	CV-4412 CV-4415 CV-4418 CV-4420	CV-4413 CV-4416 CV-4419 CV-4421	Seat leakage testing of MSIVs subsequent to actuator replacement is not required if the RAH testing performed on the replacement actuator indicates better or equal performance to the actuator being replaced (initial rebuild tests). The System Engineer is responsible for comparison of the tests. Stroke timing and position indication testing is required.
C. NG-94-4237	Motor Operated Valve		Re-establishing the packing gland loading to the valve noted at the MOVs most recent stroke time, seat leakage, and switch setting verification does not affect these performance parameters. Live-loading of the MOVs packing gland provides a relatively constant gland loading during the service life of the packing. Therefore, the above conclusions also apply to valves with live-loaded packing glands.

Technical position or Evaluation No.	Valve No. or Valve Type	Evaluation Summary
		When repacking a valve is performed, a valve specific analysis per NG-94-4237 is required to address the effects of maintenance on valve performance parameters. This analysis requires approval of the System Engineer, IST Engineer, App. J Coordinator, and MOV Engineer.

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P022A	RHR SERVICE WATER PUMP	146	86A1	Vertical Centrifugal	>= 600 rpm	A	3	Pressure (Discharge)	Not Applicable	2	
								Speed	Not Applicable	1	
								Differential Pressure	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
1P022B	RHR SERVICE WATER PUMP	146	61A1	Vertical Centrifugal	>= 600 rpm	A	3	Vibration (Displacement or Velocity)	Quarterly / 2 years		
								Pressure (Discharge)	Not Applicable	2	
								Speed	Not Applicable	1	
								Differential Pressure	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P022C	RHR SERVICE WATER PUMP	146	80A1	Vertical Centrifugal	>= 600 rpm	A	3	Pressure (Discharge)	Not Applicable	2	
								Speed	Not Applicable	1	
								Differential Pressure	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
1P022D	RHR SERVICE WATER PUMP	146	56A1	Vertical Centrifugal	>= 600 rpm	A	3	Pressure (Discharge)	Not Applicable	2	
								Speed	Not Applicable	1	
								Differential Pressure	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		
								Vibration (Displacement or Velocity)	Quarterly / 2 years		

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P099A	EMERGENCY SERVICE WATER PUMP	146	73A1	Vertical Centrifugal	< 600 rpm	A	3	Flow (Rate)	Quarterly / 2 years		
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
								Differential Pressure	Quarterly / 2 years		
								Speed	Not Applicable	1	
								Pressure (Discharge)	Not Applicable	2	
1P099B	EMERGENCY SERVICE WATER PUMP	146	68A1	Vertical Centrifugal	< 600 rpm	A	3	Flow (Rate)	Quarterly / 2 years		
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
								Differential Pressure	Quarterly / 2 years		
								Pressure (Discharge)	Not Applicable	2	
								Speed	Not Applicable	1	

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P117A	RIVER WATER SUPPLY PUMP	129	74C3	Vertical Centrifugal	>= 600 rpm	A	3	Pressure (Discharge)	Not Applicable	2	
								Speed	Not Applicable	1	
								Differential Pressure	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
1P117B	RIVER WATER SUPPLY PUMP	129	47C3	Vertical Centrifugal	>= 600 rpm	A	3	Speed	Not Applicable	1	
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
								Differential Pressure	Quarterly / 2 years		
								Pressure (Discharge)	Not Applicable	2	
								Flow (Rate)	Quarterly / 2 years		

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P117C	RIVER WATER SUPPLY PUMP	129	64C3	Vertical Centrifugal	>= 600 rpm	A	3	Pressure (Discharge)	Not Applicable	2	
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		
								Speed	Not Applicable	1	
								Differential Pressure	Quarterly / 2 years		
1P117D	RIVER WATER SUPPLY PUMP	129	37C3	Vertical Centrifugal	>= 600 rpm	A	3	Pressure (Discharge)	Not Applicable	2	
								Differential Pressure	Quarterly / 2 years		
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		
								Speed	Not Applicable	1	

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P211A	CORE SPRAY PUMP	121	35C1	Vertical Centrifugal	>= 600 rpm	B	2	Flow (Rate)	Quarterly / 2 years		
								Differential Pressure	Quarterly / 2 years		
								Speed	Not Applicable	1	
								Pressure (Discharge)	Not Applicable	2	
								Vibration (Displacement or Velocity)	2 years		
1P211B	CORE SPRAY PUMP	121	49C1	Vertical Centrifugal	>= 600 rpm	B	2	Vibration (Displacement or Velocity)	2 years		
								Pressure (Discharge)	Not Applicable	2	
								Flow (Rate)	Quarterly / 2 years		
								Speed	Not Applicable	1	
								Differential Pressure	Quarterly / 2 years		

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P216	HPCI PUMP	123	24D0	Centrifugal	>= 600 rpm	B	2	Differential Pressure	Quarterly / 2 years		
								Speed	Quarterly / 2 years	1	
								Vibration (Displacement or Velocity)	2 years		
								Pressure (Discharge)	Not Applicable	2	
								Flow (Rate)	Quarterly / 2 years		
1P226	RCIC PUMP	125	47C8	Centrifugal	>= 600 rpm	B	N	Speed	Quarterly / 2 years	1	
								Pressure (Discharge)	Not Applicable	2	
								Differential Pressure	Quarterly / 2 years		
								Vibration (Displacement or Velocity)	2 years		
								Flow (Rate)	Quarterly / 2 years		

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P229A	RHR PUMP	120	42A7	Vertical Centrifugal	>= 600 rpm	A	2	Flow (Rate)	Quarterly / 2 years		
								Differential Pressure	Quarterly / 2 years		
								Speed	Not Applicable	1	
								Pressure (Discharge)	Not Applicable	2	
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
1P229B	RHR PUMP	119	68A6	Vertical Centrifugal	>= 600 rpm	A	2	Pressure (Discharge)	Not Applicable	2	
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		
								Speed	Not Applicable	1	
								Differential Pressure	Quarterly / 2 years		

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P229C	RHR PUMP	120	29A9	Vertical Centrifugal	>= 600 rpm	A	2	Pressure (Discharge)	Not Applicable	2	
								Speed	Not Applicable	1	
								Differential Pressure	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		
								Vibration (Displacement or Velocity)	Quarterly / 2 years		
1P229D	RHR PUMP	119	82A6	Vertical Centrifugal	>= 600 rpm	A	2	Differential Pressure	Quarterly / 2 years		
								Flow (Rate)	Quarterly / 2 years		
								Speed	Not Applicable	1	
								Pressure (Discharge)	Not Applicable	2	
								Vibration (Displacement or Velocity)	Quarterly / 2 years		

PUMP LIST

PUMP ID	DESCRIPTION	*P&ID*	*Coord*	*Type*	*Design (rpm)*	*Group*	*Safety Class*	*Test Type*	*Test Frequency*	*Notes*	*Relief Request*
1P230A	SBLC INJECTION PUMP	126	54C1	Postive Displacement	< 600 rpm	B	2	Flow (Rate)	Quarterly / 2 years		PR-02
								Speed	Not Applicable	1	
								Differential Pressure	Not Applicable		
								Vibration (Displacement or Velocity)	2 years		PR-01
								Pressure (Discharge)	Quarterly / 2 years	2	
1P230B	SBLC INJECTION PUMP	126	53B3	Postive Displacement	< 600 rpm	B	2	Vibration (Displacement or Velocity)	2 years		PR-01
								Differential Pressure	Not Applicable		
								Speed	Not Applicable	1	
								Flow (Rate)	Quarterly / 2 years		PR-02
								Pressure (Discharge)	Quarterly / 2 years	2	

Legends

P&ID:	Process & Instrumentation Drawing (i.e. Flow Diagram) Number.
Coord:	Flow diagram drawing coordinates for the pump. See Section 5.4 for further information on how to interpret the 4 alphanumeric characters.
rpm:	Revolution Per minute
<	Less than
>=	Greater than or equal to

Definitions

Group:	ASME O&M ISTC Group classification (A or B).
Safety Class:	ISI Classification
Test Type:	Pressure (Discharge), Speed, Vibration (Displacement or Velocity), Differential Pressure, Flow (Rate).
Relief Request:	The Column indicates any applicable Relief Requests (by Relief Request number)

Notes

1. This Pump is driven by a squirrel-cage induction motor operating at essential speed; therefore, speed measurements are not required.

2. The value of suction presure used to calculate pump differential pressure is derived indirectly from a measurement of pump submerged beneath the surface of liquid in a pit or tank.

3. This pump is located outside of the ISI-code boundaries. Testing of this pump will be performed in accordance with the Code to the extent practical. Relief requests will not be submitted for this pump if the Code requirements cannot be met.

Pump Relief Request

Relief Request Number:	PR-01		
Pump Description:	Positive Displacement Pump		
Plant System:	Standby Liquid Control (SBLC)		
Applicability:	Proposed alternative for SBLC Pump Vibration Instruments		
Code Group:	B	**ASME Class:**	2

Component No.:	1P230A, 1P230B
P&ID:	126

Function:

These are two 100% capacity positive displacement pumps designed to inject sodium pentaborate solution into the reactor at a minimum rate of 26.2 gpm as an alternate means of shutting down the reactor, independent of the Control Rod Drive System. Each pump is designed to have sufficient discharge pressure margin to be able to pump the minimum rated flow into the reactor at all operating pressures.

Test Requirement (s):

ISTB-3510(e); General, Frequency Response Range; The frequency response range of the vibration measuring transducers and their readout system shall be from one-third minimum pump shaft rotational speed to at least 1000 Hz.

Basis for Relief:

The nominal shaft rotational speed of these pumps is 242 RPM which is equivalent to approximately 4 Hz. Based on this frequency and ISTB-3510(e), the required frequency response range of instruments used for measuring pump vibration is 1.33 to 1000 Hz. Calibration of instruments to cover lower range (1.33 Hz) is impractical due to the limited number of vendors supplying such test equipment and the level of sophistication involved in calibration and cost of the equipment.

These are of a simplified reciprocating (piston) positive displacement design with rolling element bearings, Model Number TD-60, manufactured by Union Pump Corporation. Union Pump Corp. has performed an evaluation of the pump design and has determined that there are no probable sub-synchronous failure modes associated with these pumps under normal operating conditions. Furthermore, there are no known failure mechanisms that would be revealed by vibration at lower related frequency of 4 HZ; thus no useful information is obtained at or below this frequency nor will indication of pump degradation be masked by instrumentation unable to collect data below this frequency to within tolerance prescribed by ISTB.

Pump Relief Request

Relief Request Number:	PR-01		
Pump Description:	Positive Displacement Pump		
Plant System:	Standby Liquid Control (SBLC)		
Applicability:	Proposed alternative for SBLC Pump Vibration Instruments		
Code Group:	B	**ASME Class:**	2

Sub-synchronous peaks are typically associated with sleeved bearing components. These frequencies detect shaft to sleeve rub and oil whirl. The ISTB requirement for detection to 1/3 turning speed is to detect these failure mode types. However, this Union Pump design utilizes roller bearings which do not have the same failure modes. For a roller bearing design, typical failure is ball or race related and occurs at frequencies greater than turning speed, classified as non-synchronous. As a roller bearing fails, a corresponding change in one times turning speed and harmonics indicating excessive looseness and random impacting, not sub-synchronous frequencies, will be seen.

Per the manufacturer, there is no internal gearing in this pump model, therefore the input shaft RPM is also the crank RPM. The instrumentation for measuring vibration must be adequate for accurately assimilating information at this RPM. The significant modes of vibration with respect to equipment monitoring are as follows:

1-Times Crankshaft Speed - An increase in vibration at this frequency may be an indication of rubbing between a single crankshaft cheek and rod end, cavitation at a single valve, or coupling misalignment.

2-Times Crankshaft Speed - An increase in vibration at this frequency may be an indication of looseness at a single rod bearing or crosshead pin, a loose valve seat in the fluid cylinder, a loose plunger/crosshead stub connection, or coupling misalignment.

Other Multiples of Shaft Speed or Non-synchronous peaks - An increase in vibration at other frequencies may be indications of cavitation at several valves, looseness at multiple locations, or bearing degradation.

Per the manufacturer, all failure modes that cause vibration in the pump will be at multiples greater than the crank RPM.

Based on the foregoing discussion, it is clear that monitoring pump vibration within the frequency range of 4 to 1000 Hz will provide adequate information for evaluating pump condition and ensuring continued reliability with respect to the pumps' function. Relief is requested pursuant to 10CFR 50.55a(a)(3)(i); the alternative testing will provide an acceptable level of quality and safety.

Pump Relief Request

Relief Request Number:	PR-01		
Pump Description:	Positive Displacement Pump		
Plant System:	Standby Liquid Control (SBLC)		
Applicability:	Proposed alternative for SBLC Pump Vibration Instruments		
Code Group:	B	**ASME Class:**	2

Test Alternative/Frequency:

Vibration levels of the Standby Liquid Control Pumps will be measured in accordance with the applicable portions of ISTB-3500 with the exception of the lower frequency response limit for the instrumentation ISTB-3510(e). In this case the lower limit of the vibration measuring equipment will be 4.00 Hz.

In addition to the normal SBLC pump IST vibration peak overall result, DAEC engineering department personnel will routinely perform post spectral/waveform analysis of the vibration data to ensure no adverse trends toward mechanical degradation go undetected. This lower limit restriction will not affect the operational readiness of the Standby Liquid Control Pumps, and the OM Code maximum allowable vibration limits for the required action range are being maintained.

The proposed alternative will result in corrective action on a pump prior to the occurrence of significant degradation.

Note: *This proposed alternative was approved (as PR-02) in the 4th IST Program Interval per Office of NRR - Safety Evaluation dated July 12, 2006, in accordance with 10 CFR 50.55a(a)(3)(i).*

Pump Relief Request

Relief Request Number:	PR-02		
Pump Description:	Positive Displacement Pump		
Plant System:	Standby Liquid Control (SBLC)		
Applicability:	Proposed alternative for SBLC Pump Flow Measurement		
Code Group:	B	**ASME Class:**	2

Component No.:	1P230A, 1P230B
P&ID:	126

Function:

These are two 100% capacity positive displacement pumps designed to inject sodium pentaborate solution into the reactor at a minimum rate of 26.2 gpm as an alternate means of shutting down the reactor, independent of the Control Rod Drive System. Each pump is designed to have sufficient discharge pressure margin to be able to pump the minimum rated flow into the reactor at all operating pressures.

Test Requirement (s):

ISTB-3550 Flow Rate; When measuring flow rate, a rate or quantity meter shall be installed in the pump circuit.
ISTB-5300 Positive Displacement Pumps, *(a)Duration of Tests, (1)For the comprehensive test; after pump conditions are as stable as the system permits, each pump shall be run at least 2 min. At the end of this time at least one measurement or determination of each of the quantities required by Table ISTB-3000-1 shall be made and recorded.*

Basis for Relief:

The positive displacement SBLC pumps are designed to pump a constant flow rate regardless of system resistance. The SBLC system was not designed with a flow meter in the flow loop. The system was designed with a test tank, where the change in level can be measured over time and a flow rate calculated. As part of the modifications made to the SBLC system for the ATWS Rule (10 CFR 50.62), the DAEC installed instrumentation to measure the SBLC flow. The ultrasonic flow meter that was installed, however, was not intended to meet the accuracy requirements of the ASME OM Code, and has not proven to be capable of meeting Code accuracy requirements. The accuracy performance of the flow meter is attributed to the lack of adequate straight length of pipe to establish fully developed flow.

In March, 2006, portable ultra-sonic flow meters were installed on the common SBLC pump discharge piping to determine the practicality of using ultra-sonic flow meters to measure flow per ASME OM Code requirements. The flow meter transducers were installed at three different locations on the discharge piping. A vendor representative was on-site to facilitate proper installation and setup of the transducers and flow meters.

Pump Relief Request

Relief Request Number:	PR-02		
Pump Description:	Positive Displacement Pump		
Plant System:	Standby Liquid Control (SBLC)		
Applicability:	Proposed alternative for SBLC Pump Flow Measurement		
Code Group:	B	**ASME Class:**	2

Each location resulted in significantly different measured flow rates compared to the other locations and the test tank level method.

NUREG 1482, Revision 1 recognizes that plants may have difficulties with flow instrumentation. In Section 2.5.1, Justifications for Relief, the NUREG states that compliance with the Code may be impractical because of design limitations. "Imposition of the Code requirements would require significant system redesign and modifications. For example, a flow meter does not meet the accuracy requirements of ISTB-3510 and Table ISTB-3510-1 because the present system configuration does not have a straight section of pipe of sufficient length in which to measure flow accurately ... ." In that respect, flow measurement cannot be achieved to the required accuracy using a flow meter. In addition, the SBLC test tank is not large enough to provide two minutes of flow prior to recording flow data. As discussed in NUREG 1482, Revision 1, Section 5.5.2, requiring installation of a flow meter to measure the flow rate, and to guarantee the test tank size, such that the pump flow rate will stabilize in 2 minutes before recording data would be a burden because of the design and installation changes to be made to the existing system.

Relief is requested pursuant to 10CFR 50.55a(a)(3)(i); the alternative testing will provide an acceptable level of quality and safety.

Test Alternative/Frequency:

As a proposed alternative, Flow rate for the SBLC pumps will be determined by measuring the change in test tank level over time. The pump will be started with suction from the test tank and will discharge to storage barrels. The test tank level will be approximately the same at the beginning of each test to ensure repeatability. After at least two minutes of pump operation and a change of tank level of at least 20 inches, the time and level are recorded and the pump stopped.

The change in level over the measured time will be converted to flow rate by the following formula:

$$Q\ (GPM) = \Psi \Delta L\ (inch) / \Delta t\ (Second)$$

Where: Q *is flow rate*
Ψ *is a constant which reflects tank dimensions and unit conversions*
ΔL *is the measured change in level in the tank in time* Δt.

Pump Relief Request

Relief Request Number:	PR-02		
Pump Description:	Positive Displacement Pump		
Plant System:	Standby Liquid Control (SBLC)		
Applicability:	Proposed alternative for SBLC Pump Flow Measurement		
Code Group:	B	**ASME Class:**	2

Pump discharge pressure will match system pressure up to the shutoff head of the positive displacement pump. Because of the characteristics of a positive displacement pump, there should be virtually no change in pump discharge flow rate as a result of the rising level in the temporary storage barrels. Therefore, increasing level will not have an impact on test results. By having approximately the same level in the tank at the beginning of each test, repeatable results can be achieved.

Per NUREG 1482, Revision 1, Section 5.5.2, Use of Tank Level to Calculate Flow Rate for Positive Displacement Pumps, when "flow meters are not installed in the flow loop of a system with a positive displacement pump, it is impractical to directly measure flow rate for the pump. The staff has determined that, if the licensee uses the tank level to calculate the flow rate as described in Subsection ISTB-3550, the implementing procedure must include the calculation method and any test conditions needed to achieve the required accuracy. If the meter does not directly indicate the flow rate, the record of the test shall identify the method used to reduce the flow data."

The test tank level will be measured in accordance with the accuracy requirements of OM Table ISTB-3510-1. The calculation method and test conditions required to achieve this accuracy are documented in the implementing procedures.

Note:
The proposed alternative was approved (as PR-03) in the 4Th DAEC IST Program Interval per Safety Evaluation by the Office of NRR, dated March 14, 2007, in accordance with 10 CFR 50.55a(f)(5)(iii). There is also industry precedence with Monticello Nuclear Generating Plant (reference Docket No. 50-263, Relief Request PR-01, authorized by letter from L. Raghavan (NRC) to D. Wilson (NMC), dated July 17, 2003 (TAC NO. MB 6807).

