Omaha Public Power District

10 CFR 50.55(a)

June 8, 2016
LIC-16-0046

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

Fort Calhoun Station, Unit No. 1
Renewed Facility Operating License No. DPR-40
NRC Docket No. 50-285

Subject: Transmittal of Fort Calhoun Station Inservice Testing (IST) Program Plan Fifth Ten-Year Interval, June 7, 2016 – June 6, 2026

Please find enclosed the subject Inservice Testing (IST) Program Plan.

If you should have further questions, please contact Mr. Bradley H. Blome, Manager – Site Regulatory Assurance, at 402-533-7270.

No commitments to the NRC are contained in this letter.

Respectfully,

Bradley Blome
Manager – Site Regulatory Assurance,

BHB/epm

Attachment - Fort Calhoun Station Inservice Testing (IST) Program Plan Fifth Ten-Year Interval, June 7, 2016 – June 6, 2026

c: M. L. Dapas, NRC Regional Administrator, Region IV
C. F. Lyon, NRC Senior Project Manager
S. M. Schneider, NRC Senior Resident Inspector

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NRR

Omaha Public Power District
Fort Calhoun Station

Docket Number 50-285

Inservice Testing (IST) Program
Program Plan

Fifth Ten-Year Interval
June 7, 2016 – June 6, 2026

FCS-IST-PLAN-INT5

Revision 0
June 7, 2016

REVISION RECORD

Effective Date	Revision Description	Sign & Date		
		Prepared: Site IST Engineer	Reviewed: Corporate IST Engineer	Approved; Engr. Programs Manager
07/06/2016	Revision 0	J Reimers 6/2/16	M Ruff 6/3/16	J Cate 6/6/16

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SECTION

INTRODUCTION

1.1 Purpose

The purpose of this Inservice Testing (IST) Program Plan is to provide a summary description of the Ft. Calhoun IST Program in order to document its compliance with the requirements of 10 CFR 50.55a(f) and 10 CFR 50.55a(g) for the 5th 10-year IST interval.

1.2 Scope

This Inservice Testing Program Plan identifies all of the testing performed on the components included in the Fort Calhoun Station (FCS) Inservice Testing (IST) Program for the 5th ten-year IST interval, which began on June 7th 2016 and is scheduled to end on June 6th, 2026.

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

Based on the start date identified above, the IST Program for the 5th ten-year interval is required by 10 CFR 50.55a(f)(4)(ii) and 10 CFR 50.55a(g)(4)(ii) to comply with the requirements of the ASME OM Code-2004 Edition, Code for Operation and Maintenance of Nuclear Power Plants, including addenda through the OMb-2006 Addenda, except where relief from such requirements has been granted in writing by the NRC.

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

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

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

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

The IST program components were identified using the Fort Calhoun safety classifications along with certain references listed in section 1.4 (1.4.1 – 1.4.13). These boundaries were used to classify all IST components (ASME Class 1, 2, 3 and NC).

After all components were identified and classified, the safety functions for each component were determined. The safety function reference of each component was identified utilizing reference sources such as the USAR, Technical Specifications, and Engineering analysis, etc.

Valves included in the IST Program were categorized in accordance with ISTC-1300. Pumps included in the IST Program were identified as either centrifugal or reciprocating in accordance with ISTB-1100, and then grouped as either Group A or Group B in accordance with ISTB-1300. Dynamic restraints were categorized and grouped in accordance with ISTD-4000 and ISTD-5000.

Subsequent to determining component safety function, classification and categorization, ISTB, ISTC, ISTD and Appendices I & II were utilized to assign test type and test frequencies for each pump, valve and snubber identified. Assignment of test frequency was performed on a most limiting basis considering all Technical Specification, USAR and licensing commitments.

The results of these efforts are documented in the Station's IST Bases Document for pumps and valves. In addition to a description of each component's safety function(s), the Bases Document identifies the tests and examinations that are performed on each component to provide assurance that they will be operationally ready to perform those safety function(s). The Bases Document identifies those ASME Class 1, 2, and 3 pumps and valves that are in the scope of the IST Program, including those that do and those that do not have required testing. It also identifies those ASME Class 1, 2 and 3 pumps and valves that are outside the scope of the IST Program on the basis that they are not required to perform any specific safety function. The IST Program Snubbers are listed in Attachment 17.

As stated at the beginning of this Section, the scope of this IST Program Plan is to identify all of the testing and examinations performed on those components within the scope of the IST Program. This is accomplished primarily by means of the IST Pump, Valve and Snubber Tables contained in Attachments 14, 15 and 17 respectively. The remaining Sections and Attachments of this document provide support information to that contained in the Tables. Components that do not require testing are not included in the IST Program Plan document.