VALVE LIST

Description: *Main Steam Turbine Stop and Control Valves*

Drawing: *103* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV1064	MAIN STEAM DRAIN ISOLATION TO CONDENSER	45F4	2	B	2	GL	AO	C/FO	A	O	BTO	CS		DTJ-01	
											FST	CS		DTJ-01	
											PIT	2Y			
MO1043	MAIN STEAM DRAIN LINE ISOLATION	86E0	2	B	3	GL	MO	C	A	O	BTO	CS		DTJ-01	
											PIT	2Y			
MO1044	DRYWELL STEAM LINE DRAINS CONDENSER ISOLATION	83A4	Y	B	3	GL	MO	C	A	O	BTO	CS		DTJ-01	3
											PIT	2Y			3
MO1054	MSR 1E-18B 2ND STAGE REHEAT STEAM SUPPLY	81F9	2	B	6	GA	MO	O	A	C	BTC	CS		DTJ-02	
											PIT	2Y			
MO1055	MSR 1E-18A 2ND STAGE REHEAT STEAM SUPPLY	83F7	2	B	6	GA	MO	O	A	C	BTC	CS		DTJ-02	
											PIT	2Y			
MO1362A	MSL"A" SUPPLY TO OFFGAS AND SJAE	71E9	2	B	3	GA	MO	O	A	C	BTC	CS		DTJ-03	
											PIT	2Y			

VALVE LIST

Description: *Main Steam Turbine Stop and Control Valves*

Drawing: *103* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO1362B	MSL"B" SUPPLY TO OFFGAS AND SJAE	70E5	2	B	3	GA	MO	O	A	C	BTC	CS		DTJ-03	
											PIT	2Y			

VALVE LIST

Description: *Turbine Steam Seals*

Drawing: *104* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO1169	TURBINE STEAM SEAL MAIN STEAM SUPPLY ISOLATION	69C1	2	B	3	GA	MO	O	A	C	BTC	CS		DTJ-04	
											PIT	2Y			
MO1170	TURBINE STEAM SEAL PRESS REGULATOR BYPASS VALVE	72C2	2	B	3	GA	MO	C	A	C	BTC	CS		DTJ-04	
											PIT	2Y			

VALVE LIST

Description: *Condensate and Demineralized Water System*

Drawing: *109* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V09-0065	DEMIN WATER SUPPLY TO DRYWELL	33E9	2	A	1	GA	M	LC	P	C	AT-1	AJ			
V09-0111	DRYWELL DEMIN WATER SUPPLY HDR ISOLATION	27E9	2	A	1	GA	M	LC	P	C	AT-1	AJ			

VALVE LIST

Description: *Reactor Building Cooling Water System*

Drawing: 112 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO4841A	DRYWELL RBCCW RETURN HEADER ISOLATION	38D6	2	A	4	GA	MO	O	A	C	AT-1	AJ			
											BTC	CS		DTJ-05	
											PIT	2Y			
MO4841B	DRYWELL RBCCW SUPPLY HEADER ISOLATION	38D7	2	A	4	GA	MO	O	A	C	AT-1	AJ			
											BTC	CS		DTJ-05	
											PIT	2Y			
PSV4842	DW EQUIP DRAIN SUMP HX 1E-34 TUBE SIDE RELIEF	24E5	N	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16,3

VALVE LIST

Description: *RHR Service Water & Emergency Service Water System*

Drawing: 113 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV1956A	CB CHILLER 1V-CH-1A DISCH TO ESW ISOLATION	31E9	3	B	4	GA	AO	C/FO	A	O	BTO	Q			12
											FST	Q			1
CV1956B	CB CHILLER 1V-CH-1B DISCH TO ESW ISOLATION	17E9	3	B	4	GA	AO	C/FO	A	O	BTO	Q			12
											FST	Q			1
CV2080	SBDG 1G-31 COOLER 1E-53A ESW SUPPLY ISOLATION	57F3	3	B	6	GL	AO	C/FO	A	O	BTO	Q			12
											FST	Q			1
CV2081	SBDG 1G-21 COOLER 1E-53B ESW SUPPLY ISOLATION	59E7	3	B	6	GL	AO	C/FO	A	O	BTO	Q			12
											FST	Q			1
MO1942	RHR SERVICE WATER CROSS- TIE TO RHR SYSTEM	85D9	2	B	12	GA	MO	C	P	C	PIT	2Y			
MO1943A	RHRSW PUMPS 1P-22A/C CROSS-TIE TO RHR	85E9	3	B	12	GA	MO	C/KL	P	C	PIT	2Y			
MO1943B	RHRSW PUMPS 1P-22B/D CROSS-TIE TO RHR	79F1	3	B	12	GA	MO	C/KL	P	C	PIT	2Y			

VALVE LIST

Description: *RHR Service Water & Emergency Service Water System*

Drawing: 113 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO1947	RHR HX 1E-201B SERVICE WATER OUTLET ISOLATION	69C0	3	B	16	GA	MO	C	A	O	BTO	Q			
											PIT	2Y			
MO1998A	ESW/RHRSW A LOOPS RETURN TO COOLING TOWERS	71A8	3	B	16	BTF	MO	O	P	O	PIT	2Y			
MO1998B	ESW/RHRSW B LOOPS RETURN TO COOLING TOWERS	71B4	3	B	16	BTF	MO	O	P	O	PIT	2Y			
MO2039A	CB CHILLER 1V-CH-1A WELL WATER SUPPLY ISOLATION	42F6	3	B	4	GA	MO	O	A	C	BTC	Q			
											PIT	2Y			
MO2039B	CB CHILLER 1V-CH-1B WELL WATER SUPPLY ISOLATION	27F6	3	B	4	GA	MO	O	A	C	BTC	Q			
											PIT	2Y			
MO2046	RHR HX 1E-201A SERVICE WATER OUTLET ISOLATION	57C3	3	B	16	GA	MO	C	A	O	BTO	Q			
											PIT	2Y			
MO2077	CHILLER 1V-CH-1A DISCH TO WELL WTR ISOLATION	33F6	3	B	4	GA	MO	O	A	C	BTC	Q			
											PIT	2Y			

VALVE LIST

Description: *RHR Service Water & Emergency Service Water System*

Drawing: 113 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2078	CHILLER 1V-CH-1B DISCH TO WELL WTR ISOLATION	18F6	3	B	4	GA	MO	O	A	C	BTC PIT	Q 2Y			
PSV1988	RHR HX 1E-201B TUBE SIDE (RHRSW) PRESSURE RELIE	73C9	3	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16
PSV2068	RHR HX 1E-201A TUBE SIDE (RHRSW) PRESS RELIEF	62D2	3	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16
V13-0036	1V-CH-1B ESW SUPPLY HEADER CHECK VALVE	29F1	3	C	4	CK	SA	SYS	A	O	CM	CM			
V13-0051	1V-CH-1A ESW SUPPLY HEADER CHECK VALVE	44F1	3	C	4	CK	SA	SYS	A	O	CM	CM			
V13-0121	AIR COMP 1K-4/1K-3 'B' ESW/WW INLET CHECK VALVE	27F1	3	C	1	CK	SA	SYS	A	O	CM	CM			
V13-0126	AIR COMP 1K-3/1K-4 'A' ESW/WW INLET CHECK VALVE	42F1	3	C	1	CK	SA	SYS	A	O	CM	CM			

VALVE LIST

Description: *Nuclear Boiler System*

Drawing: 114 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4412	"A" MAIN STEAM LINE INBOARD ISOLATION	32E0	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	CS		DTJ-06	
											FST	CS/R		DTJ-07	
											PIT	2Y			
CV4413	"A" MAIN STEAM LINE OUTBOARD ISOLATION	25E0	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	CS		DTJ-06	
											FST	CS/R		DTJ-07	
											PIT	2Y			
CV4415	"B" MAIN STEAM LINE INBOARD ISOLATION	74C1	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	CS		DTJ-06	
											FST	CS/R		DTJ-07	
											PIT	2Y			
CV4416	"B" MAIN STEAM LINE OUTBOARD ISOLATION	82C1	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	CS		DTJ-06	
											FST	CS/R		DTJ-07	
											PIT	2Y			

VALVE LIST

Description: *Nuclear Boiler System*

Drawing: 114 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4418	"C" MAIN STEAM LINE INBOARD ISOLATION	31C2	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	CS		DTJ-06	
											FST	CS/R		DTJ-07	
											PIT	2Y			
CV4419	"C" MAIN STEAM LINE OUTBOARD ISOLATION	24C2	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	CS		DTJ-06	
											FST	CS/R		DTJ-07	
											PIT	2Y			
CV4420	"D" MAIN STEAM LINE INBOARD ISOLATION	74D8	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	CS		DTJ-06	
											FST	CS/R		DTJ-07	
											PIT	2Y			
CV4421	"D" MAIN STEAM LINE OUTBOARD ISOLATION	82D8	1	A	20	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	CS		DTJ-06	
											FST	CS/R		DTJ-07	
											PIT	2Y			

VALVE LIST

Description: *Nuclear Boiler System*

Drawing: 114 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4428	REACTOR VESSEL HEAD VENT ISOLATION	64F2	1	B	0.5	GL	AO	C	P	C	PIT	2Y			
CV4429	REACTOR VESSEL HEAD VENT ISOLATION	71F2	1	B	0.5	GL	AO	C	P	C	PIT	2Y			
MO4423	MAIN STEAM LINE DRAIN INBOARD ISOLATION	37A8	1	A	3	GA	MO	O	A	C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			
MO4424	MAIN STEAM LINE DRAIN OUTBOARD ISOLATION	34A8	1	A	3	GA	MO	O	A	C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			
MO4441	RX FEEDWATER LOOP A INLET STOP CHECK	34A5	1	A/C	16	SCK	MO	O/KL	A	C	AT-1	AJ			6
											BTC	CS		DTJ-08	
											CT-CC	R		DTJ-08	
											CT-CO	R*		DTJ-08	4
											PIT	2Y			

VALVE LIST

Description: *Nuclear Boiler System*

Drawing: 114 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO4442	RX FEEDWATER LOOP B INLET STOP CHECK	72B1	1	A/C	16	SCK	MO	O/KL	A	C	AT-1	AJ			6
											BTC	CS		DTJ-08	
											CT-CC	R		DTJ-08	
											CT-CO	R*		DTJ-08	4
											PIT	2Y			
PSV4400	MAIN STEAM LINE A ADS RELIEF VALVE	47E1	1	B/C	6	RV	SAP	C/KL	A	O/C	BTO	6Y	VR-02		18
											BTX	2Y	VR-02		
											CT-SP	6Y	VR-02		
PSV4401	MAIN STEAM LINE A LLS RELIEF VALVE	42E1	1	B/C	6	RV	SAP	C/KL	A	O/C	BTO	6Y	VR-02		18
											BTX	2Y	VR-02		
											CT-SP	6Y	VR-02		
PSV4402	MAIN STEAM LINE B ADS RELIEF VALVE	62C2	1	B/C	6	RV	SAP	C/KL	A	O/C	BTO	6Y	VR-02		18
											BTX	2Y	VR02		
											CT-SP	6Y	VR-02		
PSV4403	MAIN STEAM LINE B SAFETY RELIEF VALVE	66C2	1	C	6	SV	SA	C	A	O/C	CT-SP	5Y			

VALVE LIST

Description: *Nuclear Boiler System*

Drawing: 114 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
PSV4404	MAIN STEAM LINE C SAFETY RELIEF VALVE	47C3	1	C	6	SV	SA	C	A	O/C	CT-SP	5Y			
PSV4405	MAIN STEAM LINE C ADS RELIEF VALVE	43C4	1	B/C	6	RV	SAP	C/KL	A	O/C	BTO	6Y	VR-02		18
											BTX	2Y	VR-02		
											CT-SP	6Y	VR-02		
PSV4406	MAIN STEAM LINE D ADS RELIEF VALVE	62E0	1	B/C	6	RV	SAP	C/KL	A	O/C	BTO	6Y	VR-02		18
											BTX	2Y	VR-02		
											CT-SP	6Y	VR-02		
PSV4407	MAIN STEAM LINE D LLS RELIEF VALVE	67E0	1	B/C	6	RV	SAP	C/KL	A	O/C	BTO	6Y	VR-02		18
											BTX	2Y	VR-02		
											CT-SP	6Y	VR-02		
PSV4439A	SRV PSV-4400 RELIEF LINE VACUUM BREAKER	47B0	3	C	6	RV	SA	C	A	O/C	CT-VSP	2Y			
PSV4439B	SRV PSV-4401 RELIEF LINE VACUUM BREAKER	47A9	3	C	6	RV	SA	C	A	O/C	CT-VSP	2Y			
PSV4439C	SRV PSV-4402 RELIEF LINE VACUUM BREAKER	51A7	3	C	6	RV	SA	C	A	O/C	CT-VSP	2Y			

VALVE LIST

Description: *Nuclear Boiler System*

Drawing: *114* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
PSV4439D	SRV PSV-4405 RELIEF LINE VACUUM BREAKER	47A7	3	C	6	RV	SA	C	A	O/C	CT-VSP	2Y			
PSV4439E	SRV PSV-4407 RELIEF LINE VACUUM BREAKER	50A7	3	C	6	RV	SA	C	A	O/C	CT-VSP	2Y			
PSV4439F	SRV PSV-4406 RELIEF LINE VACUUM BREAKER	49A7	3	C	6	RV	SA	C	A	O/C	CT-VSP	2Y			
V14-0001	FEEDWATER CHECK VALVE	67B1	1	A/C	16	CK	SA	SYS	A	O/C	AT-1	AJ			
											CT-CC	R		DTJ-08	
											CT-CO	R*		DTJ-08	4
V14-0003	FEEDWATER CHECK VALVE	41B1	1	A/C	16	CK	SA	SYS	A	O/C	AT-1	AJ			
											CT-CC	R		DTJ-08	
											CT-CO	R*		DTJ-08	4
V14-0009	VALVE,CK,N2 SUPPLY TO SV4406 AND 7	60E7	Y	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-09	2,3
											CT-CO	R*		DTJ-09	2,3,4

VALVE LIST

Description: *Nuclear Boiler System*

Drawing: *114* ***Sheet #:*** *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V14-0014	VALVE,CK,N2 SUPPLY TO SV4402	70C9	Y	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-09	2,3
											CT-CO	R*		DTJ-09	2,3,4
V14-0015	VALVE,CK,N2 SUPPLY TO SV4400 & 01	48E9	Y	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-09	2,3
											CT-CO	R*		DTJ-09	2,3,4
V14-0016	VALVE,CK,N2 SUPPLY TO SV4405	39C7	Y	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-09	2,3
											CT-CO	R*		DTJ-09	2,3,4
V14-0032	CHECK VALVE FOR N2 SUPPLY TO ACCUM 1R002A	43F8	N	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-10	2,3
											CT-CO	R*		DTJ-10	2,3,4
V14-0100	CHECK VALVE FOR N2 SUPPLY TO ACCUM 1R001B	29E9	N	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-10	2,3
											CT-CO	R*		DTJ-10	2,3,4

VALVE LIST

Description: *Nuclear Boiler System*

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V14-0104	VALVE,CHK, NITROGEN TO ACCUM 1R001A, MSIV CV441	69F8	N	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-10	2,3
											CT-CO	R*		DTJ-10	2,3,4
V14-0108	VALVE,CHK, NITROGEN TO ACCUM 1R002B, MSIV CV441	43F8	N	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-10	2,3
											CT-CO	R*		DTJ-10	2,3,4
V14-0112	VALVE,CHK, NITROGEN TO ACCUM 1R001C, MSIV CV441	69F8	N	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-10	2,3
											CT-CO	R*		DTJ-10	2,3,4
V14-0116	VALVE,CHK, NITROGEN TO ACCUM 1R002C, MSIV CV441	43F8	N	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-10	2,3
											CT-CO	R*		DTJ-10	2,3,4
V14-0120	VALVE,CHK, NITROGEN TO ACCUM 1R001D, MSIV CV442	69F8	N	A/C	2	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-10	2,3
											CT-CO	R*		DTJ-10	2,3,4

VALVE LIST

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V14-0124	VALVE,CHK, NITROGEN TO ACCUM 1R002D, MSIV CV442	43F8	N	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			2,3
											CT-CC	R		DTJ-10	2,3
											CT-CO	R*		DTJ-10	2,3,4
XFV4453A	MN STM LINE A INST LINE EXCESS FLOW CHECK VALVE	30D5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4453B	MN STM LINE A INST LINE EXCESS FLOW CHECK VALVE	30D1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4454A	PDIS-4432C/D LP LINE ISOLATION (MSL A FLOW)	31D4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4454B	PDIS-4432C/D HP LINE ISOLATION (MSL A FLOW)	31D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4455A	PDIS-4436C/D LP LINE ISOLATION (MSL C FLOW)	31B8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4455B	PDIS-4436C/D HP LINE ISOLATION (MSL C FLOW)	30B3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4456A	MN STM LINE C INST LINE EXCESS FLOW CHECK VALVE	32B7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Nuclear Boiler System*

Drawing: 114 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4456B	MN STM LINE C INST LINE EXCESS FLOW CHECK VALVE	31B4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4457A	MN STM LINE D INST LINE EXCESS FLOW CHECK VALVE	76D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4457B	MN STM LINE D INST LINE EXCESS FLOW CHECK VALVE	77D0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4458A	PDIS-4438C/D LP LINE ISOLATION (MSL D FLOW)	77D4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Nuclear Boiler System*

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4458B	PDIS-4438C/D HP LINE ISOLATION (MSL D FLOW)	76D1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4459A	PDIS-4434A/B LP LINE ISOLATION (MSL B FLOW)	77B7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4459B	PDIS-4434A/B HP LINE ISOLATION (MSL B FLOW)	77B3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4460A	PDIS-4434C/D LP LINE ISOLATION (MSL B FLOW)	76B6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4460B	PDIS-4434C/D HP LINE ISOLATION (MSL B FLOW)														
		76B4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
SV4594A	LOOP A JET PUMP SAMPLE LINE INBOARD ISOLATION	39C4	1	A	1	GL	SO	O/C/FC	A	C	AT-1	AJ			
											PIT	2Y			
SV4594B	LOOP B JET PUMP SAMPLE LINE INBOARD ISOLATION	67C3	1	A	1	GL	SO	O/C/FC	A	C	AT-1	AJ			
											PIT	2Y			
SV4595A	LOOP A JET PUMP SAMPLE LINE OUTBOARD ISOLATION	36C4	1	A	1	GL	SO	O/C/FC	A	C	AT-1	AJ			
											PIT	2Y			
SV4595B	LOOP B JET PUMP SAMPLE LINE OUTBOARD ISOLATION	70C3	1	A	1	GL	SO	O/C/FC	A	C	AT-1	AJ			
											PIT	2Y			
XFV4501A	JET PUMP 9 FLOW LP CAL LINE ISOLATION	40D2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Vessel Instrumentation*

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4501B	JET PUMP 13 FLOW LP CAL ISOLATION	40D1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4503	JET PUMP 10 FLOW LP LINE ISOLATION (TO FT-4503)	40D0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4504	JET PUMP 2 FLOW LP LINE ISOLATION (TO FT-4504)	66D0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4505	VALVE,CHK,FLOW,EXCESS,RX RECIRC	24B8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4506	JET PUMP 3 FLOW LP LINE ISOLATION (TO FT-4506)	24B8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4507	JET PUMP 12 FLOW LP LINE ISOLATION (TO FT-4507)	24B7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4508	JET PUMP 4 FLOW LP LINE ISOLATION (TO FT-4508)	24B7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4510A	JET PUMP 5 FLOW CAL LP LINE ISOLATION	66D2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: ***Reactor Vessel Instrumentation***

Drawing: *115* ***Sheet #:*** *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4510B	JET PUMP 1 FLOW CAL LP LINE ISOLATION	67D1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4511	JET PUMP 14 FLOW LP LINE ISOLATION (TO FT-4511)	24B6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4512	JET PUMP 6 FLOW LP LINE ISOLATION (TO FT-4512)	24B5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4513	JET PUMP 15 FLOW LP LINE ISOLATION (TO FT-4513)	24B5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

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Drawing: *115* ***Sheet #:*** *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4514	JET PUMP 7 FLOW LP LINE ISOLATION (TO FT-4514)	24B4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4515	JET PUMP 16 FLOW LP LINE ISOLATION (TO FT-4515)	24B5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4516	JET PUMP 8 FLOW LP LINE ISOLATION (TO FT-4516)	24B3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4518	JET PUMP 1 FLOW HP CAL LINE ISOLATION	67C5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4519	JET PUMP 13 FLOW HP CAL ISOLATION	38C5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4528	PRESS ABOVE CORE PLATE SENSING LINE ISOLATION	66C4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4562	RX WTR LEVEL NR VAR LEG SENSING LINE ISOL	40D7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4578	RX WTR LEVEL WR FLOODUP REF LEG SENSING LINE	66E8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

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VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4579	RX PRESS/LEVEL WR YARWAY REF LEG SENSING LINE	66E5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4580	RX WTR LEVEL WR YARWAY VAR LEG SENSING LINE	66E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4581	RX WTR LEVEL NR REF LEG SENSING LINE ISOL	66E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4582	RX LEVEL NR VAR LEG & FLOODUP VAR LEG LINE	66D6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Vessel Instrumentation*

Drawing: 115 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4583	RX PRESSURE SENSING LINE ISOLATION	66D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4584	JET PUMP 5 FLOW HP CAL LINE ISOLATION	66C6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4585	PRESS BELOW CORE PLATE SENSING LINE ISOLATION	66C3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4586	RX WTR LEVEL WR YARWAY REF LEG SENSING LINE	40E5	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Vessel Instrumentation*

Drawing: 115 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4587	RX WTR LEVEL WR YARWAY VAR LEG SENSING LINE	40E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4588	PS-4566\4588 SENSING LINE ISOL (RX PRESS)	40E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4589	RX WTR LEVEL NR REF LEG SENSING LINE ISOL	40D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4590	JET PUMP 9 FLOW HP LINE ISOLATION	40C6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Vessel Instrumentation*

Drawing: 115 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4591	PRESS BELOW CORE PLATE SENSING LINE ISOLATION	40C4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Recirculation System*

Drawing: 116 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4639	RECIRC SAMPLE LINE INBOARD ISOLATION	68E1	1	A	0.75	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4640	RX RECIRC SYSTEM SAMPLE LINE OUTBOARD ISOLATION	70E2	1	A	0.75	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
MO4627	RX RECIRC PUMP 1P-201A DISCHARGE ISOLATION	27B8	1	B	22	GA	MO	O	A	C	BTC	CS		DTJ-11	
											PIT	2Y			
MO4628	RX RECIRC PUMP 1P-201B DISCHARGE ISOLATION	86B8	1	B	22	GA	MO	O	A	C	BTC	CS		DTJ-11	
											PIT	2Y			

VALVE LIST

Description: *Reactor Recirculation System*

Drawing: 116 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4607	RECIRC PP A SEAL 1 PRESS (PT-4607/PI-4609 ISOL)	56A4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4608	RECIRC PP B SEAL 1 PRESS (PT-4608/PI-4610 ISOL)	57A4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4611	RECIRC PP A SEAL 2 PRESS (PT-4611/PI-4613 ISOL)	56A3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4612	RECIRC PP B SEAL 2 PRESS (PT-4612/PI-4614 ISOL)	57A4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Recirculation System*

Drawing: 116 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4637	RECIRC PP B SUCT PRESS (PS-4637 ISOLATION)	66D7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4638	RECIRC PP B SUCT PRESS (PS-4638 ISOLATION)	66D3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4641A	PDIS-4641 SENSING LINE FROM JET PUMP 1/2 RISER	71F4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4641B	PDIS-4641 SENSING LINE FROM JET PP 15/16 RISER	41F7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Recirculation System*

Drawing: 116 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4642A	PDIS-4642 SENSING LINE FROM JET PUMP 3/4 RISER	71F1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4642B	PDIS-4642 SENSING LINE FROM JET PP 13/14 RISER	41F3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4643A	PDIS-4643 SENSING LINE FROM JET PUMP 5/6 RISER	71F0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4643B	PDIS-4643 SENSING LINE FROM JET PP 11/12 RISER	41F0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Recirculation System*

Drawing: 116 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4644A	PDIS-4644 SENSING LINE FROM JET PUMP 7/8 RISER	71E8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4644B	PDIS-4644 SENSING LINE FROM JET PUMP 9/10 RISER	41E8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4663	FT-4631A LP LINE ISOL (1P-201A DISCH FLOW)	44E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4664	FT-4631A HP LINE ISOL (1P-201A DISCH FLOW)	45E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Recirculation System*

Drawing: 116 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4665	FT-4632C LP LINE ISOL (1P-201B DISCH FLOW)	42D2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4666	FT-4632C HP LINE ISOL (1P-201B DISCH FLOW)	47C9	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4667	FT-4631B LP LINE ISOL (1P-201A DISCH FLOW)	46E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4668	FT-4631B HP LINE ISOL (1P-201A DISCH FLOW)	48E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: ***Reactor Recirculation System***

Drawing: *116* ***Sheet #:*** *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4669	FT-4632B HP LINE ISOL (1P-201B DISCH FLOW)	43D6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4670	FT-4632B LP LINE ISOL (1P-201B DISCH FLOW)	45D6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4671	FT-4631C LP LINE ISOL (1P-201A DISCH FLOW)	43D4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4672	FT-4631C HP LINE ISOL (1P-201A DISCH FLOW)	44D2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: ***Reactor Recirculation System***

Drawing: *116* ***Sheet #:*** *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4673	FT-4632A LP LINE ISOL (1P-201B DISCH FLOW)	44E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4674	FT-4632A HP LINE ISOL (1P-201B DISCH FLOW)	45E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4675	FT-4631D LP LINE ISOL (1P-201A DISCH FLOW)	45C8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4676	FT-4631D HP LINE ISOL (1P-201A DISCH FLOW)	44C8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Recirculation System*

Drawing: 116 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4677	FT-4632D HP LINE ISOL (1P-201B DISCH FLOW)	45C6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4678	FT-4632D LP LINE ISOL (1P-201B DISCH FLOW)	43C7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4679	PDIS-4626A-D & PDT-4624 HP SENSING LINE ISOL	76A7	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4680	PDIS-4626A-D & PDT-4624 LP SENSING LINE ISOL	76A3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Recirculation System*

Drawing: 116 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV4681	PDIS-4625A-D & PDT-4623 HP SENSING LINE ISOL	37A8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV4682	PDIS-4625A-D & PDT-4623 LP SENSING LINE ISOL	37A3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Control Rod Drive Hydraulic System*

Drawing: 117 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV1804A	"A" RECIRC PUMP MINI- PURGE SUPPLY ISOLATION	62A4	1	A	0.75	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV1804B	"B" RECIRC PUMP MINI- PURGE SUPPLY ISOLATION	49A4	1	A	0.75	GL	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
V17-0052	CRD-TO-VESSEL RETURN HDR UPSTREAM CHECK VALVE	29D8	1	A/C	3	CK	SA	SYS	A	C	AT-1	AJ			
											CM	CM			
V17-0053	CRD-TO-VESSEL RETURN HDR DOWNSTREAM CHECK VALVE	25D8	1	A/C	3	CK	SA	SYS	A	C	AT-1	AJ			
											CM	CM			
V17-0083	VALVE,CHK,RX RECIRC	44A2	1	A/C	1	CK	SA	SYS	A	C	AT-1	AJ			
											CM	CM			

VALVE LIST

Description: *Control Rod Drive Hydraulic System*

Drawing: 117 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V17-0096	VALVE,CHK,RX RECIRC	67A3	1	A/C	1	CK	SA	SYS	A	C	AT-1 CM	AJ CM			

VALVE LIST

Description: *Control Rod Drive Hydraulic System*

Drawing: *118* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV1849(##-##)	SCRAM INLET VALVE	81C5	2	B	0.75	GL	AO	C	A	O	NA	NA			S4,5
CV1850(##-##)	SCRAM OUTLET VALVE	66C5	2	B	0.75	GL	AO	C	A	O	NA	NA			S4,5
CV1859A	SCRAM DISCHARGE VOLUME VENT VALVE	40F5	N	B	1	GL	AO	O/FC	A	C	BTC	Q			3
											FST	CS		DTJ-12	3
											PIT	2Y			3
CV1859B	SCRAM DISCHARGE VOLUME VENT VALVE	40F2	2	B	1	GL	AO	O/FC	A	C	BTC	Q			
											FST	CS		DTJ-12	
											PIT	2Y			
CV1867A	SCRAM DISCHARGE VOLUME DRAIN OUTBOARD ISOLATION	55C9	N	B	2	GL	AO	O/FC	A	C	BTC	Q			3
											FST	CS		DTJ-12	3
											PIT	2Y			3
CV1867B	SCRAM DISCHARGE VOLUME DRAIN INBOARD ISOLATION	55D0	2	B	2	GL	AO	O/FC	A	C	BTC	Q			
											FST	CS		DTJ-12	
											PIT	2Y			

VALVE LIST

Description: *Control Rod Drive Hydraulic System*

Drawing: *118* ***Sheet #:*** *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V18-0118(##-##)	CHECK VLV, CHARGING WTR RISER	82B3	2	A/C	0.5	CK	SA	SYS	A	C	NA	NA			S1,5
V18-0919(##-##)	CHECK VLV, COOLING WTR HDR	80D0	2	C	0.5	CK	SA	SYS	A	C	NA	NA			S2,5
V18-1453(##-##)	CHECH VLV, SCRAM DISCH RISER	64C6	2	C	0.75	CK	SA	SYS	A	O	NA	NA			S3,5

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: 119 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO1902	RHR LOOP B INBOARD DRYWELL SPRAY ISOLATION	81E9	2	A	10	GA	MO	C/KL	A	C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			
MO1903	RHR LOOP B DRYWELL SPRAY HDR OUTBOARD ISOLATION	67E9	2	B	10	GL	MO	C/KL	A	C	BTC	Q			
											PIT	2Y			
MO1904	RHR LOOP B LPCI OUTBOARD INJECTION ISOLATION	62D7	2	B	20	ANG	MO	O	A	O	BTO	Q			
											PIT	2Y			
MO1905	RHR LOOP B LPCI INBOARD INJECTION ISOLATION	67E0	1	A	20	GA	MO	C	A	O/C	AT-5	2Y			
											BTC	Q			
											BTO	Q			
											PIT	2Y			
MO1908	RHR SHUTDOWN COOLING SUCTION ISOLATION	85D8	1	A	18	GA	MO	C	P	C	AT-5	2Y			
											PIT	2Y			

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: 119 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO1909	RHR SHUTDOWN COOLING OUTBOARD SUCTION ISOL	85D5	1	A	18	GA	MO	C	P	C	AT-5	2Y			
											PIT	2Y			
MO1912	RHR PP 1P-229B S/D CLNG & FUEL POOL CLNG SUCTIO	72B8	2	B	14	GA	MO	C/KL	P	C	BTC	Q			
											PIT	2Y			
MO1913	RHR PUMP 1P-229B TORUS SUCTION ISOLATION	77B8	2	B	14	GA	MO	O/KL	P	O	BTO	Q			
											PIT	2Y			
MO1920	RHR PP 1P-229D S/D CLNG & FUEL POOL CLNG SUCTIO	84C9	2	B	14	GA	MO	C/KL	P	C	BTC	Q			
											PIT	2Y			
MO1921	RHR PUMP 1P-229D TORUS SUCTION ISOLATION	79B8	2	B	14	GA	MO	O/KL	P	O	BTO	Q			
											PIT	2Y			
MO1932	RHR LOOP B TORUS SPRAY & COOLING SUPPLY HDR ISO	57E6	2	B	12	GA	MO	C/KL	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: 119 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO1933	RHR LOOP B TORUS SPRAY HEADER ISOLATION	56E4	2	A	4	GL	MO	C	A	O/C	AT-1	AJ			
											BTC	Q			
											BTO	Q			
											PIT	2Y			
MO1934	RHR LOOP B TORUS COOLING & TEST RETURN HDR ISOL	54E0	2	B	12	GL	MO	C	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO1935	RHR PUMPS 1P-229B/D MINIMUM FLOW BYPASS	56B8	2	B	3	GA	MO	C	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO1936	RHR DRAIN TO WASTE SURGE TANK OUTBOARD ISOLATION	61D0	N	B	4	GA	MO	C	P	C	PIT	2Y			3
MO1937	RHR DRAIN TO WASTE SURGE TANK INBOARD ISOLATION	64D0	2	B	4	GA	MO	C	P	C	PIT	2Y			

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: 119 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO1939	RHR HX 1E-201B INLET THROTTLE VALVE	45C8	2	B	12	GA	MO	O	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO1940	RHR HX 1E-201B BYPASS VALVE	46D4	2	B	18	GL	MO	O	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO1941	RHR HX 1E-201B OUTLET ISOLATION	29D4	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			
MO1949A	RHR HX 1E-201B SHELL SIDE OUTBOARD VENT	42C1	2	B	1	GL	MO	C	P	C	PIT	2Y			
MO1989	RHR LOOP B TORUS SUCTION ISOLATION	77C8	2	B	24	GA	MO	O/KL	P	O	PIT	2Y			
PSV1911	RHR SHUTDOWN CLG SUCTION HEADER PRESSURE RELIEF	84D1	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
PSV1919	RHR PUMP 1P-229B SUCTION PRESSURE RELIEF	69C2	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: 119 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
PSV1927	RHR PUMP 1P-229D SUCTION PRESSURE RELIEF	88C4	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
PSV1953	RHR HX 1E-201B SHELL SIDE PRESSURE RELIEF	32C1	2	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16
PSV1975	RHR HX 1E-201B DISCHARGE HEADER PRESSURE RELIEF	38F0	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
SV1972	RHR HX 1E-201B PASS SAMP LINE INBOARD ISOLATION	22C5	2	B	1	GL	SO	C/KL	P	C	BTC	Q			
											FST	Q			
											PIT	2Y			
SV1973	RHR HX 1E-201B PASS SAMP LINE OUTBOARD ISOLATIO	17C5	N	B	1	GL	SO	C/KL	P	C	BTC	Q			
											FST	Q			
											PIT	2Y			
V19-0001	VALVE,CHK,RHR,PUMP 1P229D DISCH	78A7	2	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V19-0003	VALVE,CHK,RHR,PUMP 1P229B DISCH	53A7	2	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: 119 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V19-0014	VALVE,CHK,RHR,1P229D DISCH,BYP LINE	82A9	2	C	3	CK	SA	SYS	A	O/C	CM	CM			
V19-0016	VALVE,CHK,RHR,1P229B DISCH,BYP LINE	56A9	2	C	3	CK	SA	SYS	A	O/C	CM	CM			
V19-0020	"B" RHR LOOP KEEP FILL SUPPLY LINE STOP CHECK	64B2	2	C	1	SCK	SA	SYS/LO	A	C	CM	CM			
V19-0022	RHR/CORE FILL PUMP 1P-70 CORE SPRAY CHECK VALVE	66B5	2	C	1	CK	SA	SYS	A	C	CM	CM			
V19-0023	"B" CORE SPRAY KEEP FILL SUPPLY LINE STOP CHECK	68B5	2	C	1	SCK	SA	SYS/LO	A	C	CT-CC	Q			
											CT-CO	Q			
V19-0024	RHR FILL PUMP 1P-70 TO PUMP A,C CHECK VALVE	66B8	2	C	1	CK	SA	SYS	A	C	CM	CM			
V19-0048	RHR LOOP CROSSTIE	47E4	2	B	18	GA	M	O	P	O	ME	2Y			
											PIT	2Y			
V19-0124	"A" RHR LOOP KEEP FILL SUPPLY LINE STOP CHECK	67B7	2	C	0.75	CK	SA	SYS	A	C	CM	CM			

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: 119 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V19-0128	"A" CORE SPRAY KEEP FILL SUPPLY LINE STOP CHECK	68B3	2	C	1	SCK	SA	SYS/LO	A	C	CT-CC	Q			
											CT-CO	Q			
V19-0147	"B" LPCI SUPPLY LINE MANUAL ISOLATION	78D9	1	B	20	GA	M	O	P	O	PIT	2Y			
V19-0149	VALVE, CHECK, RHR, LPCI, INJECT LOOP B	77D8	1	A/C	20	CK	SA	SYS	A	O/C	AT-5	2Y			
											CT-CC	R		DTJ-13	
											CT-CO	R*		DTJ-13	16
V19-0195	MO-1908 BYPASS CHECK VALVE	87D8	1	A/C	0.5	CK	SA	C	A	O/C	AT-5	2Y			
											CT-CC	R		DTJ-14	
											CT-CO	R*		DTJ-14	16

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: *120* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2000	RHR LOOP A INBOARD DRYWELL SPRAY VALVE	30E9	2	A	10	GA	MO	C/KL	A	C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			
MO2001	RHR LOOP A DRYWELL SPRAY HDR OUTBAORD ISOLATION	44E9	2	B	10	GL	MO	C/KL	A	C	BTC	Q			
											PIT	2Y			
MO2003	RHR LOOP A LPCI INBOARD INJECTION ISOLATION	43D9	1	A	20	GA	MO	C	A	O/C	AT-5	2Y			
											BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2004	RHR LOOP A LPCI OUTBOARD INJECTION ISOLATION	48D6	2	B	20	ANG	MO	O	A	O	BTO	Q			
											PIT	2Y			
MO2005	RHR LOOP A TORUS SPRAY & COOLING SUPPLY HDR ISO	51E6	2	B	12	GA	MO	C/KL	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: *120* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2006	RHR LOOP A TORUS SPRAY HEADER ISOLATION	51E3	2	A	4	GL	MO	C	A	O/C	AT-1	AJ			
											BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2007	RHR LOOP A TORUS COOLING & TEST RETURN HDR ISOL	53E1	2	B	12	GL	MO	C	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2009	RHR PUMPS 1P-229A/C MINIMUM FLOW BYPASS	50B9	2	B	3	GA	MO	C	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2010	RHR LOOPS A/B CROSS-TIE HEADER ISOLATION	54C7	2	B	18	GA	MO	O/KL	P	O	BTO	Q			
											PIT	2Y			
MO2011	RHR PP 1P-229A S/D CLNG & FUEL POOL CLNG SUCTIO	39C0	2	B	14	GA	MO	C/KL	P	C	BTC	Q			
											PIT	2Y			

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: 120 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2012	RHR PUMP 1P-229A TORUS SUCTION ISOLATION	34B9	2	B	14	GA	MO	O/KL	P	O	BTO	Q			
											PIT	2Y			
MO2015	HR PUMP 1P-229C TORUS SUCTION ISOLATION	32B9	2	B	14	GA	MO	O/KL	P	O	BTO	Q			
											PIT	2Y			
MO2016	1P-229C SHUTDOWN COOLING & FUEL POOL COOLING SU	28C0	2	B	14	GA	MO	C/KL	P	C	BTC	Q			
											PIT	2Y			
MO2029	RHR HX 1E-201A INLET THROTTLE VALVE	61C8	2	B	12	GA	MO	O/KL	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2030	RHR HX 1E-201A BYPASS VALVE	60D4	2	B	18	GL	MO	O	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2031	RHR HX 1E-201A OUTLET ISOLATION	72D3	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			

VALVE LIST

Description: *Residual Heat Removal System*

Drawing: 120 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2044A	RHR HX 1E-201A SHELL SIDE OUTBOARD VENT	64D2	2	B	1	GL	MO	C	P	C	PIT	2Y			
MO2069	RHR LOOP A TORUS SUCTION ISOLATION	34C8	2	B	24	GA	MO	O/KL	P	O	PIT	2Y			
PSV2019	RHR PUMP 1P-229A SUCTION PRESSURE RELIEF	42C8	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
PSV2020	RHR PUMP 1P-229C SUCTION PRESSURE RELIEF	24C4	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
PSV2042	RHR HX 1E-201A SHELL SIDE PRESSURE RELIEF	64C1	2	C	0.75	RV	SA	C	A	O/C	CT-SP	10Y2			16
PSV2057	RHR HX 1E-201A DISCHARGE HEADER PRESSURE RELIEF	70E6	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
SV2051	RHR HX 1E-201A PASS SAMP LINE INBOARD ISOLATION	79C5	2	B	1	GL	SO	C/KL	A	C	BTC	Q			
											FST	Q			
											PIT	2Y			

VALVE LIST

Description: ***Residual Heat Removal System***

Drawing: *120* ***Sheet #:*** *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
SV2052	RHR HX 1E-201A PASS SAMP LINE OUTBOARD ISOLATIO	83C5	N	B	1	GL	SO	C/KL	P	C	BTC	Q			
											FST	Q			
											PIT	2Y			
V20-0001	VALVE,CHK,RHR,PUMP 1P229C DISCH	33A7	2	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V20-0003	VALVE,CHK,RHR,PUMP 1P229A DISCH	55A8	2	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V20-0006	1P-229A DISCHARGE BYPASS LINE CHECK VALVE	50A9	2	C	3	CK	SA	SYS	A	O/C	CM	CM			
V20-0008	VALVE,CHK,RHR,1P229C DISCH,BYP LINE	27B1	2	C	3	CK	SA	SYS	A	O/C	CM	CM			
V20-0081	"A" LPCI SUPPLY LINE MANUAL ISOLATION	29D9	1	B	20	GA	M	O	P	O	PIT	2Y			
V20-0082	VALVE, CHK, RHR, LPCI INJ LOOP A	34E0	1	A/C	20	CK	SA	SYS	A	O/C	AT-5	2Y			
											CT-CC	R		DTJ-13	
											CT-CO	R*		DTJ-13	

VALVE LIST

Description: *Core Spray System*

Drawing: 121 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2100	CORE SPRAY PUMP 1P-211A OUTBOARD TORUS SUCTION	52B0	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			
MO2104	CORE SPRAY PUMP 1P-211A MINIMUM FLOW BYPASS	40C4	2	B	2	GA	MO	O	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2112	CORE SPRAY LOOP A TEST BYPASS VALVE	52E0	2	B	8	GL	MO	C	P	C	PIT	2Y			
MO2115	CORE SPRAY LOOP A OUTBD INJECTION VALVE	57E7	2	B	8	GA	MO	O	P	O	PIT	2Y			
MO2117	CORE SPRAY INBOARD INJECTION VALVE	64E7	1	A	8	GA	MO	C	A	O/C	AT-1	2Y			
											AT-5	2Y			
											BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2120	CORE SPRAY PUMP 1P-211B OUTBOARD TORUS SUCTION	52B3	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			

VALVE LIST

Description: *Core Spray System*

Drawing: *121* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2124	CORE SPRAY PUMP 1P-211B MINIMUM FLOW BYPASS	43C4	2	B	2	GA	MO	O	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2132	CORE SPRAY LOOP B TEST BYPASS VALVE	53D6	2	B	8	GL	MO	C	P	C	PIT	2Y			
MO2135	CORE SPRAY LOOP B OUTBD INJECTION VALVE	58D2	2	B	8	GA	MO	O	P	O	PIT	2Y			
MO2137	CORE SPRAY LOOP B INBD INJECTION VALVE	65D2	1	A	8	GA	MO	C	A	O/C	AT-1	2Y			
											AT-5	2Y			
											BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2146	CORE SPRAY PUMP 1P-211B INBOARD TORUS SUCTION	57B5	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			
MO2147	CORE SPRAY PUMP 1P-211A INBOARD TORUS SUCTION	57B2	2	B	12	GA	MO	O/KL	P	O	PIT	2Y			

VALVE LIST

Description: *Core Spray System*

Drawing: 121 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
PSV2102	CORE SPRAY PUMP 1P-211A SUCTION PRESSURE RELIEF	33C7	2	C	0.75	RV	SA	SYS	A	O/C	CT-SP	10Y2			16
PSV2109	CORE SPRAY PUMP 1P-211A DISCH HDR PRESS RELIEF	46E6	2	C	2	RV	SA	SYS	A	O/C	CT-SP	10Y2			16
PSV2122	CORE SPRAY PUMP 1P-211B SUCTION PRESSURE RELIEF	50B7	2	C	0.75	RV	SA	SYS	A	O/C	CT-SP	10Y2			16
PSV2129	CORE SPRAY PUMP 1P-211B DISCH HDR PRESS RELIEF	46D3	2	C	2	RV	SA	SYS	A	O/C	CT-SP	10Y2			16
V21-0007	1P-211A DISCHARGE HEADER CHECK VALVE	36C3	2	C	10	CK	SA	SYS	A	O	CT-CC	Q			
											CT-CO	Q			
V21-0009	1P-211A MINIMUM FLOW LINE CHECK VALVE	38C3	2	C	2	CK	SA	SYS	A	O	CM	CM			
V21-0010	1P-211B DISCHARGE HEADER CHECK VALVE	47C4	2	C	10	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V21-0012	1P-211B MINIMUM FLOW LINE CHECK VALVE	44C3	2	C	2	CK	SA	SYS	A	O	CM	CM			

VALVE LIST

Description: *Core Spray System*

Drawing: 121 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V21-0042	CS LOOP "A" INJECTION HEADER MANUAL BLOCK	77E1	1	B	8	GA	M	O	P	O	PIT	2Y			
V21-0043	CS LOOP "B" INJECTION HEADER MANUAL BLOCK	77D8	1	B	8	GA	M	O	P	O	PIT	2Y			
V21-0072	VALVE, CHK,LPCS, A	71E0	1	A/C	8	CK	SA	SYS	A	O/C	AT-5	2Y			
											CM	CM			
V21-0073	VALVE, CHK, LPCS B	72D7	1	A/C	8	CK	SA	SYS	A	O/C	AT-5	2Y			
											CM	CM			
XFV2119	PDIS-2119 SENSING LINE (CORE SPRAY SPARGER DP)	74F1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV2139	PDIS-2139 SENSING LINE (CORE SPRAY SPARGER DP)	74F4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *High Pressure Coolant Injection Steam Side*

Drawing: 122 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV2211	HPCI STM SUP DRAIN LINE UPSTREAM AUTO ISOLATION	23C3	2	A	1	GA	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			
											PIT	2Y			
CV2212	HPCI STM SUP DRAIN LINE DOWNSTREAM AUTO ISOL	19C3	2	A	1	GA	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			
											PIT	2Y			
CV2234	HPCI COND PUMP 1P-219 DISCH TO CRW INBD ISOL	60B7	2	B	1	GA	AO	O/FC	A	C	BTC	Q			
											FST	Q			
											PIT	2Y			
CV2235	HPCI COND PUMP 1P-219 DISCH TO CRW OUTBD ISOL	64B7	N	B	1	GA	AO	O/FC	A	C	BTC	Q			3
											FST	Q			3
											PIT	Q			3
HV2201	HPCI TURBINE STOP VALVE	33E0	2	B	10	PLG	HO	C	A	O/C	PIT	2Y			2, S7