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

For IST purposes, FCS considers Cold Shutdown as the safe shutdown condition. Therefore, the scope of the IST Program must include, as a minimum, (1) all of those ASME Class 1, 2, and 3 pumps and valves which are required to shut down the Reactor to the Cold Shutdown condition, maintain the Cold Shutdown condition, or mitigate the consequences of an accident, (2) pressure relief devices that protect systems or portions of systems that perform one or more of these three functions and (3) snubbers used in systems that perform one or more of these functions, or to ensure the integrity of the reactor coolant pressure boundary.

1.3 Discussion

A summary listing of all the pumps, valves and snubbers that are tested, examined and monitored in accordance with the IST Program is provided in the IST Pump, Valve and Snubber Tables contained in Attachments 14, 15 and 17 respectively. The Pump and Valve Tables also identify each test that is performed on each component, the frequency at which the test is performed, and any Relief Request or Technical Position applicable to the test. For valves, the Valve Table also identifies any Cold Shutdown Justification or Refueling Outage Justification that is applicable to the required exercise tests. Additional information is provided for both pumps and valves. All of the data fields included in the IST Pump, Valve and Snubber Tables are listed and described in Sections 2, 3 and 4 of this document.

Attachments are included which provide information referenced in the Pump, Valve or Snubber Tables.

Attachment 1 includes a listing of Systems and associated P&IDs on which a depiction of the pump or valve may be located.

Attachment 2 provides an index of the Pump Relief Requests that apply to any of the pumps in the IST Program for this ten-year interval. Attachment 3 includes a copy of each of those Relief Requests.

Attachment 4 provides an index of the Valve Relief Requests that apply to any of the valves in the IST Program for this ten-year interval. Attachment 5 includes a copy of each of those Relief Requests.

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

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

Attachment 8 provides an index of Deferred Test Justifications that apply to the exercise testing of any valves in the IST Program for this ten-year interval. Attachment 9 includes a copy of each of those Deferred Test Justifications.

Attachment 10 provides an index of Refueling Outage Justifications that apply to the exercise testing of any valves in the IST Program for this ten-year interval. Attachment 11 includes a copy of each of those Refueling Outage Justifications.

Attachment 12 provides an index of Technical Positions that apply to the IST Program for this ten-year interval. Technical Positions provide detailed information regarding how FCS satisfies certain ASME OM Code requirements, particularly when the Code requirement may be ambiguous or when multiple options for implementation may be available. Technical Positions do not take exception to or provide alternatives to Code requirements. Attachment 13 includes a copy of each Technical Position listed in Attachment 12.

As described previously, Attachments 14 and 15 include the IST Pump and Valve Tables.

Attachment 16 provides a listing of Check Valve Condition Monitoring (CVCM) Program Plans. References 1.4.14 and 1.4.15 provide further details on CVCM Plans and program requirements.

Attachment 17 provides the Snubber Table.

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

1.4 References

1.4.1 Fort Calhoun Station Technical Specifications.
1.4.2 Fort Calhoun Station Updated Safety Analysis Report.
1.4.3 Title 10, Code of Federal Regulations, Part 50, Section 55a (10 CFR 50.55a)
1.4.4 10CFR50, Appendix J, Primary Reactor Containment Leakage Testing for Water Cooled Power Plants.
1.4.5 ASME OM Code 2004 Edition (through 2006 Addenda), Code for Operation and Maintenance of Nuclear Power Plants.
1.4.6 NRC Generic Letter No. 89-04, "Guidance on Developing Acceptable Inservice Testing Programs".
1.4.7 NRC NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants (for guidance only).
1.4.8 NRC Safety Evaluation Report on Revisions 3 and 4 of the Fort Calhoun Station's Inservice Inspection/Testing Program Plan (1983-1993), dated December 22, 1988 and July 3, 1989, respectively.
1.4.9 Fort Calhoun Station Piping and Instrument Diagrams.
1.4.10 LIC-12-0004, Delay 2012 Refueling Outage and Extend In-service Inspection (ISI) and In-service Testing (IST) Intervals
1.4.11 PED-SSE-95-0187, Closure of CID 931236/01. "ISI Program As It Relates to the Station Blackout (SBO) Inspection, " due July 31, 1995
1.4.12 LIC-14-0117, Failure to recognize the interaction created by potential excessive leakage from check valves, FW-173 and FW-174
1.4.13 Exelon Corporation Administrative Procedure ER-AA-321, Administrative Requirements for Inservice Testing
1.4.14 System Engineering Instruction PED-SEI-44, Check Valve Condition Monitoring
1.4.15 PDB-6, Dynamic Restraints Program
1.4.16 SO-G-44, Snubber List and Operability Requirements
1.4.17 Letter, OPPD (L. P. Cortopassi) to NRC, Dated 8.27.15, Subject: Submittal of Relief Requests Associated with the Fifth Inservice Testing Interval. (LIC-15-0089)
1.4.18 Letter, NRC (C. F. Lyon) to OPPD (L. P. Cortopassi), dated 11.24.15, Subject: Fort Calhoun Station No. 1 – Request for Additional Information RE: Fifth Inservice Testing Interval Relief Requests P-1 and P-2 (CAC NOS. MF6651 and MF6652)
1.4.19 Letter, OPPD (L. P. Cortopassi) to NRC, dated 1.11.16, Subject: Response to NRC Request for Additional Information RE: Fifth Interval Inservice Testing Interval Relief Requests P-1 and P-2 (CAC NOS. MF6651 and MF6652). (LIC-15-0147).
1.4.20 Letter, NRC (R. J. Pascarelli) to OPPD (S.M. Marik), dated 2.29.16, Subject: Fort Calhoun Station No. 1 – Request for Relief G-1, P-1 and P-2 for the Fifth Inservice Testing Interval (CAC NOS. MF6651, MF6652 and MF6653). (NRC-16-0015).
1.4.21 FCS-SNUB-PLAN-INT5, IST Program Plan Dynamic Restraints (Snubbers).
1.4.22 ER-FC-SNUB-001, IST Program Procedure Dynamic Restraints (Snubbers).