VALVE LIST

Description: *High Pressure Coolant Injection Steam Side*

Drawing: 122 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2202	HPCI TURBINE STEAM SUPPLY ISOLATION	31D8	2	B	10	GA	MO	C	A	O	BTO	Q			
											PIT	2Y			
MO2238	HPCI STEAM SUPPLY INBOARD ISOLATION	69E8	1	A	10	GA	MO	O	A	C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			
MO2239	HPCI STEAM SUPPLY OUTBOARD ISOLATION	60F2	1	A	10	GA	MO	O	A	C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			
MO2247	HPCI CONDENSER/LUBE OIL COOLER CLNG WTR SUPPLY	52C2	2	B	2	GL	MO	C	A	O	BTO	Q			
											PIT	2Y			
MO2290A	HPCI/RCIC TURB STM EXHST VACUUM BREAKER LINE IS	86B6	2	A	2	GA	MO	O	A	C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			

VALVE LIST

Description: *High Pressure Coolant Injection Steam Side*

Drawing: 122 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2290B	HPCI/RCIC TURB STM EXHST VACUUM BREAKER LINE IS	86B3	2	A	2	GA	MO	O	A	C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			
PSE2213	HPCI TURBINE STEAM EXHST RUPTURE DISC	61C6	2	C	16	RPD	SA	C	A	O/C	CT-RDR	5Y			
PSE2214	HPCI TURBINE STEAM EXHST RUPTURE DISC	61C8	N	C	16	RPD	SA	C	A	O/C	CT-RDR	5Y			3,14
PSV2223	HPCI CONDENSER 1E-202 PRESSURE RELIEF	32C0	N	C	1.25	RV	SA	C	P	C	CT-SP	10Y			3
PSV2228	HPCI LO COOLER COOLING WTR INLET PRESS RELIEF	52B5	2	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			16
V22-0016	VALVE,CHK,HPCI,1S201 EXH LINE	74B8	2	C	16	CK	SA	SYS	A	O/C	CM	CM			
V22-0017	HPCI TURBINE STEAM EXHAUST LINE ISOLATION	78B7	2	C	16	SCK	MSA	SYS/LO	A	O/C	CM	CM			
V22-0021	HPCI EXHAUST DRAIN POT DRAIN LINE CHECK VALVE	70B0	2	C	2	CK	SA	SYS	A	C	CM	CM			

VALVE LIST

Description: *High Pressure Coolant Injection Steam Side*

Drawing: 122 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V22-0022	HPCI TURB STM EXHST COND DRN POT RETURN TO TORUS	75B0	2	C	2	SCK	MSA	SYS/LO	A	C	CM	CM			
V22-0026	HPCI CONDST PUMP 1P-219 DISCH LINE CHECK VALVE	38B1	2	C	1.25	CK	SA	SYS	A	O	NA	NA			S6
V22-0028	HPCI TURB LUBE OIL CLR 1E-203 CLG WTR EXH LINE	44B2	2	C	2	CK	SA	SYS	A	O	CM	CM			
V22-0029	VALVE,CHK,HPCI,1P219 EXH LINE	53B1	2	C	2	CK	SA	SYS	A	O	CM	CM			
V22-0063	VALVE,CHK,HPCI,VAC BREAKER LINE	82B7	2	A/C	3	CK	SA	SYS	A	O/C	AT-1	AJ			
											CM	CM			
V22-0064	VALVE,CHK,HPCI,VAC BREAKER LINE	84B7	2	A/C	3	CK	SA	SYS	A	O/C	AT-1	AJ			
											CM	CM			
XFV2246A	PS-2246A SENSING LINE (HPCI STEAM PRESSURE)	63E2	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *High Pressure Coolant Injection Steam Side*

Drawing: 122 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV2246B	PS-2246B SENSING LINE (HPCI STEAM PRESSURE)	63E3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV2246C	PS-2246C SENSING LINE (HPCI STEAM PRESSURE)	63D8	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV2246D	PS-2246D SENSING LINE (HPCI STEAM PRESSURE)	63D6	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: ***High Pressure Coolant Injection Water Side***

Drawing: 123 ***Sheet #:*** 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV2315	HPCI CST TEST RETURN LINE ISOLATION	60D5	2	B	8	GL	AO	C/FC	P	C	PIT	2Y			
MO2300	HPCI PUMP CST SUCTION ISOLATION	34E8	2	B	14	GA	MO	O	A	C	BTC	Q			
											PIT	2Y			
MO2311	HPCI PUMP DISCHARGE ISOLATION	58C7	2	B	12	GA	MO	O	P	O	PIT	2Y			
MO2312	HPCI FEEDWATER INJECTION ISOLATION	65C7	1	A	12	GA	MO	C	A	O/C	AT-1	AJ			6
											BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2316	HPCI/RCIC TEST RETURN REDUNDANT SHUTOFF VALVE	60E1	N	B	8	GA	MO	C	P	C	PIT	2Y			
MO2318	HPCI PUMP MINIMUM FLOW BYPASS VALVE	50C2	2	B	4	GL	MO	C	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			

VALVE LIST

Description: *High Pressure Coolant Injection Water Side*

Drawing: 123 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2321	HPCI PUMP TORUS SUCTION INBOARD ISOLATION	69A6	2	B	14	GA	MO	C	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2322	HPCI PUMP TORUS SUCTION ISOLATION	39E6	2	B	14	GA	MO	C	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
PSV2301	HPCI BOOSTER PP SUCTION PRESSURE RELIEF	29E8	2	C	1.5	RV	SA	SYS	A	O/C	CT-SP	10Y			
PSV2302	HPCI PUMP 1P-216 DISCHARGE PRESSURE RELIEF VALVE	65C6	2	C	0.75	RV	A	SYS	A	O/C	CT-SP	10Y2			
V23-0001	HPCI TORUS SUPPLY LINE CHECK VALVE	62A5	2	C	14	CK	SA	SYS	A	O	CM	CM			
V23-0004	VALVE,CHK,HPCI,CONDST TK SUP LINE	37E5	2	C	14	CK	SA	SYS	A	O	CM	CM			
V23-0014	VALVE,CHK,HPCI,MIN FLOW LINE	44C1	2	C	4	CK	SA	SYS	A	O/C	CM	CM			
V23-0049	VALVE,CHECK,HPCI WATER,1P216 EXH LINE	65C6	1	C	12	CK	SA	SYS	A	O/C	CM	CM			

VALVE LIST

Description: *High Pressure Coolant Injection Water Side*

Drawing: 123 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V23-0076	HPCI INJECT KEEP-FILL ISOLATATION CHECK INBOARD	66D6	2	C	1	CK	SA	SYS	A	C	CM	CM			
V23-0081	HPCI PUMP DISCHARGE LINE CHECK VALVE	62C2	2	C	12	CK	SA	SYS	A	O/C	CM	CM			
V23-0085	HPCI HIGH PRESSURE KEEP FILL LINE INBOARD CHECK	62C2	2	C	0.75	CK	SA	SYS	A	O/C	CT-CC	R		DTJ-15	
											CT-CO	R*			

VALVE LIST

Description: ***Reactor Core Isolation Cooling Steam Side***

Drawing: *124* ***Sheet #:*** *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV2410	RCIC STM SUP DRAIN LINE UPSTREAM AUTO ISOLATION	30C6	N	A	1	GA	AO	O/FC	A	C	AT-1	AJ			3
											BTC	Q			3
											FST	Q			1, 3
											PIT	2Y			3
CV2411	RCIC STM SUP DRAIN LINE DOWNSTREAM AUTO ISOL	30C3	N	A	0	GA	AO	O/FC	A	C	AT-1	AJ			3
											BTC	Q			3
											FST	Q			2, 3
											PIT	2Y			3
CV2435	CONDENSATE PUMP 1P-228 DISCHARGE DRAIN TO CRW	55B0	N	B	1	GA	AO	O/C/FC	A	C	BTC	Q			3
											FST	Q			1, 3
											PIT	2Y			3
MO2400	RCIC STEAM SUPPLY INBOARD ISOLATION	69F0	1	A	4	GA	MO	O	A	O/C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			

VALVE LIST

Description: *Reactor Core Isolation Cooling Steam Side*

Drawing: 124 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2401	RCIC STEAM SUPPLY OUTBOARD ISOLATION	61E9	1	A	4	GA	MO	O	A	O/C	AT-1	AJ			
											BTC	Q			
											PIT	2Y			
MO2404	RCIC TURBINE STEAM SUPPLY ISOLATION	35E1	N	B	4	GL	MO	C	A	O/C	BTC	Q			3
											BTO	Q			3
											PIT	2Y			3
MO2405	RCIC TURBINE STEAM SUPPLY STOP VALVE	38E0	N	B	3	GA	MO	O	P	O	PIT	2Y			3
MO2426	RCIC CONDENSER/LUBE OIL COOLER CLNG WTR SUPPLY	57C0	N	B	2	GL	MO	C	A	O	BTO	Q			3
											PIT	2Y			3
PSE2418	RCIC TURBINE STEAM EXHST RUPTURE DISC	66D0	N	C	10	RPD	SA	SYS	A	O/C	CT-RDR	10Y			3,15
PSE2419	RCIC TURBINE STEAM EXHST RUPTURE DISC	66D1	N	C	10	RPD	SA	SYS	A	O/C	CT-RDR	10Y1			3,15
PSV2430	RCIC CONDENSER CLNG WTR SUPPLY PRESSURE RELIEF	62C2	N	C	2	RV	SA	C	A	O/C	CT-SP	10Y2			3, 16

VALVE LIST

Description: *Reactor Core Isolation Cooling Steam Side*

Drawing: 124 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
PSV2474	RCIC CONDENSER 1E-205 PRESSURE RELIEF	35C1	N	C	1.25	RV	SA	C	A	O/C	CT-SP	10Y			3
V24-0008	RCIC TURBINE STEAM EXH TO TORUS STOP-CHECK	81C7	2	C	10	SCK	MSA	SYS/LO	A	O/C	CM	CM			
V24-0010	VALVE,CHK,RCIC,GLAND SEAL CNDST PP 1P228	43B6	N	C	1.25	CK	SA	SYS	A	O	NA	NA			3, S6
V24-0012	VALVE,CHK,RCIC,1P228 EXH LINE	58B6	N	C	2	CK	SA	SYS	A	O	CM	CM			3
V24-0023	VALVE,CHK,RCIC,1S203 EXH LINE	80C9	2	C	10	CK	SA	SYS	A	O/C	CM	CM			
V24-0046	RCIC TURB LUBE OIL CLR 1S-203 EXH VAC BRKR VALVE	74C7	2	A/C	3	CK	SA	SYS	A	O/C	AT-1 CM	AJ CM			
V24-0047	VALVE,CHK,RCIC,1S203 EXH VAC BREAKER	74C7	2	A/C	3	CK	SA	SYS	A	O/C	AT-1 CM	AJ CM			

VALVE LIST

Description: *Reactor Core Isolation Cooling Steam Side*

Drawing: 124 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
XFV2443A	PS-2443A SENSING LINE (RCIC STEAM PRESSURE)	59E3	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV2443B	PS-2443B SENSING LINE (RCIC STEAM PRESSURE)	59E4	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV2443C	PS-2443C SENSING LINE (RCIC STEAM PRESSURE)	59E1	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		
XFV2443D	PS-2443D SENSING LINE (RCIC STEAM PRESSURE)	59E0	1	C	1	XFC	SA	SYS	A	C	AT-2	10Y1	VR-01		
											CT-CC	10Y1	VR-01		
											CT-CO	10Y1	VR-01		
											PIT	10Y1	VR-01		

VALVE LIST

Description: *Reactor Core Isolation Cooling Water Side*

Drawing: 125 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2500	RCIC PUMP CST SUCTION ISOLATION	44E7	Y	B	6	GA	MO	O	A	C	BTC	Q			3
											PIT	2Y			3
MO2510	RCIC PUMP MINIMUM FLOW BYPASS VALVE	50B9	2	B	2	GL	MO	C	A	O/C	BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2511	RCIC PUMP DISCHARGE ISOLATION	54C6	N	B	4	GA	MO	O	P	O	PIT	2Y			3
MO2512	RCIC INJECTION HEADER ISOLATION	60C6	1	A	4	GA	MO	C	A	O/C	AT-1	AJ			6
											BTC	Q			
											BTO	Q			
											PIT	2Y			
MO2515	RCIC PUMP DISCHARGE TEST LINE ISOLATION	56D6	N	B	4	GL	MO	C	P	C	PIT	2Y			3
MO2516	RCIC PUMP TORUS SUCTION INBOARD ISOLATION	57B0	2	B	6	GA	MO	C	A	O	BTO	Q			
											PIT	2Y			

VALVE LIST

Description: *Reactor Core Isolation Cooling Water Side*

Drawing: 125 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2517	RCIC PUMP TORUS SUCTION OUTBOARD ISOLATION	48E4	2	B	6	GA	MO	C	A	O	BTO	Q			
											PIT	2Y			
PSV2501	RCIC PUMP 1P-226 SUCTION PRESSURE RELIEF	45D9	N	C	1	RV	SA	C	A	O/C	CT-SP	10Y2			3, 16
V25-0001	VALVE,CHK,RCIC,TORUS WTR SUCT LINE	53A8	2	C	6	CK	SA	SYS	A	O	CM	CM			
V25-0003	VALVE,CHK,RCIC,CNDST STRG TK LINE	46E6	N	C	6	CK	SA	SYS	A	O	CM	CM			3
V25-0006	RCIC MIN FLOW LINE CHECK VALVE	45B7	N	C	2	CK	SA	SYS	A	O	CM	CM			3
V25-0036	VALVE, CHK, FDWTR, 1P226,EXH LINE	62C5	1	C	4	CK	SA	SYS	A	O	CM	CM			

VALVE LIST

Description: *Standby Liquid Control System*

Drawing: 126 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
PSV2607	SBLC ACCUMULATOR 1T-219A OVER PRESSURE RELIEF	53D2	2	C	1	RV	SA	SYS	A	O/C	CT-SP	10Y			
PSV2609	SBLC ACCUMULATOR 1T-219B OVER PRESSURE RELIEF	53B3	2	C	1	RV	SA	SYS	A	O/C	CT-SP	10Y			
V26-0004	VALVE,CHK,SBLC,PUMP 1P230A OUTLET	57C3	2	C	1.5	CK	SA	SYS	A	O/C	CM	CM			
V26-0006	SBLC INJECTION PUMP 1P-230B OUTLET CHECK VALVE	56B6	1	C	1.5	CK	SA	SYS	A	O/C	CM	CM			
V26-0008	VALVE,CHK,SBLC OUTBOARD	77E3	1	C	1.5	CK	SA	SYS	A	O/C	CM	CM			
V26-0009	VALVE,CHK,SBLC INBOARD	85C7	1	C	1.5	CK	SA	SYS	A	O/C	CM	CM			
V26-0032	SBLC INJECTION LINE MANUAL ISOLATION	87C3	1	B	1.5	GA	M	O	P	O	PIT	2Y			
XS2618A	SBLC SQUIB VALVE	67E6	2	D	1.5	GA	EXP	C/KL	A	O	DT-E	.2/2Y			
											DT-REC	2Y			
XS2618B	SBLC SQUIB VALVE	67E6	2	D	1.5	GA	EXP	C/KL	A	O	DT-E	.2/2Y			
											DT-REC	2Y			

VALVE LIST

Description: *Reactor Water Cleanup System*

Drawing: 127 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
MO2700	RWCU INLET INBOARD ISOLATION	84E3	1	A	4	GA	MO	O	A	C	AT-1	AJ			
											BTC	CS		DTJ-16	
											PIT	2Y			
MO2701	RWCU SUCTION OUTBOARD ISOLATION	78E3	1	A	4	GA	MO	O	A	C	AT-1	AJ			
											BTC	CS		DTJ-16	
											PIT	2Y			
MO2740	RWCU RETURN HEADER OUTBOARD ISOLATION	46F0	1	A	4	GL	MO	O	A	C	AT-1	AJ			6
											BTC	CS		DTJ-16	
											PIT	2Y			

VALVE LIST

Description: *River Water Supply System Intake Structure*

Drawing: 129 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
AV2909A	1P-117A DISCHARGE AUTO VENT	62C5	3	C	3	AV	SA	SYS	A	C	CM	CM			
AV2909B	1P-117B DISCHARGE AUTO VENT	49C6	3	C	3	AV	SA	SYS	A	C	CM	CM			
AV2909C	1P-117C DISCHARGE AUTO VENT	62C5	3	C	3	AV	SA	SYS	A	C	CM	CM			
AV2909D	1P-117D DISCHARGE AUTO VENT	29C5	3	C	3	AV	SA	SYS	A	C	CM	CM			
V29-0001	RIVER WATER PUMP 1P-117A DISCHARGE CHECK VALVE	71C6	3	C	18	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V29-0003	RIVER WATER PUMP 1P-117C DISCHARGE CHECK VALVE	60C6	3	C	18	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V29-0005	RIVER WATER PUMP 1P-117B DISCHARGE CHECK VALVE	51C6	3	C	18	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V29-0007	RIVER WATER PUMP 1P-117D DISCHARGE CHECK VALVE	40C6	3	C	18	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			

VALVE LIST

Description: *Service Air System*

Drawing: *130* *Sheet #:* *9*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V30-0287	DRYWELL BREATHING AIR SUPPLY OUTBOARD ISOL	67C4	2	A	1	GA	M	LC	P	C	AT-1	AJ			

VALVE LIST

Description: *Diesel Generator Systems*

Drawing: 132 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
PSV3221A	AIR RECEIVER 1T-115A PRESSURE RELIEF VALVE	87F4	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
PSV3221B	AIR RECEIVER 1T-115B PRESSURE RELIEF VALVE	87B7	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
PSV3222A	AIR RECEIVER 1T-116A PRESSURE RELIEF VALVE	78F2	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
PSV3222B	AIR RECEIVER 1T-116B PRESSURE RELIEF VALVE	78B7	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
PSV3223A	AIR RECEIVER 1T-117A PRESSURE RELIEF VALVE	72F2	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
PSV3223B	AIR RECEIVER 1T-117B PRESSURE RELIEF VALVE	72B7	Y	C	0.5	RV	SA	SYS	A	O/C	CT-SP	10Y			3
V32-0005	VALVE,CHK,DIESEL FUEL OIL,1P044B DISCHARGE	36B2	Y	C	1.5	CK	SA	SYS	A	O	CT-CC	Q			3
											CT-CO	Q			3
V32-0010	VALVE,CHK,DIESEL FUEL OIL,1P044A DISCHARGE	25B3	Y	C	1.5	CK	SA	SYS	A	O	CT-CC	Q			3
											CT-CO	Q			3

VALVE LIST

Description: *Diesel Generator Systems*

Drawing: 132 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V32-0019	VALVE,CHK,DIESEL OIL,1T037B FOOT VALVE														
		49C1	N	C	1.5	CK	SA	SYS	A	O/C	CT-CC	Q			3
											CT-CO	Q			3
V32-0021	VALVE,CHK,DIESEL OIL,1T037A FOOT VALVE														
		49F4	N	C	1.5	CK	SA	SYS	A	O/C	CT-CC	Q			3
											CT-CO	Q			3
V32-0032	1K-10C DISCHARGE CHECK VALVE														
		81H2	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
											CT-CC	Q			3
											CT-CO	Q			3
V32-0034	1K-10D DISCHARGE CHECK VALVE														
		82D2	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
											CT-CC	Q			3
											CT-CO	Q			3
V32-0036	1K-10A DISCHARGE CHECK VALVE TO 1T-115A														
		86E9	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
											CT-CC	Q			3
											CT-CO	Q			3

VALVE LIST

Description: *Diesel Generator Systems*

Drawing: 132 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V32-0039	1K-10A DISCHARGE CHECK VALVE TO 1T-116A	79E9	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
											CT-CC	Q			3
											CT-CO	Q			3
V32-0043	AIR RECEIVER 1T-115A OUTLET CHECK VALVE	85F3	N	C	2	CK	SA	SYS	A	C	CT-CC	Q			3
											CT-CO	Q			3
V32-0045	AIR RECEIVER 1T-116A OUTLET CHECK VALVE	80F3	N	C	2	CK	SA	SYS	A	C	CT-CC	Q			3
											CT-CO	Q			3
V32-0047	1K-1OB DISCHARGE CHECK VALVE TO 1T-115B	86B4	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
											CT-CC	Q			3
											CT-CO	Q			3
V32-0048	1K-10B DISCHARGE CHECK VALVE TO 1T-116B	79B4	Y	A/C	0.75	CK	SA	SYS	A	C	AT-6	2Y			3
											CT-CC	Q			3
											CT-CO	Q			3

VALVE LIST

Description: *Diesel Generator Systems*

Drawing: *132* ***Sheet #:*** *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V32-0052	AIR RECEIVER 1T-115B OUTLET CHECK VALVE	85B8	N	C	2	CK	SA	SYS	A	O/C	CT-CC	Q			3
											CT-CO	Q			3
V32-0054	AIR RECEIVER 1T-116B OUTLET CHECK VALVE	80B8	N	C	2	CK	SA	SYS	A	O/C	CT-CC	Q			3
											CT-CO	Q			3
V32-0262	AIR RECEIVER 1T-117A OUTLET CHECK VALVE	72E2	Y	C	2	CK	SA	SYS	A	O/C	CT-CC	R			3
											CT-CO	R*			3
V32-0263	AIR RECEIVER 1T-117B OUTLET CHECK VALVE	72B6	N	C	2	CK	SA	SYS	A	O/C	CT-CC	R			3
											CT-CO	R*			3

VALVE LIST

Description: *Diesel Generator Systems*

Drawing: 132 *Sheet #:* 2

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
SV3261A	SBDG 1G-31 EMERG START AIR SUPPLY ISOLATION	19C8	N	B	1.5	2WY	SO	C	A	O	NA	NA			2,S5
SV3261B	SBDG 1G-31 NORMAL START AIR SUPPLY ISOLATION	19C4	N	B	1.5	2WY	SO	C	A	O	NA	NA			2,S5
SV3261C	SBDG 1G-31 STARTING AIR SUPPLY LINE VENT	15C5	N	B	1.5	2WY	SO	C	A	O	NA	NA			2,S5
SV3262A	SBDG 1G-21 EMERG START AIR SUPPLY ISOLATION	19C8	N	B	1.5	2WY	SO	C	A	O	NA	NA			2,S5
SV3262B	SBDG 1G-21 NORMAL START AIR SUPPLY ISOLATION	19C4	N	B	1.5	2WY	SO	C	A	O	NA	NA			2,S5
SV3262C	SBDG 1G-21 STARTING AIR SUPPLY LINE VENT	15C5	N	B	1.5	2WY	SO	C	A	O	NA	NA			2,S5

VALVE LIST

Description: *Radwaste Sump System*

Drawing: 137 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV3704	DRYWELL FLOOR DRAIN SUMP INBOARD ISOLATION	75F8	2	A	3	GA	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV3705	DRYWELL FLOOR DRAIN SUMP OUTBOARD ISOLATION	71F8	2	A	3	GA	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV3728	DRYWELL EQUIP DRAIN SUMP INBOARD ISOLATION	70D1	2	A	3	GA	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV3729	DRYWELL EQUIP DRAIN SUMP OUTBOARD ISOLATION	67D1	N	A	3	GA	AO	O/FC	A	C	AT-1	AJ			3
											BTC	Q			3
											FST	Q			2, 3
											PIT	2Y			3

VALVE LIST

Description: *Circulating Water System*

Drawing: *142* ***Sheet #:*** *0*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V42-0012	RHRSW/ESW ISOLATION TO RW DILUTION LINE	81C2	3	B	24	BTF	M	C/LC	A	O	ME	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: 143 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
1Q122-BALL	"A" TIP DRIVE BALL VALVE	68C5	2	A	0.375	BAL	SO	C	A	C	AT-1	AJ			
											BTC	Q			2
											FST	Q			
											PIT	2Y			
1Q122-SHEAR	"A" TIP DRIVE SHEAR VALVE	68C4	2	D	0.375	SH	EXP	O/KL	A	C	DT-E	.2/2Y			
											DT-REC	2Y			
1Q222-BALL	"B" TIP DRIVE BALL VALVE	75C5	2	A	0.375	BAL	SO	C	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			
											PIT	2Y			
1Q222-SHEAR	"B" TIP DRIVE SHEAR VALVE	75C4	2	D	0.375	SH	EXP	O/KL	A	C	DT-E	2/2Y			
											DT-REC	2Y			
1Q322-BALL	"C" TIP DRIVE BALL VALVE	72C5	2	A	0.375	BAL	SO	C	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			
											PIT	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: *143* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
1Q322-SHEAR	"C" TIP DRIVE SHEAR VALVE	72C4	2	D	0.375	SH	EXP	O/KL	A	C	DT-E	.2/2Y			
											DT-REC	2Y			
CV4300	TORUS VENT LINE INBOARD ISOLATION	77C1	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
											AT-7	Q			
											BTC	Q			8
											FST	Q			1
											PIT	2Y			
CV4301	TORUS VENT LINE OUTBOARD ISOLATION	83C1	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
											AT-7	Q			
											BTC	Q			8
											FST	Q			1
											PIT	2Y			
CV4302	DRYWELL VENT LINE INBOARD VENT	73D0	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
											AT-7	Q			
											BTC	Q			8
											FST	Q			1
											PIT	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: 143 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4303	DRYWELL VENT LINE OUTBOARD ISOLATION														
		80D0	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
											AT-7	Q			
											BTC	Q			8
											FST	Q			1
											PIT	2Y			
CV4304	TORUS VACUUM BREAKER V-43-169 ISOLATION														
		77A8	2	A	20	BTF	AO	C/FO	A	O	AT-1	AJ			6
											BTC	Q			
											BTO	Q			
											BT-VOP	R			
											FST	Q			1
											PIT	2Y			
CV4305	TORUS VACUUM BREAKER V-43-168 ISOLATION														
		78A8	2	A	20	BTF	AO	C/FO	A	O	AT-1	AJ			6
											BTC	Q			
											BTO	Q			
											BT-VOP	R			
											FST	Q			1
											PIT	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: *143* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4306	CONTAINMENT PURGE SUPPLY ISOLATION VALVE														
		21C4	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
											AT-7	Q			
											BTC	Q			8
											FST	Q			1
											PIT	2Y			
CV4307	DRYWELL PURGE INLET ISOLATION VALVE														
		29C4	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
											AT-7	Q			
											BTC	Q			8
											FST	Q			1
											PIT	2Y			
CV4308	TORUS PURGE INLET ISOLATION VALVE														
		29B8	2	A	18	BTF	AO	C/FC	A	C	AT-1	AJ			6
											AT-7	Q			
											BTC	Q			8
											FST	Q			1
											PIT	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: 143 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4309	INBD TORUS VENT BYPASS LINE ISOLATION	78C0	2	A	2	BTF	AO	C/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4310	INBOARD DW VENT CV-4302 BYPASS	72C9	2	A	2	GA	AO	C/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4311	CONTAINMENT N2 MAKEUP SUPPLY ISOLATION	33D1	2	A	6	GA	AO	C/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4312	DRYWELL NITROGEN MAKEUP INLET ISOLATION	37C7	2	A	6	GA	AO	C/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: 143 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4313	TORUS NITROGEN MAKEUP INLET ISOLATION	33C8	2	A	6	GA	AO	C/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4327A	VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
											CT-CC	Q			
											CT-CO	Q			
											CT-VSP	R			
											PIT	2Y			
CV4327B	VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
											CT-CC	Q			
											CT-CO	Q			
											CT-VSP	R			
											PIT	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: 143 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4327C	VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
											CT-CC	Q			
											CT-CO	Q			
											CT-VSP	R			
											PIT	2Y			
CV4327D	VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
											CT-CC	Q			
											CT-CO	Q			
											CT-VSP	R			
											PIT	2Y			
CV4327F	VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
											CT-CC	Q			
											CT-CO	Q			
											CT-VSP	R			
											PIT	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: *143* *Sheet #:* *1*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4327G	VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
											CT-CC	Q			
											CT-CO	Q			
											CT-VSP	R			
											PIT	2Y			
CV4327H	VALVE,CHK,VAC BRK,TORUS/DRYWELL VAC BREAKER	72B8	2	A/C	18	CK	SAP	SYS	A	O	AT-4	R			
											CT-CC	Q			
											CT-CO	Q			
											CT-VSP	R			
											PIT	2Y			
CV4357	TORUS HARD PIPE VENT LINE ISOLATION	85B8	2	A	8	BTF	AO	C/KL	A	C	AT-1	AJ			6
											AT-7	R			
											BTC	R		DTJ-17	
											FST	R		DTJ-17	
											PIT	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: 143 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4371A	DW VALVES N2 SUPPLY ISOLATION (FROM 1T-128)	51E1	2	A	2	GA	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4371C	TORUS/DW VACUUM BKR N2 SUPPLY ISOLATION	69E2	2	A	2	GA	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4378A	N2 COMPRESSOR 1K-14 DW SUCTION ISOLATION	56D0	2	A	2	GA	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4378B	N2 COMPRESSOR 1K-14 DW SUCTION ISOLATION	54D0	2	A	2	GA	AO	O/FC	A	C	AT-1	AJ			
											BTC	Q			
											FST	Q			1
											PIT	2Y			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: 143 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
PSE4357	TORUS HARD PIPE VENT LINE RUPTURE DISC	87B8	N	A	8	RPD	SA	C	A	C	CT-RDR	2R			3
V43-0032	VALVE,CHK,VAC BRK,CV4305,AIRSUPPLY	32B0	N	C	0.5	CK	SA	SYS	A	O	NA	NA			2
V43-0035	VALVE,CHK,VAC BRK,CV4305,AIRSUPPLY	59B0	N	C	0.5	CK	SA	SYS	A	O	NA	NA			2
V43-0168	VALVE,CHK,VAC BRK,TORUS/RB VACUUM BREAKER	78A2	2	A/C	20	CK	SA	SYS	A	O/C	AT-1	AJ			6
											CTCME	Q			
											CTOME	Q			
											CT-VSP	R			
											PIT	2Y			
V43-0169	VALVE,CHK,VAC BRK,TORUS/RB VACUUM BREAKER	77A2	2	A/C	20	CK	SA	SYS	A	O/C	AT-1	AJ			6
											CTCME	Q			
											CTOME	Q			
											CT-VSP	R			
											PIT	2Y			

VALVE LIST

Description: ***Containment Atmosphere Control System***

Drawing: 143 ***Sheet #:*** 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V43-0441	VALVE,CHK,TORUS WXH,CV4300 AND CV4357,A/S														
		85C6	N	A/C	0.5	CK	SA	C	A	O/C	AT-6	2Y			3
											CT-CC	R			3
											CT-CO	R*			3,4
V43-0503	TIP INDEXER N2 PURGE SUPPLY CHECK VALVE														
		59E0	2	A/C	0.375	CK	SA	SYS	A	C	AT-1	AJ			
											CM	CM			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: *143* *Sheet #:* *3*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
SV4331A	LOWER DRYWELL SPRAY CAD N2 INBOARD ISOLATION	41B3	2	A	2	GA	SO	C/FC	A	O/C	AT-1	AJ			
											PIT	2Y			
SV4332A	UPPER DRYWELL SPRAY CAD N2 INBOARD ISOLATION	41B9	2	A	2	GA	SO	C/FC	A	O/C	AT-1	AJ			
											PIT	2Y			
SV4333A	WEST TORUS SPRAY HDR CAD N2 SUPPLY INBOARD ISOL	31C5	2	A	2	GA	SO	C/FC	A	O/C	AT-1	AJ			
											PIT	2Y			
SV4334A	NORTH TORUS SPRAY HEADER CAD N2 SUPPLY INBD ISO	41D0	2	A	2	GA	SO	C/FC	A	C	AT-1	AJ			
											PIT	2Y			
V43-0109	CONTAINMENT SPRAY HEADER CAD SUPPLY ISOLATION	36B9	2	A	2	BTF	M	C/LC	P	C	AT-1	AJ			
V43-0110	CAD SUPPLY TO CONTAINMENT SPRAY HEADER	36C6	2	A	2	BTF	M	C/LC	P	C	AT-1	AJ			
V43-0111	CAD SUPPLY TO RHR B/D TORUS SPRAY HEADER	36D2	2	A	2	BTF	MAN	C/LC	P	C	AT-1	AJ			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: *143* *Sheet #:* *3*

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V43-0112	CAD SUPPLY TO RHR A/C TORUS SPRAY HEADER	36D7	2	A	2	BTF	M	C/LC	P	C	AT-1	AJ			

VALVE LIST

Description: *Containment Atmosphere Control System*

Drawing: 143 *Sheet #:* 4

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V43-0214	DRYWELL NITROGEN SUPPLY HEADER ISOLATION	59E4	2	A/C	2	SCK	MSA	C/LO	A	C	AT-1 CM	AJ CM			

VALVE LIST

Description: *Service Water System Pumphouse*

Drawing: 146 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV4909	RIVER WATER RADWASTE DILUTION LINE ISOLATION	63F5	3	B	24	BTF	AO	C/O/FC	A	C	BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4910A	RADWASTE DILUTION LINE ISOLATION FROM RW SYS A	72F4	3	B	24	BTF	AO	O/FC	A	C	BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4910B	RADWASTE DILUTION LINE ISOLATION FROM RW SYS B	72F5	3	B	24	BTF	AO	O/FC	A	C	BTC	Q			
											FST	Q			1
											PIT	2Y			
CV4914	1P-117B/D INLET TO STILLING BASIN	67E1	3	B	20	BTF	AO	O/FO	A	O	BTO	Q			
											FST	Q			1
											PIT	2Y			
CV4915	1P-117A/C INLET TO STILLING BASIN	70E0	3	B	20	BTF	AO	O/FO	A	O	BTO	Q			
											FST	Q			1
											PIT	2Y			

VALVE LIST

Description: *Service Water System Pumphouse*

Drawing: 146 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V46-0011	RHRSW PUMP 1P-22D DISCHARGE CHECK VALVE	53B1	3	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V46-0013	RHRSW PUMP 1P-22B DISCHARGE CHECK VALVE	59B1	3	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V46-0018	1P-99B DISCHARGE CHECK VALVE	65B2	3	C	8	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V46-0021	1P-99A DISCHARGE CHECK VALVE	71B2	3	C	8	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V46-0026	RHRSW PUMP 1P-22C DISCHARGE CHECK VALVE	77B1	3	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			
V46-0030	RHRSW PUMP 1P-22A DISCHARGE CHECK VALVE	83B1	3	C	12	CK	SA	SYS	A	O/C	CT-CC	Q			
											CT-CO	Q			

VALVE LIST

Description: *Drywell Cooling Water System*

Drawing: 157 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
CV5704A	DRYWELL COOLING LOOP A WELL WATER RETURN ISOL	64F4	2	A	4	GL	AO	O/FO	A	C	AT-1	AJ			6
											BTC	CS		DTJ-18	
											PIT	2Y			
CV5704B	DRYWELL COOLING LOOP B WELL WATER RETURN ISOL	61F4	2	A	4	GL	AO	O/FO	A	C	AT-1	AJ			6
											BTC	CS		DTJ-18	
											PIT	2Y			
CV5718A	DRYWELL COOLING LOOP A WELL WATER SUPPLY ISOL	84B1	2	A	4	GL	AO	O/FO	A	C	AT-1	AJ			6
											BTC	CS		DTJ-18	
											PIT	2Y			
CV5718B	DRYWELL COOLING LOOP B WELL WATER SUPPLY ISOL	82B2	2	A	4	GL	AO	O/FO	A	C	AT-1	AJ			6
											BTC	CS		DTJ-18	
											PIT	2Y			
V57-0075	DW CLNG LOOP A BACKWASH SUPPLY DOWNSTREAM ISOL	69F1	2	A	3	GA	M	C/LC	P	C	AT-1	AJ			6

VALVE LIST

Description: *Drywell Cooling Water System*

Drawing: 157 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V57-0076	DW CLNG LOOP B BACKWASH SUPPLY DOWNSTREAM ISOL	70E6	2	A	3	GA	M	C/LC	P	C	AT-1	AJ			6
V57-0077	DW CLNG LOOP A BACKWASH RETURN TO EQUIP DRN SUMP	81A9	2	A	3	GA	M	C/LC	P	C	AT-1	AJ			6
V57-0078	DW CLNG LOOP B BACKWASH RETURN TO EQUIP DRN SUMP	81A5	2	A	3	GA	M	C/LC	P	C	AT-1	AJ			6

VALVE LIST

Description: *Standby Filter Unit Control Building*

Drawing: 173 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
PSV7333A	AIR RECEIVER 1V-S-12 OVER PRESSURE RELIEF	58A8	N	C	1	RV	SA	C	A	O/C	CT-SP	10Y			3
PSV7333B	AIR RECEIVER 1V-S-13 OVER PRESSURE RELIEF	74A8	N	C	1	RV	SA	C	A	O/C	CT-SP	10Y			3
V73-0006	VALVE,CHK,CB H&V,1VS012 PLT INSTRU AIR SUP	63B1	N	A/C	1	CK	SA	SYS	A	C	CT-CC	Q			3
											CT-CO	Q			3
V73-0007	VALVE,CHK,CB H&V,1VS012 PLT INSTRU AIR SUP	63B1	N	C	1	CK	SA	SYS	A	C	CT-CC	Q			3
											CT-CO	Q			3
V73-0016	VALVE,CHK,CB H&V,1VS013 PLT INSTRU AIR SUP	81B1	N	C	1	CK	SA	SYS	A	C	CT-CC	Q			3
											CT-CO	Q			3
V73-0017	VALVE,CHK,CB H&V,1VS013 PLT INSTRU AIR SUP	81B0	N	C	1	CK	SA	SYS	A	C	CT-CC	Q			3
											CT-CO	Q			3
V73-0032	VALVE,CHK,CB H&V,1K004 AIR EXH LINE	81A7	N	C	1	CK	SA	SYS	A	O	CT-CO	Q			3

VALVE LIST

Description: *Standby Filter Unit Control Building*

Drawing: 173 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
V73-0033	VALVE,CHK,CB H&V,1K004 AIR EXH LINE	81A7	N	C	1	CK	SA	SYS	A	O	CT-CO	Q			3
V73-0034	VALVE,CHK,CB H&V,1K003 AIR EXH LINE	63A7	N	C	1	CK	SA	SYS	A	O	CT-CO	Q			3
V73-0035	VALVE,CHK,CB H&V,1K003 AIR EXH LINE	63A7	N	C	1	CK	SA	SYS	A	O	CT-CO	Q			3

VALVE LIST

Description: *Containment Atmosphere Monitoring System*

Drawing: 181 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
SV8101A	DRYWELL #1 SAMPLE LINE ISOLATION	54D9	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8101B	DRYWELL #1 SAMPLE LINE ISOLATION	47D9	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8102A	DRYWELL #1 SAMPLE LINE ISOLATION	57D9	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8102B	DRYWELL #1 SAMPLE LINE ISOLATION	44D9	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8103A	DRYWELL #2 SAMPLE LINE ISOLATION	54D3	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1

VALVE LIST

Description: *Containment Atmosphere Monitoring System*

Drawing: 181 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
SV8103B	DRYWELL #2 SAMPLE LINE ISOLATION	46D3	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8104A	DRYWELL #2 SAMPLE LINE ISOLATION	56D3	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8104B	DRYWELL #2 SAMPLE LINE ISOLATION	44D3	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8105A	DRYWELL SAMPLE RETURN LINE ISOLATION	53D0	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8105B	DRYWELL SAMPLE RETURN LINE ISOLATION	46D0	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1

VALVE LIST

Description: *Containment Atmosphere Monitoring System*

Drawing: 181 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
SV8106A	DRYWELL SAMPLE RETURN LINE ISOLATION	56D0	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8106B	DRYWELL SAMPLE RETURN LINE ISOLATION	44D0	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8107A	CAM SYSTEM A TORUS RETURN LINE INBOARD ISOLATION	45C5	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8107B	CAM SYSTEM B TORUS RETURN LINE INBOARD ISOLATION	45C5	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8108A	CAM SYSTEM A TORUS RETURN LINE OUTBOARD ISOL	56C5	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1

VALVE LIST

Description: *Containment Atmosphere Monitoring System*

Drawing: 181 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
SV8108B	CAM SYSTEM B TORUS RETURN LINE OUTBOARD ISOL	43C5	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8109A	CAM SYSTEM A TORUS SAMPLE LINE INBOARD ISOLATION	53C1	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8109B	CAM SYS B TORUS SAMPLE LINE INBOARD ISOLATION	47C1	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8110A	CAM SYSTEM A TORUS SAMPLE LINE OUTBOARD ISOL	57C1	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1
SV8110B	CAM SYSTEM B TORUS SAMPLE LINE OUTBOARD ISOL	43C1	2	A	1	GL	SO	O/FC	A	C	AT-1	AJ			
											BTC	Q			12
											FST	Q			1

VALVE LIST

Description: *Post Accident Sampling System*

Drawing: 187 *Sheet #:* 1

VALVE ID	VALVE DESCRIPTION	Dwg Coor	ASME Code Class	Cat.	Size	Vlv Type	Act Type	Norm Pos	A/P	Safety Position	Test	Freq	RR	DTJ	Notes
SV8772A	PASS LIQ SAMPLE RETURN TO TORUS INBD ISOLATION	84B7	2	A	1	GL	SO	C/FC	P	C	AT-1	AJ			
											PIT	2Y			
SV8772B	PASS LIQ SAMPLE RETURN TO TORUS OUTBD ISOLATION	85B7	N	A	1	GL	SO	C/FC	P	C	AT-1	AJ			
											PIT	2Y			

VALVE LIST

Definitions

Dwg Coor: Flow diagram drawing coordinates for the Valve. See Section 5.4 for further information on how to interpret the 4 alphanumeric characters.

ASME Code Class: ISI Classification

Cat Valve Category per ISTC-1300

A/P Indicates whether valve is Active (A) or Passive (P)

Valve Type:

ANG	Angle	BAL	Ball	GA	Gate	GL	Globe	SV	Saftey
CK	Check	BTF	Butterfly	SCK	Stop Check	RV	Relief	RPD	Rupture Diaphragm
AV	Auto-Vent	2WY	Two-way	PLG	Plug	3WY	Three-way	SH	Explosive shear
4WY	Four-way	XFC	Excess Flow Check						

Act Type:

AO	Air Operated	AP	Air pilot Operated	EXP	Explosively actuated
M	Manual	MSA	Self and Manual Acutated	MO	Electrical Motor Operated
HO	Hydraulic	SA	Self actuated	SO	Solenoid operated
SAP	Self actuated Pilot Operated				

Norm Pos: Normal position of the valve during plant operation.

C	Closed	FC	Closed, fails closed	LC	Locked close	FO	Fail open
O	Open	LO	Locked open	NE	Normally Energized	SYS	Position dependent

Relief Req No: Refers to the specific relief request associated with the indicated test requirement.

Defer Test: Refers to the specific justification for deferred testing (cold shutdown or refueling) associated with the indicated test requirement.

VALVE LIST

Exam Type Identifies the test requirements for a valve as follows:

AT-1	Appendix J Test
AT-2	Excess Flow Check Valve Test
AT-4	Torus/Drywell Vacuum Breaker Leaktest
AT-5	Pressure Isolation Valve Leak Test
AT-6	Accumulator Check Valve Leak Test
AT-7	Purge/Vent Pressure Decay Test
BTD	Full-stroke exercise test to DE-ENERGIZED
BTE	Full-stroke exercise test to ENERGIZED
BTO	Full-stroke exercise time test to OPEN Position
BTC	Full-stroke exercise time test to CLOSE Position
BTX	Full-stroke exercise tests
BT-VOP	Vacuum breaker operational test (Part 1, 1.3.4.3)
CM	Testing will be determined by the check valve condition monitoring program.
CTCME	Check valve mechanical exercise-CLOSED
CTOME	Check valve mechanical exercise-OPEN
CT-CC	Check valve exercise test to the CLOSED Position
CT-CO	Check valve exercise test to the OPEN Position
CT-RDI	Rupture diaphragm inspection
CT-RDR	Rupture diaphragm replacement
CT-SP	Safety/Relief Valve Setpoint Verification Test
CT-VSP	Check Valve/Vacuum Breaker Setpoint Test
DSBY	Check valve disassembly/inspection
DT-E	Explosive Valve Test
DT-REC	Record verification for explosive valves
FST	Fail-safe Test
ME	Manual Exercise
NA	Components is skid mounted and no IST testing requirements are applicable.
PIT	Remote Position Indication Verification Test

VALVE LIST

Freq	The Required test Interval as defined below:
AJ	Test frequency is determined by the Appendix J program, as allowed by ISTC-3620.
CS	Cold shutdown, as clarified by NUREG 1482 section 2.4.5. Note: Cold shutdown is a frequency, not a plant condition.
CM	Frequency will be determined by the check valve condition monitoring program
Q	Quarterly - every 92 days (during plant operation).
R	Each reactor refueling outage (cycle). For valves for which disassemblies are governed by relief requests, only one in each group may be affected each outage. To determine the actual frequency, review valve relief requests, if one is referenced.
R*	Check valve exercise open test or exercise close test that is not refueling outage dependent and may be performed more frequently than once a refueling interval.
R1	Valve will be grouped with other valves in-accordance with ISTC-5221 (c) , with at least one valve disassembled each refueling outage in-accordance with ISTC-5221 (c) .
R2	50% of Main Steam and Safety Valves are tested during successive refueling outages.
2Y	Every 2 years
.2/2Y	Explosive valves require at least 20 % replacement every two years per ISTC-5260.
5Y	5 Year replacement of non-reclosing pressure relief devices per Appendix 1 of ASME OM Code 2001 Edition through 2003 addendum.
6M	Semi-annually (every 6 months).
6Y	Every 6 years.
10Y	Safety/relief valves are tested on a sampling basis in accordance with Appendix 1 of ASME OM Code 2001 Edition through 2003 addendum.
10Y1	Excess Flow Check Valve Test scheduled per Relief Request VR-01.
10Y2	Thermal relief valves are tested once every 10 years in accordance with ASME OM Code 2001 Appendix 1.

VALVE LIST

Notes: Important items not covered under other documentation as to valve construction and testing.

1. Normal stroke to safety position satisfies fail safe testing requirement.
2. Component is considered skid mounted. Pumps and valves integral to or that support operation of major components, even though these pumps and valves may not be located directly on the skid.
3. Valve is not within the ISI-code boundaries. Testing of this valve will be performed in accordance with the Code to the extent practical. Relief requests will not be submitted for this valve if the Code requirements cannot be met. Also cold shutdown or refueling justifications will not be provided for this valve, in this document.
4. Check valve exercise open test or exercise close test that is not refueling outage dependent and may be performed more frequently than once a refueling interval.
5. There are 89 individual CRD hydraulic control units (HCU's) with each unit provided with one of these valves. The valve number listed is typical of all 89 like valves. All 89 valves will be tested as specified for the typical valve.
6. Due to a restrictive plant configuration, the type C leaktest procedures for these valves yield test results related to the combined leakage of several valves tested as a group and not a valve-specific seat leakage. The leakrate acceptance criteria assigned to these valves is the limit for the entire group of valves being tested.
7. Reserved
8. The "full" stroke of this 1/4-turn Butterfly valve is restricted by physical modifications to a range from fully closed to 30 degrees open.
9. These valves are exercised (tested) during normal control rod exercising routines.
10. Reserved
11. This solenoid valve operates under accident or emergency conditions. During exercise of this valve the stroke time of the associated main valve is measured and evaluated.
12. Valve has no remote position indication.
13. There are 89 individual CRD hydraulic control units (HCU's) with each unit provided with one of these solenoids. The two scram pilot solenoids are contained in the same valve for each HCU. The solenoid number listed is typical of all 89 like solenoids. All 89 solenoids will be tested as specified for the typical solenoid.
14. Category 'B' Safety Relief valves are exempt from stroke timing and position indication testing.per ISTC-1200.
15. Rupture disc does not see pressure during operation, and therefore does not experience wear. Valve is outside of Code boundary. Disc will be replaced per vendor recommendation every 10 years.
16. The valve is classified as a thermal relief according to design documentation.
17. Air supply to actuator has been isolated. Valve is maintained in the open direction and is unable to stroke as configured.
18. Stroke time testing of the Main Steam Line Safety Relief Valves will be performed at an off-site facility during the setpoint testing.

VALVE LIST

Notes: "S" indicate that the component is considered skid mounted.

S1 These valves are supplied with the HCU. The safety function of these check valves to close is verified by depressurizing the supply water charging header and verifying that the scram accumulator maintains pressure. Scram accumulator pressure is also verified once every seven days per Tech Spec. surveillance requirement SR 3.1.5.1.

S2 These valves are supplied with the HCU. Per NUREG 1472, industry experience has shown that normal control rod motion may verify the cooling water header check valve moving to its safety function position, which can be demonstrated because the control rod motion may not occur if the valve were to fail in the open position. Motion of each withdrawn control rod is verified every 31 days by TS SR 3.1.3.2.

S3 These valves are supplied with the HCU. The safety function to open of these valves is verified during TS required scram insertion time testing per SRs 3.1.4.1 and 3.1.4.2. Failure of these check valves to open will result in failure to meet the required insertion time for associated control rod.

S4 These valves are supplied with the HCU and are considered to be skid mounted. CV1849(##-##) opens to provide a flow path for CRD drive water to the CRD housing. CV1850(##-##) opens to provide a flow path from the CRD housing to the scram discharge volume. The safety function of these valves is adequately tested during TS required scram time testing. Failure of either of the these valves for a given control rod will result in a failure to meet the required scram insertion time.

S5 These valves are integral to the operation of the EDG air start system and are adequately tested during testing EDG.

S6 These valves are mounted on the discharge of the HPCI/RCIC condensate pumps and are part of the HPCI/RCIC skid. These valves are cycled during operation of the HPCI/RCIC pumps.

S7 HV2201 is part of the HPCI skid and is considered a skid mounted component. HV2201 is adequately tested during HPIC operability testing. During operability testing, the valve is verified to cycle open and closed. HV2201 is considered skid mounted and is not required to be stroke time tested per the ASME OM Code.

Valve Relief Request

Relief Request Number: VR-01

Valve Description: Excess Flow Check Valves (EFCV)

Plant Systems: Feed Water Control, Residual Heat Removal, Core Spray, Neutron Monitoring, Nuclear Steam Supply Shutoff, Reactor Vessel Recirculation, Reactor Non-Nuclear Instrumentation

Applicability: Proposed alternative test for Excess Flow Check Valves (EFCV)

Code Category: C **ASME Class:** 1

Component No.	P&ID	Component No.	P&ID	Component No.	P&ID
XFV2119 XFV2139	121	XFV4501A XFV4501B XFV4503 XFV4504 XFV4505 XFV4506 XFV4507 XFV4508 XFV4510A XFV4510B XFV4511 XFV4512 XFV4513 XFV4514 XFV4515 XFV4516 XFV4518 XFV4519 XFV4528 XFV4562 XFV4578 XFV4579 XFV4580 XFV4581 XFV4582 XFV4583 XFV4584 XFV4585 XFV4586 XFV4587 XFV4588 XFV4589 XFV4590 XFV4591	115	XFV4607 XFV4608 XFV4611 XFV4612 XFV4637 XFV4638 XFV4641A XFV4641B XFV4642A XFV4642B XFV4643A XFV4643B XFV4644A XFV4644B XFV4663 XFV4664 XFV4665 XFV4666 XFV4667 XFV4668 XFV4669 XFV4670 XFV4671 XFV4672 XFV4673 XFV4674 XFV4675 XFV4676 XFV4677 XFV4678 XFV4679 XFV4680 XFV4681 XFV4682	116
XFV2246A XFV2246B XFV2246C XFV2246D	122				
XFV2443A XFV2443B XFV2443C XFV2443D	124				
XFV4453A XFV4453B XFV4454A XFV4454B XFV4455A XFV4455B XFV4456A XFV4456B XFV4457A XFV4457B XFV4458A XFV4458B XFV4459A XFV4459B XFV4460A XFV4460B	114				

Valve Relief Request

Relief Request Number:	VR-01		
Valve Description:	Excess Flow Check Valves (EFCV)		
Plant Systems:	Feed Water Control, Residual Heat Removal, Core Spray, Neutron Monitoring, Nuclear Steam Supply Shutoff, Reactor Vessel Recirculation, Reactor Non-Nuclear Instrumentation		
Applicability:	Proposed alternative test for Excess Flow Check Valves (EFCV)		
Code Category:	C	**ASME Class:**	1

Function:

Excess flow check valves (EFCV) specifically designed, by Marotta Scientific Controls Inc., for the DAEC are provided in each instrument process line that penetrates the drywell and is part of the reactor coolant pressure boundary. The excess flow check valve is designed so that it will not close accidentally during normal operation, will close if a rupture of the instrument line is indicated downstream of the valve, can be reopened when appropriate, and has its status indicated in the control room. An orifice is installed just inside the drywell on each of these instrument lines. The orifice limits leakage to a level where the integrity and functional performance of secondary containment and associated safety systems are maintained, the coolant loss is within the capability of the reactor coolant makeup system, and the potential offsite exposure is substantially below the guidelines of 10 CFR 100. Regulatory Guide 1.11 requested that an additional isolation valve capable of automatic operation be located outside containment on these instrument process lines. At the DAEC, these are the excess flow check valves.

Test Requirement (s):

ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months, except as provided by ISTC-3520, ISTC-3540, ISTC-3550, ISTC-3570, ISTC-5221 and ISTC-5222.

Basis for Relief:

The excess flow check valve is a simple device: the major components are a poppet and spring. The spring holds the poppet open under static conditions. The valve will close upon sufficient differential pressure across the poppet. Functional testing of the valve is accomplished by venting the instrument side of the tube. The resultant increase in flow imposes a differential pressure across the poppet, which compresses the spring and decreases flow through the valve.

Excess flow check valves have been extremely reliable throughout the industry. In the first 30 years of operation at the DAEC, no excess flow check valve has failed to close due to actual valve failure (i.e., not related to test methodology). The DAEC Technical Specifications (TS) detail what frequency is required to maintain a high degree of reliability and availability, and provide an acceptable level of quality and safety.

Valve Relief Request

Relief Request Number:	VR-01		
Valve Description:	Excess Flow Check Valves (EFCV)		
Plant Systems:	Feedwater Control, Residual Heat Removal, Core Spray, Neutron Monitoring, Nuclear Steam Supply Shutoff, Reactor Vessel Recirculation, Reactor Non-Nuclear Instrumentation		
Applicability:	Proposed alternative test for Excess Flow Check Valves (EFCV)		
Code Category:	C	**ASME Class:**	1

In the NRC's Safety Evaluation, which approved the associated TS amendment, the Staff concluded, "Based on the acceptability of the methods applied to estimate the release frequency, a relatively low release frequency estimate in conjunction with unlikely impact on core damage and negligible consequence of a release in the reactor building, we conclude that the increase in risk associated with the licensee's request for relaxation of EFCV surveillance testing to be sufficiently low and acceptable." DAEC requested this relief pursuant to 10CFR50.55a(a)(3)(i) to exercise excess flow check valves at the frequency specified in amended DAEC TS Surveillance Requirement (SR) 3.6.I.3.7.

Test Alternative/Frequency:

Excess flow check valves will be exercised at the frequency specified in the amended DAEC TS Surveillance Requirement (SR) 3.6.I.3.7. The surveillance requirement is to test a representative sample of Excess Flow Check Valves so that each Excess Flow Check Valve is tested at least once every 10 years. The Excess Flow Check Valves have position indication in the control room. Check valve remote position indication is excluded from Regulatory Guide 1.97 as a required parameter for evaluating containment isolation. The remote position indication will be verified in the closed direction at the same frequency as the exercise test, which will be performed at the frequency prescribed in the amended DAEC TS Surveillance Requirement (SR) 3.6.I.3.7. After the close position test, the valves will be reset, and the remote open position indication will be verified. Although inadvertent actuation of an EFCV during operation is highly unlikely due to the spring-poppet design, the DAEC will verify the EFCVs indicate open in the control room at a frequency greater than once every 2 years.

Relief is requested pursuant to 10CFR 50.55a(a)(3)(i); the alternative testing will provide an acceptable level of quality and safety.

Reference:

- DAEC Technical Specification Amendment 230 approved by the NRC on December 29, 1999
- Safety Evaluation by the office of Nuclear Reactor Regulation of the third 10-year interval inservice inspection plan request for relief regarding excess flow check valve surveillance requirements, Duane Arnold Energy Center, Docket No. 50-331, dated March 28, 2000.

Note:

This proposed alternative was approved (as VR-01) in the 4th IST Interval per Office of NRR - Safety Evaluation dated July 21, 2006, in accordance with 10 CFR 50.55a(a)(3)(i).

Valve Relief Request

Relief Request Number:	VR-02
Valve Description:	Relief Safety Valves (SRV)
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves
Code Category:	B/C **ASME Class:** 1
Component No.:	PSV4400, PSV4401, PSV4402, PSV4405, PSV4406, PSV4407
P&ID:	114

Function:

These Safety/Relief Valves (SRVs) provide automatic overpressure protection or the nuclear boiler system, thereby preventing failure of the nuclear process barrier (i.e., reactor coolant pressure boundary). Each SRV is self-actuating at its prescribed set-point and resets at approximately 50 psi below its lift set-point.

The Automatic Depressurization System (ADS) utilizes four of the six SRVs provided in the nuclear boiler system to accomplish reactor vessel depressurization. The purpose of the ADS is to provide an automatic means of reducing reactor pressure for events such as pipe breaks or reactor loss of water level transients when the HPCI system is unable to maintain reactor water level. The pressure reduction enables low pressure make-up systems such as Low Pressure Coolant Injection (LPCI) and Core Spray to inject additional makeup water into the vessel to restore or maintain water level preventing overheating of the fuel cladding. (DAEC UFSAR Section 6.3.2.2.2)

The Low-Low Set (LLS) System utilizes the two remaining SRVs provided in the nuclear boilers system that are not used for the ADS function to mitigate the induced high frequency loads on the primary containment (torus) and the thrust loads on the SRV discharge lines and tailpipes. This reduces the possibility of a SRV tailpipe rupture occurring inside the torus above the suppression pool water level; thereby creating a bypass of the pressure suppression function. The LLS System automatically controls reactor pressure by opening and closing the LLS SRVs in the relief mode over a wider band of reactor pressure than the safety mode. The LLS valves are the two SRVs with the lowest safety mode pressure relief setpoints. This reduces the number and frequency of SRV actuations allowing the SRV discharge line vacuum relief valves time to clear the discharge lines of water, thus lowering the thrust loads. (DAEC UFSAR Section 5.4.13)

In addition, each SRV may be operated in the relief mode from the Main Control Room with individual AUTO/OPEN switches and selected SRVs may be similarly operated from the Remote Shutdown Panel outside the Main Control Room. This capability allows the SRVs to be utilized for reactor vessel pressure control under emergency conditions.

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

The six SRVs are Target Rock Three-Stage, Model 7467F design. The SRVs are dual-function valves capable of being independently opened in either the safety or relief mode of operation. The ADS SRVs are identical in construction to the LLS SRVs. Each valve is a pilot-controlled, pneumatically opened, spring shut, reverse-seated globe valve. It can be operated either as a self-actuated pressure relief function or a remote-actuated pressure control function.

The SRV consists of three main sections, the pilot valve, the remote actuator, and the main valve. Reactor vessel pressure is felt on the top and bottom of the main valve piston, and on the pilot valve bellows via the pilot sensing port. Since reactor vessel pressure is equalized across the main valve piston due to the drilled orifice, it is the main valve spring and differential pressure across the main disc, which keeps the main disc seated. When reactor vessel pressure reaches the self-actuated pressure relief function opening set-point, the pilot valve is forced open against spring pressure, allowing steam to flow into the chamber above the second stage piston. Steam pressure exerted on the second stage piston causes the second stage disc to unseat, providing a relief path for steam above the main disc. Since the steam can escape through the passage in the valve body faster than it can be admitted through the small main piston orifice, pressure above the main piston will decrease. Pressure will continue to decrease until reactor vessel pressure acting on the under-side of the main piston overcomes the spring pressure and forces the main disc off its seat. When reactor system pressure decreases to approximately 50 psi below the self-actuated pressure relief function opening set-point, the pilot valve will reseat and the main valve spring pressure will reseat the main disc.

Remote actuation of an SRV may be accomplished by its hand-switch located in the Main Control Room, selected switches on the Remote Shutdown Panel, or by automatic initiation signals (ADS or LLS). Upon receipt of a remote initiation signal from any of these sources, the SRV's solenoid operating valve (SOV) is energized and 90-psi nitrogen pressure is directed to a diaphragm near the top of the SRV. This causes the diaphragm and the attached rod to be forced downward. The rod then makes physical contact with the second stage piston causing the second stage disc to unseat. The remainder of the valve operation is the same as for self-actuation function previously described. Removal of the remote initiation signal allows nitrogen pressure to vent off of the diaphragm via the exhaust port of the SOV, thus permitting the spring to reseat the main disc.

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

The main steam relief valves are dual function safety/relief valves that operate as both a pilot operated relief valve (overpressure protection mode) and a power-operated relief valve (manual/ADS/LLS mode). The SRVs are categorized as Category B and Category C valves in the Inservice Testing Program. The Category of C is consistent with the pilot operated relief valve function and is tested per Appendix I of the ASME OM Code. Category B is consistent with a power-operated relief valve and is tested per Section ISTC-5100 of the ASME OM Code.

Test Requirement (s):

Appendix I Section I-1320, Test Frequencies, Class 1 Pressure Relief Valves

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

(b) Replacement with Pretested Valves. The Owner may satisfy testing requirements by installing pretested valves to replace valves that have been in service, provided that:

(1) For replacement of a partial complement of valves, the valves removed from service shall be tested prior to resumption of electric power generation; or

(2) For replacement of a full complement of valves, the valves removed from service shall be tested within 12 months of removal from the system.

(c) Requirements for Testing Additional Valves. Additional valves shall be tested in accordance with the following requirements.

(1) For each valve tested for which the as-found set-pressure (first test actuation) exceeds the greater of either the ±tolerance limit of the Owner-established set-pressure acceptance criteria of I-1310(e) or ±3% of valve nameplate set-pressure, two additional valves shall be tested from the same valve group.

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

(2) If the as-found set-pressure of any of the additional valves tested in accordance with I-1320(c)(1) exceeds the criteria noted therein, then all remaining valves of that same valve group shall be tested.

(3) The Owner shall evaluate the cause and effect of valves that fail to comply with the set-pressure acceptance criteria established in I-1320(c)(l) or the Owner-established acceptance criteria for other required tests, such as the acceptance of auxiliary actuating devices, compliance with Owner's seat tightness criteria, etc. Based upon this evaluation, the Owner shall determine the need for testing in addition to the minimum tests specified in I-1320(c) to address any generic concerns that could apply to valves in the same or other valve groups

Appendix I Section I-3410, Class 1 Main Steam Pressure Relief Valves with Auxiliary Actuating Devices

Each valve that has been maintained or refurbished in place, removed for maintenance and testing, or both, and reinstalled shall be remotely actuated at reduced or normal system pressure to verify open and close capability of the valve before resumption of electric power generation. Set-pressure verification is not required.

Section ISTC-5113, Valve Stroke Testing

(a) Active valves shall have their stroke times measured when exercised in accordance with ISTC-3500.
(b) The limiting value(s) of full-stroke time of each valve shall be specified by the Owner.
(c) The stroke time of all valves shall be measured to at least the nearest second.
(d) Any abnormality or erratic action shall be recorded (see ISTC-9120) and an evaluation shall be made regarding need for corrective action.
(e) Stroke testing shall be performed during normal operating conditions for temperature and pressure if practicable.

Section ISTC-5114 Stroke Test Acceptance Criteria

Test results shall be compared to the reference values established in accordance with ISTC-3300, ISTC-3310, or ISTC-3320.

(a) Valves with reference stroke times of greater than 10 sec shall exhibit no more than 125% change in stroke time when compared to the reference value.
(b) Valves with reference stroke times of less than or equal to 10 sec shall exhibit no more than 150% change in stroke time when compared to the reference value.

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

(c) Valves that stroke in less than 2 sec may be exempted from ISTC-5115(b). In such cases the maximum limiting stroke time shall be 2 sec.

Basis for Relief from I-1320(a) and I-3410(d):

This Fifth 10-year IST Interval request for relief is based on Appendix I, ASME OM Code-2004 Edition through the 2006 Addenda. Exercising of the SRV after reinstallation could only be performed during reactor startup when there is sufficient steam pressure to actuate the main disk. Past history indicates that the main disks may not re-seat properly after being exercised during reactor startup resulting in steam leakage into the suppression pool. This leakage results in a decrease in plant performance and the potential for increased suppression pool temperatures which could force a plant shutdown to repair a leaking SRV. Past operating history indicates that the exercising performed during reactor startup is of no significant benefit in ensuring the proper operation of the individual SRV subassemblies.

This request for relief also proposes to implement Code Case OMN-17 "Alternate Rules for Testing ASME Class 1 Pressure Relief/Safety Valves." OMN-17 states in Section (a) that safety valves shall be tested at least once every 72 months (6 years) with a minimum of 20% of the SRV group being tested within any 24-month interval. This 20% shall consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve that is in service shall not exceed 72 months except that a 6-month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods.

Justification:

Leaking SRVs create operational problems associated with the suppression pool. SRV leakage increases both pool temperature and level, requiring more frequent use of the Residual Heat Removal (RHR) System to maintain the corresponding limits for the suppression pool in the plant's Technical Specifications (TS).

The SRV pilot assemblies removed during the refuel outage are tested at an offsite facility. The as-found testing is performed prior to the resumption of power operation from that refuel outage, meeting the OM code requirements. The valves are refurbished, as necessary, to meet the acceptance criteria of zero leakage, and are certified in writing as being leak free. The valves are then reinstalled in the plant in a subsequent refuel outage and proper pilot operation is confirmed through leak rate testing of the pilot air operators and associated accumulator piping followed by manual lift at reactor power.

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

Several aspects of SRV design and operation can contribute to valve leakage. As mentioned earlier, these include test pressure, pilot valve disc and rod configuration, and overall system and valve cleanliness. Actuation of the SRVs after laboratory testing by any means allows these contributors to impact the ability of the valve to re-close completely. NextEra Energy Duane Arnold has made significant efforts to minimize the effects of these contributors. In 1999 the DAEC Technical Specifications were changed to permit an as-found tolerance of ±3% and ±1% as-left tolerance on the SRV opening setpoints. Since that time, the DAEC has had no SRV setpoint failures and only one instance of seat leakage during testing at the offsite facility in 2009. There have been two instances of valve leakage during power operation; a pilot valve leak in 2004 and a second stage leak in 2010. This recent event occurred shortly after performance of the in-situ test at reduced system pressure and is believed to be a contributing cause of the valve failure.

In reference to the OM Code 2004 Edition through 2006 Addenda, Section I-1320 "Test Frequencies, Class I Pressure Relief Valves", this states that there is a five year frequency for SRV testing. NextEra Energy Duane Arnold proposes to use Code Case OMN-17 "Alternate Rules for Testing ASME Class 1 Pressure Relief/Safety Valves" to change the frequency to six years, including a 6 month grace period, to coincide with the 24-month refueling cycle at DAEC

Additionally, reducing challenges to the SRVs is a recommendation of NUREG-0737; "TMI Action Plan Requirements," Item II.K.3.16. This recommendation is based on a stuck-open SRV being a possible Loss of Coolant Accident (LOCA). This relief request is consistent with that NRC recommendation.

Proposed Alternative Test:

As an alternative to the testing required by ASME OM Code-2004, Appendix I, paragraph I-3410(d), NextEra Energy Duane Arnold proposes to actuate the SRVs in the relief mode at the certified test facility. A test solenoid valve will be energized, the actuator will stroke, and the 2nd stage rod movement will be verified. This test will verify that, given a signal to energize the solenoid valve, the 2nd stage disc rod will travel to unseat the 2nd stage disc. The 2nd stage function will be recorded in the test documentation package for future reference, as needed. Alternate testing is justified since the remaining segments of the SRV relief mode of operation are verified by other tests. The ability of the pilot disc to open is demonstrated in the safety mode actuation bench test. The integrity of the pneumatic and solenoid system for the SRVs is verified by performance of post maintenance leak rate testing, continuity testing, and a functional test of the solenoid valve while detached from the SRV.

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

Automatic valve actuation is proven by Logic System Functional Tests which include verification that the SOV is energized by the automatic signal. The actuator to main body joint is inspected during ISIVT-2 exam performed prior to startup. The above proposed surveillance and testing of the SRVs and associated components provide reasonable assurance of adequate valve operation and readiness.

Following installation, the electrical and pneumatic connections will be verified by energizing the SOVs using the respective control switches and inspecting the pneumatic actuator for movement and leakage (so-called dry lift test). While this test will actuate the SRV second stage, operating experience at other plants indicates that it does not initiate second stage leakage or otherwise damage the valve when performed with no steam pressure; thus, making it a better alternative test to an in-situ steam test during reactor startup.

NextEra Energy Duane Arnold proposes to implement Code Case OMN-17 that requires in section (a) a 72-month test interval for Class 1 pressure relief valves with a minimum of 20% of the SRV group being tested within any 24-month interval. This 20% shall consist of valves that have not been tested during the current 72-month interval, if they exist. The test interval for any individual valve that is in service shall not exceed 72 months except that a six month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods. The removed main steam relief valves will be sent for as-found testing to the off-site test facility. Each main steam relief valve will then be disassembled and inspected for abnormal wear and the specific concerns documented in General Electric Company Service Information Letters (SIL) No. 196, Supplement 17 and No. 646, References 5 and 6 respectively. The post-maintenance tests required by Appendix I, Section I-3310 will be conducted at the off-site testing facility. As part of implementation of this relief request, NextEra Energy Duane Arnold will institute measures to assure that each main steam relief valve will be disassembled and inspected prior to being placed on the new 72-month interval.

Testing will be performed as stated below:

Test Frequencies, Class 1 Pressure Relief Valves

(a) 72-Month Test Interval. Class 1 pressure relief valves shall be tested at least once every 72 months (6-years), starting with initial electric power generation. A minimum of 20% of the valves from each valve group shall be tested within any 24-month interval. This 20% shall consist of valves that have not been tested during the current 5-year interval, if they exist. The test interval for any individual valve shall not exceed 72 months except that a 6 month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods.

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

(b) Replacement With Pretested Valves. The Owner may satisfy testing requirements by installing pretested valves to replace valves that have been in service, provided that:

1. For replacement of a partial complement of valves, the valves removed from service shall be tested prior to resumption of electric power generation and shall be subjected to the maintenance specified in (d); or

2. For replacement of a full complement of valves, the valves removed from service shall be tested within 24 months of removal from the system.

(c) Requirements for Testing Additional Valves. Additional valves shall be tested in accordance with the following requirements.

1. For each valve tested for which the as-found set-pressure (first test actuation) exceeds the greater of either the ±tolerance limit of the Owner-established set-pressure acceptance criteria or ±3% of valve nameplate set-pressure, two additional valves shall be tested from the same valve group.

2. If the as-found set-pressure of any of the additional valves tested in accordance with (c)(1) exceeds the criteria noted therein, then all remaining valves of that same valve group shall be tested.

3. The Owner shall evaluate the cause and effect of valves that fail to comply with the set-pressure acceptance criteria established in (c)(1) or the Owner-established acceptance criteria for other required tests (e.g. acceptance of auxiliary actuating devices, compliance with Owner's seat tightness criteria). Based upon this evaluation, the Owner shall determine the need for testing in addition to the minimum tests specified.

(d) Maintenance. The Owner shall disassemble and inspect each valve after as-found set-pressure testing to verify that parts are free of defects resulting from time rated degradation or service induced wear. Based on upon this inspection, the Owner shall determine the need for additional inspections or testing to address any generic concerns. As-left set-pressure testing shall be performed following maintenance and prior to retuning the valve to service.

(e) Each valve shall have been disassembled and inspected in accordance with (d) above prior to the start of the 72 month test interval. Disassembly and inspection performed prior to the implementation of this Code Case may be used.

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

Basis for Relief from ISTC-5113 and ISTC-5114:

The proposed alternatives also provide adequate assurance that valve stroke time in the power-actuated mode will be acceptable. Stroke timing of the SRVs will be performed at the test facility as described above. Currently, as-found stroke time testing is performed prior to and after performing maintenance at the test facility. After completion of maintenance, plant surveillance tests with steam at reduced pressure are performed in order to detect gross failures of the SRVs to change position. The tests performed at DAEC are not as refined as the valve response time test performed at the steam test facility. The design requirement for the valve stroke time is 0.45 seconds from signal initiation to valve full open in the power-actuated mode (0.40 seconds for signal initiation to start of valve motion and 0.050 seconds (50 milliseconds) for valve stroke to full open). Measuring valve stroke times to this level of accuracy in-situ at the power plant is not practical and only possible under the controlled conditions of the offsite facility. Per ISTC-5114(c), the maximum permissible valve stroke time can be up to 2 seconds. Consequently, the in-situ test acceptance criterion becomes essentially a "failure to open" criterion. Therefore, the tests performed at DAEC can only detect gross failures to change position and cannot monitor for valve performance degradation between tests.

Justification:

In-situ stroke timing is not useful for identifying valve degradation over several operating cycles. Rather, an in-situ exercise test will be used to ensure that the valve will function in the power actuation mode. This test will be performed at the frequency prescribed in ISTC-3510 for power-operated relief valves. Stroke time at the test facility will demonstrate that the valve performs acceptably compared to the stroke times of known good performing valves. Since the test facility cannot duplicate the electrical control system at the plant, actuation of the valve at the test facility is accomplished through a simplified electrical actuation. Observation of the end of the operating stroke at the test facility is indirect, based on evidence of steam flow and pressure, as it is at the nuclear facility, since the relief valves have no positive open indication. Although these differences may result in minor differences in measured stroke time compared to those measured when installed in the plant, the stroke times measured at the test facility will be comparable to each other and thus can be used to detect any abnormality in valve performance.

Proposed Alternative Test:

Stroke times will be measured at the test facility. Stroke times will be measured following valve rebuild. The timing will begin with the actuating electrical signal and end with the indirect indication of the end of the operating stroke. Stroke time acceptance criteria will use a pre-established reference value that represents good performance for the valve type.

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

An in-situ exercise test of the valve in the power-actuated mode will be performed at the frequency prescribed in ISTC-3510. The in-situ exercise test will be performed prior to the resumption of electric power generation. Main disc movement and set-pressure verification are not required.

Conclusion:

Based upon the above, the proposed alternatives provide an adequate assurance of quality and safety equal to that of the current Code of record. Consequently, the provisions of 10 CFR 50.55a(a)(3)(i) are judged to be met.

Duration:

The proposed alternatives identified in this relief request shall be utilized during the Fifth 10-year IST Interval that began on February 1, 2016.

Precedents:

NUREG-1482, Rev. 1, Paragraph 4.3.2.1 states, "In recent years, the NRC staff has received numerous requests for relief and/or TS changes related to the stroke testing requirements for BWR dual function main steam SRVs. Both Appendix I to the ASME OM Code and the plant-specific TS require stroke testing of SRVs after they are reinstalled following maintenance activities. Several licensees have determined that in-situ testing of the SRVs can contribute to undesirable seat leakage of the valves during subsequent plant operation and have received approval to perform testing at a laboratory facility coupled with in situ tests and other verifications of actuation systems as an alternative to the testing required by the ASME OM Code and TS."

Similar relief has been approved for the Dresden and Quad Cities stations (ML081330557) and Peach Bottom units (ML081790539), which also use three-stage Target Rock SRVs. The alternative testing approved for these plants included an in-situ actuator test without live steam (dry lift test).

Note:

This Relief Request was approved (as VR-02) in the 4th IST Interval per Office of NRR - Safety Evaluation dated July 11, 2012, in accordance with 10 CFR 50.55a(a)(3)(i).

Valve Relief Request

Relief Request Number:	VR-02		
Valve Description:	Relief Safety Valves (SRV)		
Plant Systems:	Nuclear Boiler System, Automatic Depressurization (ADS), Low-Low Set (LLS) System		
Applicability:	Proposed alternative test for ASME Class 1 Pressure Relief/Safety Valves		
Code Category:	B/C	**ASME Class:**	1

References:

1. ASME OM Code, 2004 Edition through 2006 Addenda.
2. Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief / Safety Valves".
3. NUREG-1482 Rev. 1, "Guidelines for Inservice Testing at Nuclear power Plants".
4. DAEC UFSAR Section 5.4.13, Safety and Relief Valves.
5. General Electric Co. Service Information Letter # 196, Supplement 17, "Target Rock SRV main disc spring relaxation and tip breakage," January 5, 1996.
6. General Electric Co. Service Information Letter # 646, "Target Rock safety relief valve failure to fully open," December 20, 2002.

General Relief Request

Relief Request Number: VR-03

Description: Hardship or Unusual Difficulty without Compensating Increase in Level of Quality or Safety

Applicability: All Pumps and Valves Contained within the Inservice Testing (IST) Program Scope

Applicable Code Edition and Addenda: ASME OM Code 2001 Edition through 2003 Addenda

Applicable Code Requirement:

This request applies to the frequency specifications of the ASME OM Code. The frequencies for tests given in the ASME OM Code do not include a tolerance band.

Code Paragraph	Description
ISTA-3120(a)	"The frequency for the inservice testing shall be in accordance with the requirements of Section IST."
ISTB-3400	Frequency of Inservice Tests
ISTC-3510	Exercising Test Frequency
ISTC-3540	Manual Valves
ISTC-3630(a)	Frequency
ISTC-3700	Position Verification Testing
ISTC-5221(c)(3)	"At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in a group shall be disassembled and examined at least once every 8 years."
Appendix I, 1-1320	Test Frequencies - Class 1 Pressure Relief Valves
Appendix I, 1-1330	Test Frequencies - Class 1 Nonreclosing Pressure Relief Devices
Appendix I, 1-1340	Test Frequencies - Class 1 Pressure Relief Valves that are used for Thermal Relief Application
Appendix I, 1-1350	Test Frequencies - Class 2 and 3 Pressure Relief Valves
Appendix I, 1-1360	Test Frequencies - Class 2 and 3 Nonreclosing Pressure Relief Devices
Appendix I, 1-1370	Test Frequencies - Class 2 and 3 Primary Containment Vacuum Relief Valves
Appendix I, 1-1380	Test Frequencies - Class 2 and 3 Vacuum Relief Valves Except for Primary Containment Vacuum Relief Valves
Appendix I, 1-1390	Test Frequencies - Class 1 Pressure Relief Valves that are used for Thermal Relief Application
Appendix II, II-4000(a)(1)	Performance Improvement Activities Interval
Appendix II, II-4000(b)(1)(e)	Optimization of Condition Monitoring Activities Interval

General Relief Request

Relief Request Number:	VR-03
Description:	Hardship or Unusual Difficulty without Compensating Increase in Level of Quality or Safety
Applicability:	All Pumps and Valves Contained within the Inservice Testing (IST) Program Scope
Applicable Code Edition and Addenda:	ASME OM Code 2001 Edition through 2003 Addenda

Reason for Request:

Pursuant to 10 CFR 50.55a, "Codes and standards," paragraph (a)(3)(ii), relief is requested from the frequency specifications of the ASME OM Code. The basis of the relief request is that the Code requirement presents an undue hardship without a compensating increase in the level of quality or safety.

ASME OM Code Section Inservice Testing (IST) establishes the inservice test frequency for all components within the scope of the Code. The frequencies (e.g., quarterly) have always been interpreted as "nominal" frequencies and are defined in plant Technical Specifications (TS) Section 5.5.6, "Administrative Controls, Programs and Manuals - Inservice Testing Program." Licensees routinely applied the surveillance extension time period (i.e., grace period) contained in the plant TS Surveillance Requirements (SR) Applicability, specifically SR 3.0.2. This TS allows for a less than or equal to 25% extension of the surveillance test interval to accommodate plant conditions that may not be suitable for conducting the surveillance. However, regulatory issues have been raised concerning the applicability of the TS "grace period" to ASME OM Code required IST frequencies irrespective of allowances provided under TS SR 3.0.2.

The lack of a tolerance band on the ASME OM Code IST frequency restricts operational flexibility. There may be a conflict where a surveillance test could be required (i.e., its frequency could expire,) but where it is not possible or not desired that it be performed until sometime after a plant condition or associated Limiting Condition for Operation (LCO) is within its applicability. Therefore, to avoid this conflict, the surveillance test should be performed when it can and should be performed.

The NRC recognized this potential issue in the TS by allowing a frequency tolerance as described in TS SR 3.0.2. The lack of a similar tolerance applied to OM Code testing places an unusual hardship on the plant to adequately schedule work tasks without operational flexibility.

Thus, just as with TS required surveillance testing, some tolerance is needed to allow adjusting OM Code testing intervals to suit the plant conditions and other maintenance and testing activities. This assures operational flexibility when scheduling surveillance tests that minimize the conflicts between the need to complete the surveillance and plant conditions.

General Relief Request

Relief Request Number:	VR-03
Description:	Hardship or Unusual Difficulty without Compensating Increase in Level of Quality or Safety
Applicability:	All Pumps and Valves Contained within the Inservice Testing (IST) Program Scope
Applicable Code Edition and Addenda:	ASME OM Code 2001 Edition through 2003 Addenda

Proposed Alternative and Basis for Use:

Code Case OMN-20 is included in the ASME OM Code, 2012 Edition and will be used as the alternative to the frequencies specified in ASME OM Code.

The requirements of Code Case OMN-20 are described below.

ASME OM Division: 1 Section IST and earlier editions and addenda of ASME OM Code specify component test frequencies based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or based on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.).

a) 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 the table below. The specified time period between tests may be reduced or extended as follows:

   1) For periods specified as less 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).

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 less than two year test frequencies not specified in the table below.

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.

General Relief Request

Relief Request Number: VR-03

Description: Hardship or Unusual Difficulty without Compensating Increase in Level of Quality or Safety

Applicability: All Pumps and Valves Contained within the Inservice Testing (IST) Program Scope

Applicable Code Edition and Addenda: ASME OM Code 2001 Edition through 2003 Addenda

Frequency	Specified Time Period Between Tests
Quarterly (or every 3 months)	92 days
Semiannually (or every 6 months)	184 days
Annually (or every year)	366 days
X Years	X calendar years where 'X' is a whole number of years ≥ 2

b) 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 earlier editions and addenda of ASME OM Code.

Duration of Proposed Alternative:

The proposed alternatives identified in this relief request shall be utilized during the Fifth 10-year IST Interval that begins on February 1, 2016.

Precedents:

Similar relief has been approved for DAEC (ML14111A002) and Quad Cities Nuclear Power Station, Units 1 and 2 (ML13042A348). The alternative testing approved for these plants included an in-situ actuator test without live steam (dry lift test).

References:

1. DAEC TS Section 1.4, "Frequency"

2. DAEC TS SR 3.0.2 [Specified Frequency (25% grace Period)]

3. DAEC TS SR 3.0.4, [Mode Entry Requirements]

4. DAEC TS Section 5.5.6, "Inservice Testing Program"

Deferred Testing Justification

Deferral Number:	**DTJ-01**
Valve Description:	Main Steam Turbine Stop and Control Valves
Plant System:	Main Steam Turbine System
Code Category:	B
Component No.:	CV1064 - Main Steam Drain Isolation to Condenser MO1043 - Main Steam Drain Isolation MO1044 - Drywell Steam Line Drains Condenser Isolation
P&ID:	103
Function:	These normally closed valves (CV1064 fails open) open to provide a flow path for Main Steam Isolation Valve (MSIV) leakage to the main condenser following an accident.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510, ISTC-5120 and ISTC-5130.
Basis for Deferral:	These valves open to direct MSIV leakage to the main steam drain lines and to the main condenser to reduce offsite dose to the public, after the MSIVs have isolated. The system was installed in 1994 to replace the MSIV leakage control system, and to permit greater leakage through the MSIVs. These valves are remote manually opened following isolation of the MSIVs as part of MSIV leakage treatment system. Since the function of these valves is to operate after the MSIVs close, the valves do not cycle with main steam line pressure in the line during accident conditions. These valves were not designed to be routinely operated during full power operation with full main steam line pressure. Quarterly full or partial cycling would result in increased wear, resulting in increased packing leakage, etc. while subject to pressures far greater than the valves will experience during accident conditions for the MSIV leakage treatment system. Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).
Alternate Test Frequency:	Cold Shutdown.

Deferred Testing Justification

Deferral Number:	DTJ-02
Valve Description:	Main Steam Turbine Stop and Control Valves
Plant System:	Main Steam Turbine
Code Category:	B
Component No.:	MO1054 - MSR 1E-18B 2nd Stage Reheat Steam Supply MO1055 - MSR 1E-18A 2nd Stage Reheat Steam Supply
P&ID:	103
Function:	These normally open valves close to divert Main Steam Isolation Valve (MSIV) leakage to the main condenser following an accident.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510 and ISTC-5120.
Basis for Deferral:	These valves open to direct MSIV leakage to the main steam drain lines and to the main condenser to reduce offsite dose to the public, after the MSIVs have isolated. The system was installed in 1994 to replace the MSIV leakage control system, and to permit greater leakage through the MSIVs. The safety function of these valves is to be remote manually closed following isolation of the MSIVs. These valves are normally open to allow 2nd Stage Reheat Steam to be supplied to feedwater heaters. These valves do not have a mechanism to equalize pressure across the valve after they are isolated, and should not be fully or partially stroked with main steam pressure in the line to avoid requiring the plant to enter cold shutdown in-order to re-open the valves. Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).
Alternate Test Frequency:	Cold Shutdown.

Deferred Testing Justification

Deferral Number:	DTJ-03
Valve Description:	Main Steam Turbine Stop and Control Valves
Plant System:	Main Steam Turbine Stop and Control
Code Category:	B
Component No.:	MO1362A - MSL "A" Supply to Offgas and SJAE MO1362B - MSL "B" Supply to Offgas and SJAE
P&ID:	103
Function:	These normally open valves close to divert Main Steam Isolation Valve (MSIV) leakage to the main condenser following an accident.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510 and ISTC-5120.
Basis for Deferral:	These valves close to direct MSIV leakage to the main steam drain lines and to the main condenser to reduce offsite dose to the public, after the MSIVs have isolated. The system was installed in 1994 to replace the MSIV leakage control system, and to permit greater leakage through the MSIVs. These motor-operated valves provide steam to the Steam Jet Air Ejectors. These valves are remote manually closed following isolation of the MSIVs as part of the MSIV leakage treatment system. Since the function of these valves is to operate after the MSIVs close, the valves do not cycle with main steam line pressure in the line during accident conditions. These valves were not designed to be routinely operated during full power operation with full main steam line pressure. Quarterly cycling would result in increased wear, such as increased packing leakage, etc. at pressures far greater than the valves will experience during the accident conditions for the MSIV leakage treatment system. Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).
Alternate Test Frequency:	Cold Shutdown.

Deferred Testing Justification

Deferral Number:	**DTJ-04**
Valve Description:	Main Steam Turbine Seal Valves
Plant System:	Turbine Steam Seal
Code Category:	B
Component No.:	MO1169 - Turbine Steam Seal Main Steam Supply Isolation MO1170 - Turbine Steam Seal Press Regulator Bypass
P&ID:	104
Function:	The normally open valve MO1169 and the normally closed valve MO1170 close to divert Main Steam Isolation Valve (MSIV) leakage to the main condenser following an accident.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510 and ISTC-5120.
Basis for Deferral:	These valves close to direct MSIV leakage to the main steam drain lines and to the main condenser to reduce offsite dose to the public, after the MSIVs have isolated. The system was installed in 1994 to replace the MSIV leakage control system, and to permit greater leakage through the MSIVs. The turbines steam seal system provides steam to the glands to control air leakage into the turbine. The system is essential for the turbine operation, and was not designed for full or partial valve cycling while the turbine is online. Operation Instruction OI 692 Precaution and Limitation #3 states: *"If MO1170 regulatory bypass is opened further than necessary, it is possible to lift PSV1173 A/B/C due to high pressure/flow even though seal pressure at PI1167 at 1C07 indicates <6 psig (lift setpoint) (a). Adjustments to steam seal pressure should normally be made using PC1175. (b). MO1170 regulator bypass and MO1171 manual un-loader should not be used to adjust seal pressure, except in the case of a regulator failure."* It would be very difficult to transition to the bypass without lifting the reliefs or getting a low steam seal pressure alarm. The turbine steam seal system provides steam to the turbine glands to control air leakage into the turbine. The system is essential for turbine operation, and was not designed for full or partial valve cycling while the turbine is online. Full or partial valve cycling should not be performed during plant operation to avoid unnecessary pressure transients on the steam seal system.

Deferred Testing Justification

Deferral Number:	**DTJ-04**
Valve Description:	Main Steam Turbine Seal Valves
Plant System:	Turbine Steam Seal
Code Category:	B

These valves are remote manually opened following isolation of the MSIVs as part of MSIV leakage treatment system. Since the function of these valves is to operate after the MSIVs close, the valves do not cycle with main steam line pressure in the line during accident conditions. These valves were not designed to be routinely operated during full power operation with full main steam line pressure. Quarterly full or partial cycling would result in increased wear, such as increased packing leakage, etc. while subject to pressures far greater than the valves will experience during accident conditions for the MSIV leakage treatment system.

Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).

Alternate Test Frequency: Cold Shutdown.

Deferred Testing Justification

Deferral Number:	**DTJ-05**
Valve Description:	Drywell RBCCW Return/Supply Header Isolation Valves
Plant System:	Reactor Building (Closed) Cooling Water (RBCCW) System
Code Category:	A
Component No.:	MO4841A, MO4841B
P&ID:	112
Function:	These normally open valves close to provide primary containment isolation.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510 and ISTC-5120.
Basis for Deferral:	During plant operation, these valves are open to supply and return cooling water to and from reactor recirculation pump components inside the drywell. These include the pump motor windings, seal water coolers and lube oil coolers. Closing or partially closing either of these valves interrupts cooling water flow and could result in damage to pump and motor components. Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).
Alternate Test Frequency:	Cold Shutdown.

Deferred Testing Justification

Deferral Number:	**DTJ-06**
Valve Description:	Main Steam Isolation Valves
Plant System:	Nuclear Boiler System
Code Category:	A

Component No.:	CV4412 - "A" Main Steam Line Inboard Isolation CV4413 - "A" Main Steam Line Outboard Isolation CV4415 - "B" Main Steam Line Inboard Isolation CV4416 - "B" Main Steam Line Outboard Isolation CV4418 - "C" Main Steam Line Inboard Isolation CV4419 - "C" Main Steam Line Outboard Isolation CV4420 - "D" Main Steam Line Inboard Isolation CV4421 - "D" Main Steam Line Outboard Isolation
P&ID:	114
Function:	These normally open valves (fail closed) close for reactor vessel and containment isolation.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510 and ISTC-5130.
Basis for Deferral:	Full stroke testing of the MSIVs requires a reduction in power to less than approximately 80% in order to lower steam line flow to acceptable levels for valve stroking. Attempting to full-stroke an MSIV at greater than 80% power may result in a plant trip due to high flow in the non-tested steam lines. Full stroke testing of the MSIVs, even at a reduced power places the plant in an abnormal operating condition and introduces an unnecessary challenge to plant equipment and to the operators involved in the evolution. For example, the MSIVs are challenged to close and then re-open with steam in the lines, the plant must stabilize following the isolation and un-isolation of a Main Steam Line.

Deferred Testing Justification

Deferral Number:	**DTJ-06**
Valve Description:	Main Steam Isolation Valves
Plant System:	Nuclear Boiler System
Code Category:	A

Also, the testing has the potential to cause the plant to remain at a reduced power level and/or cause the initiation of a shutdown in order to make repairs which may not be related to the MSIVs themselves. This would introduce additional equipment cycling and plant thermal transients. Therefore, plant power reductions will not be performed specifically to perform full exercise stroke testing of the MSIVs.

NUREG-1482 "Guidelines for Inservice Testing at Nuclear Power Plants", Section 2.4.5, "Deferring Valve Testing to Cold Shutdown or Refueling Outages" identifies "impractical conditions justifying test deferrals" as those conditions that could result in an unnecessary plant shutdown, unnecessary challenges to safety systems, place undue stress on components, cause unnecessary cycling of equipment, or unnecessarily reduce the life expectancy of the plant systems and components.

Deferral of the above specified tests to cold shutdown is in compliance with NUREG 1482 guidance and the extended test frequency is consistent with other BWRs regarding MSIV testing.

Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).

Alternate Test Frequency: Cold Shutdown.

Deferred Testing Justification

Deferral Number:	**DTJ-07**
Valve Description:	Main Steam Isolation Valves
Plant System:	Nuclear Boiler System
Code Category:	A
Component No.:	CV4412 "A" Main Steam Line Inboard Isolation CV4413 "A" Main Steam Line Outboard Isolation CV4415 "B" Main Steam Line Inboard Isolation CV4416 "B" Main Steam Line Outboard Isolation CV4418 "C" Main Steam Line Inboard Isolation CV4419 "C" Main Steam Line Outboard Isolation CV4420 "D" Main Steam Line Inboard Isolation CV4421 "D" Main Steam Line Outboard
P&ID:	114
Function:	These normally open valves (fail closed) close for reactor vessel and containment isolation.
Test Requirement:	Fail Safe Exercise test and stroke time test every 3 months in accordance with ISTC-3560
Basis for Deferral:	These valves have two fail-safe modes. One is loss of electric power. This mode is tested on-line (quarterly) by normal closure of each valve where the closure signal de-energizes the solenoid valves which control the actuator pilot valves. The second mode is loss of nitrogen gas pressure to the actuator. In this case the nitrogen pressure on the underside of the actuator piston, which keeps the valve open, is exhausted to atmosphere upon the failure of the supply system. The closure time is 3 to 5 seconds, after the nitrogen pressure has decayed to the point at which the air-valves reposition (internal spring force overcomes the pneumatic force). Exercising the MSIVs by closing utilizing spring force only complies with the recommendations of General Electric Service Information Letter 477. During refueling shutdowns, the MSIVs are also cycled utilizing the

Deferred Testing Justification

Deferral Number:	**DTJ-07**
Valve Description:	Main Steam Isolation Valves
Plant System:	Nuclear Boiler System
Code Category:	A

accumulators only (non-safety grade nitrogen makeup is isolated) in accordance with NRC Information Notice 85-84, Inadequate Inservice Testing of Main Steam Isolation Valves. Both of these tests require access to the drywell and a considerable expenditure of plant staff resources. Thus, the scope of these tests precludes testing during cold shutdown periods.

Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).

Alternate Test Frequency: Cold Shutdown.

Deferred Testing Justification

Deferral Number:	**DTJ-08**
Valve Description:	Feedwater Isolation Valves
Plant System:	Nuclear Boiler System
Code Category:	A/C
Component No.:	V14-0001, V14-0003 - Feedwater Inboard Isolation MO4441, MO4442 - Feedwater Outboard Isolation
P&ID:	114
Function:	These valves close for reactor vessel and containment isolation. V14-0001 and V14-0003 open to allow HPCI or RCIC injection. MO4441 and MO4442 (stop check valves) prevent diversion of HPCI and RCIC flow to the main feedwater system.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510, ISTC-5120 and ISTC-5220.
Basis for Deferral:	During plant operation at power, reactor feedwater must be supplied through these valves to maintain reactor coolant inventory and reactor vessel water level. Closing either feedwater loop will isolate two of the four supplies of feedwater into the reactor vessel. This could result in thermal shock to the reactor vessel feedwater nozzles and spargers upon resumption of flow and a plant trip due to the potential for severe reactor vessel water level and power transients For testing MO4441 and MO4442 stop check valve capability, a leak test is required. V14-0001 and V14-0003 are simple swing check valves with no positive indication of disk position with the only means of determining closure of these valves are by performing leak tests. Such a test requires drywell and steam tunnel entry plus extensive preparations of the feedwater system including draining approximately 2000 gallons of water. Furthermore, testing of V14-0001 requires shutdown of the cleanup system that is undesirable during power operation or cold shutdown.

Deferred Testing Justification

Deferral Number:	**DTJ-08**
Valve Description:	Feedwater Isolation Valves
Plant System:	Nuclear Boiler System
Code Category:	A/C

Performance of these leak tests is impossible during plant operation and impractical at cold shutdown due to the unreasonable burden on the plant staff.

Therefore, the provision stipulated in ISTC-3521(c) applies to motor operated valves (MO4441, MO4442) and these valves will be tested during cold shutdown (CS). The provision stipulated in ISTC-3522(c) applies to check valves (V14-0001, V14-0003) and will be tested during refueling outage (R).

Alternate Test Frequency: Cold Shutdown (MO4441 and MO4442)
Refueling Outage (V14-0001, V14-0003)

Deferred Testing Justification

Deferral Number:	**DTJ-09**
Valve Description:	Main Steam Nitrogen Supply Valves
Plant System:	Nuclear Boiler System
Code Category:	A/C
Component No.:	V14-0009 - Check Valve For N2 Supply To PSV4406 and PSV4407 V14-0014 - Check Valve For N2 Supply To PSV4402 V14-0015 - Check Valve For N2 Supply To PSV4400 and PSV4401 V14-0016 - Check Valve For N2 Supply To PSV4405
P&ID:	114
Function:	These valves provide isolation for the safety related Main Steam Relief Valve actuator nitrogen supply. These check valves close to maintain pressure in the accumulator on a loss of nitrogen supply.
Test Requirement:	Exercise test every 3 months in accordance with ISTC-3510.
Basis for Deferral:	These are simple check valve with no disk position indication. The only practical method of verifying closure is by performing a leak test. The method of leak testing for these valves requires entering the drywell and thus not practical during plant operation. This would require de-inerting the drywell. Based on the foregoing discussion, the cost and burden on the plant staff associated with cold shutdown testing of these valves is not justified by the little potential gain in plant safety afforded by the test. Therefore, the provision stipulated in ISTC-3522(c) applies and these valves will be tested during refueling outage (R).
Alternate Test Frequency:	Refueling Outage.

Deferred Testing Justification

Deferral Number:	**DTJ-10**
Valve Description:	Main Steam Nitrogen Supply Valves
Plant System:	Nuclear Boiler System
Code Category:	A/C
Component No.:	V14-0032 - Check Valve For N2 Supply To Accumulator 1R002A V14-0100 - Check Valve For N2 Supply To Accumulator 1R001A V14-0104 - Check Valve For N2 Supply To Accumulator 1R001B V14-0108 - Check Valve For N2 Supply To Accumulator 1R002B V14-0112 - Check Valve For N2 Supply To Accumulator 1R001C V14-0116 - Check Valve For N2 Supply To Accumulator 1R002C V14-0120 - Check Valve For N2 Supply To Accumulator 1R001D V14-0124 - Check Valve For N2 Supply To Accumulator 1R002D
P&ID:	114
Function:	These valves provide isolation for the safety related Main Steam Isolation Valve nitrogen accumulators. These check valves close to maintain pressure in the accumulator on a loss of nitrogen supply.
Test Requirement:	Exercise test every 3 months in accordance with ISTC-3510.
Basis for Deferral:	These are simple check valve with no disk position indication. The only practical method of verifying closure is by performing a leak test. The method of leak testing for these valves requires entering the drywell and thus not practical during plant operation. This would require de-inerting the drywell. Based on the foregoing discussion, the cost and burden on the plant staff associated with cold shutdown testing of these valves is not justified by the little potential gain in plant safety afforded by the test. Therefore, the provision stipulated in ISTC-3522(c) applies and these valves will be tested during refueling outage (R).
Alternate Test Frequency:	Refueling Outage.

Deferred Testing Justification

Deferral Number:	**DTJ-11**
Valve Description:	Recirculation Pump Discharge Valves
Plant System:	Reactor Recirculation System
Code Category:	B

Component No.:	MO4627 - RX Recirculation Pump 1P-201A Discharge Isolation MO4628 - RX Recirculation Pump 1P-201B Discharge Isolation
P&ID:	116
Function:	These normally open valves close to divert MSIV leakage to the main condenser following an accident.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510 and ISTC-5120.
Basis for Deferral:	Closing either of these valves during plant operation places the recirculation system in a "single loop" configuration. Although single-loop operation is possible, routinely entering into this configuration is undesirable and contrary to the prudent and safe operation of the reactor plant. In addition, operation in a single loop configuration requires a severe power reduction. Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).
Alternate Test Frequency:	Cold Shutdown.

Deferred Testing Justification

Deferral Number:	**DTJ-12**
Valve Description:	CRD Scram Discharge Vent/Drain Valves
Plant System:	Control Rod Drive Hydraulic System
Code Category:	B
Component No.:	CV1859B - CRD Scram Discharge Header Vent Valve CV1867B - CRD Scram Discharge Header Drain Inboard Isolation CV1859A - CRD Scram Discharge Volume Vent Valve CV1867A - CRD Scram Discharge Volume Drain Outboard Isolation
P&ID:	118
Function:	In the event of a scram these (fail close) valves close when solenoids SV1868A, SV1868B, SV1869A, and SV1869B de-energize. Closure isolates the scram discharge headers and reactor coolant from the reactor building.
Test Requirement:	Exercise test every 3 months in accordance with ISTC-3510.
Basis for Deferral:	Actuating the CRD scram discharge header vent and drain valves utilizing SV1868A, SV1868B, SV1869A, and SV1869B requires initiation of a full SCRAM signal. These solenoids are tied to the RPS system and de-energize to vent air from the valve actuator. The vent and drain valves are equipped with test solenoids that allow for quarterly exercising; the vent and drain valves are verified to close on a loss of air. The appropriate method of fail-safe testing these valves is to use the safety-related logic and solenoids. This is not practical quarterly: such testing could result in a plant trip. Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).
Alternate Test Frequency:	Cold Shutdown.

Deferred Testing Justification

Deferral Number:	**DTJ-13**
Valve Description:	Check Valve
Plant System:	Residual Heat Removal System
Code Category:	A/C
Component No.:	V19-0149 - B Residual Heat Removal Inject Check Valve V20-0082 - A Residual Heat Removal Inject Check Valve
P&ID:	119 (V19-0149), 120 (V20-0082)
Function:	These check valves close to isolate the reactor vessel from the residual heat removal system. They open to supply low pressure coolant injection to the vessel during an accident.
Test Requirement:	Exercise test every 3 months in accordance with ISTC-3510.
Basis for Deferral:	The only means of determining closure of these valves is by performing a leak test. Such a test requires drywell entry plus extensive preparations. Performance of these leak tests is impossible during plant operation and impractical at cold shutdown due to the unreasonable burden on the plant staff. In order to gain personnel access to the drywell, the nitrogen used to inert the drywell must be de-inerted. De-inerting the drywell solely for the purpose of valve testing is excessively burdensome and a sound basis for test deferral to refueling as described in NUREG-1482 rev. 1, Section 4.1.6. Therefore, the provision stipulated in ISTC-3521(e) and ISTC-3522(c) applies and these valves will be tested during refueling outage (R).
Alternate Test Frequency:	Refueling Outage.

Deferred Testing Justification

Deferral Number:	**DTJ-14**
Valve Description:	Check Valve
Plant System:	Residual Heat Removal System
Code Category:	A/C
Component No.:	V19-0195 - Thermal Relief Bypass Check Valve for MO1908
P&ID:	119
Function:	This check valve closes to isolate the reactor vessel from the residual heat removal system. The valve opens to reduce/relieve pressure between MO1908 and MO1909 to avoid pressure locking and thermal binding issues.
Test Requirement:	Exercise test every 3 months in accordance with ISTC-3510.
Basis for Deferral:	The only means of determining closure of these valves is by performing a leak test. Such a test requires drywell entry plus extensive preparations. Performance of these leak tests is impossible during plant operation and impractical at cold shutdown due to the unreasonable burden on the plant staff. In order to gain personnel access to the drywell, the nitrogen used to inert the drywell must be de-inerted. De-inerting the drywell solely for the purpose of valve testing is excessively burdensome and a sound basis for test deferral to refueling as described in NUREG-1482 rev. 1, Section 4.1.6. Therefore, the provision stipulated in ISTC-3521(e) and ISTC-3522(c) applies and these valves will be tested during refueling outage (R).
Alternate Test Frequency:	Refueling Outage.

Deferred Testing Justification

Deferral Number:	**DTJ-15**
Valve Description:	Check Valve
Plant System:	High Pressure Coolant Injection (HPCI) System – Water Side
Code Category:	C

Component No.:	V23-0085 - HPCI Keep Fill Isolation Check Valve
P&ID:	123
Function:	This check valve opens to provide a flow path for condensate water to the HPCI discharge pipe and closes to prevent over-pressurization of the HPCI keep fill line during HPCI operation.
Test Requirement:	Exercise test every 3 months in accordance with ISTC-3510.
Basis for Deferral:	During plant operation this valve must be capable of opening to maintain HPCI keep fill pressure. Verification that the valve can move to the open position may be accomplished by observing that the HPCI discharge piping is pressurized as required. The valve must close to prevent over-pressurization of the HPCI keep fill line during HPCI operation. However, there are no local or remote indicators of obturator position, nor are system parameters indicative of closure. The closure test method is analogous to a leak test (without quantifying leakage). The NRC has determined, in NUREG 1482 rev. 1 section 4.1.6, that the need to set up test equipment is adequate justification to defer reverse flow testing of a check valve until a refueling outage. Therefore, the provision stipulated in ISTC-3522(c) applies and these valves will be tested during refueling outage (R).
Alternate Test Frequency:	Refueling Outage.

Deferred Testing Justification

Deferral Number:	**DTJ-16**
Valve Description:	Containment Isolation Valves
Plant System:	Reactor Water Clean Up (RWCU) System
Code Category:	A
Component No.:	MO2700 - RWCU Inlet Inboard Isolation MO2701 - RWCU Suction Outboard Isolation MO2740 - RWCU Return Header Outboard Isolation
P&ID:	127
Function:	These valves close to provide containment isolation of the Reactor Water Cleanup system.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510 and ISTC-5120.
Basis for Deferral:	The Reactor Water Cleanup System maintains high reactor water purity to limit chemical and corrosive action, thereby limiting fouling and deposition on heat transfer surfaces. The RWCU system also removes corrosion products to limit impurities available for activation by neutron flux and resultant radiation from the deposition of the corrosion products. Activated materials, if left in the coolant, can deposit to form high radiation "hot spots" potentially increasing personnel exposure. Additionally, increased ionic concentration in the coolant can result in increased corrosion, such as stress corrosion cracking of stainless steel. Performance of the RWCU valves stroke time test quarterly requires that the RWCU system be removed from service for several hours every three months. Removing the RWCU system from service may result in impurities and corrosive material being distributed throughout the reactor coolant system increasing area radiation and increasing the risk for stress corrosion cracking in stainless steel components. Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).
Alternate Test Frequency:	Cold Shutdown.

Deferred Testing Justification

Deferral Number:	DTJ-17
Valve Description:	Containment Hard Vent Valve
Plant System:	Containment Atmosphere Control System
Code Category:	A
Component No.:	CV4357
P&ID:	143
Function:	The containment hard vent system was installed as requested in Generic Letter 89-16 to provide a means of venting primary containment irrespective of the release of radioactivity to the environment. This system will be utilized only when plant conditions have degraded beyond design conditions considered in the DAEC Final Safety Analysis Report.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510 and ISTC-5130.
Basis for Deferral:	Because the hard vent system is not intended to be used to mitigate events considered in the Final Safety Analysis Report, components other than those provided for primary containment isolation are not within the scope of the Inservice Test (IST) Program, as discussed in ISTA-1100. These components have been added to the IST Program for testing on an augmented basis. The intent of including these components in the Program is to provide a reasonable level of operational readiness for the hard vent system and testing at a refueling frequency satisfies this. Therefore, the provision stipulated in ISTC-3521(e) applies and these valves will be tested during refueling outage (R).
Alternate Test Frequency:	Refueling Outage.

Deferred Testing Justification

Deferral Number:	**DTJ-18**
Valve Description:	Containment Isolation Valves
Plant System:	Drywell Cooling Water System
Code Category:	A
Component No.:	CV5704A - Drywell Cooling Loop A Return Isolation Valve CV5704B - Drywell Cooling Loop B Return Isolation Valve CV5718A - Drywell Cooling Loop A Supply Isolation Valve CV5718B - Drywell Cooling Loop B Supply Isolation Valve
P&ID:	157
Function:	These normally open valves close to provide containment isolation.
Test Requirement:	Exercise and stroke time test every 3 months in accordance with ISTC-3510 and ISTC-5130.
Basis for Deferral:	These valves isolate drywell cooling when closed. Partially or fully cycling the drywell cooling isolation valves quarterly may cause pressure spikes in the system that could potentially cause drywell coolers to leak, damaging the drywell coolers. Significant drywell cooler leakage can cause the plant to shutdown to repair this unidentified leakage source in the drywell. Potential equipment damage is adequate reason for cold shutdown testing according to NUREG 1482 Rev.1. Therefore, the provision stipulated in ISTC-3521(c) applies and these valves will be tested during cold shutdown (CS).
Alternate Test Frequency:	Cold Shutdown.