2 INSERVICE TESTING PLAN FOR PUMPS

2.1 Pump Inservice Testing Plan

The FCS Inservice Testing Program for Pumps meets the requirements of Subsections ISTA and ISTB of the ASME OM Code-2004 with OMb-2006 addenda, with the exception of those specific applications identified in the Relief Requests contained in Attachment 3. Code Case OMN-16 is utilized as an alternative to certain ISTB requirements in testing Raw Water and Component Cooling Water pumps.

2.2 IST Plan Pump Table Description

The pumps included in the FCS Inservice Testing Program are listed in Attachment 14. The information contained in that table identifies those pumps required to be tested to the requirements of the ASME OM Code, the parameters measured, associated Relief Requests and comments, and other applicable information. The column headings for the Pump Table are listed below with an explanation of the content of each column.

Component	The unique identification number for the pump, as designated on the System P&ID.
Description	The descriptive name for the pump.
Class	The ASME Safety Class (i.e., 1, 2 or 3) of the pump. Non-ASME Safety Class pumps are designated "N/A".
P&ID	The Piping and Instrumentation Diagram on which the pump is shown. Coordinates are also provided.
Group	A or B, as defined in Reference 1.4.5.
Test Paramaters	Lists each of the test parameters which are required to be measured for the specific pump. These include: Speed — Speed (for variable speed pumps, only) DP — Differential Pressure Disc. Press. — Discharge Pressure (positive displacement pumps) Flow — Flow Rate VIB — Vibration

Freq

An abbreviation which designates the frequency or plant condition at which the associated test is performed:

Q	Quarterly
CS	Cold Shutdown
RO	Refueling Outage
PS	Pre-service

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

DEV

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

TP

Provides the Technical Position Identification number applicable to the pump or test.

3 INSERVICE TESTING PLAN FOR VALVES

3.1 Valve Inservice Testing Plan

The FCS Inservice Testing Program for Valves meets the requirements of Subsections ISTA and ISTC of the ASME OM Code-2004 with OMb-2006 addenda, with the exception of those specific applications identified in the Relief Requests contained in Attachment 5.

3.2 IST Plan Valve Table Description

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

System	The System name for the valve.
Component	The unique identification number for the valve, as designated on the System P&ID or Flow Diagram.
Description	Valve noun description / function.
Size	The nominal size of the valve in inches.
Type	An abbreviation used to designate the body style of the valve: 3W 3-Way AN Angle BL Ball BU Butterfly CK Check DI Diaphragm GA Gate GL Globe PG Plug ND Needle RV Relief

Actuator	An abbreviation which designates the type of actuator on the valve. Abbreviations used are: A Air Operator C Check (Self-Actuated) H Hydraulic Operator MAN Manual M Motor Operator R Relief (Self-Actuated) S Solenoid Operator
P&ID	The Piping and Instrumentation Diagram on which the valve is shown.
Coord	The coordinate location of the valve on the P&ID.
Code Class	The ASME Safety Class (i.e., 1, 2 or 3) of the valve. Non-Class valves are designated by "NC".
Norm	Abbreviations used to identify the normal positions of the valve during normal power operation. Abbreviations used are: NO Open NC Closed O/C Open/Closed SYS System dependent N/A Not Applicable NE Energized ND Deenergized LC Locked Closed LO Locked Open A Automatic
Fail	Abbreviations used to identify the failure positions of the valve. Abbreviations used are: O Open C Closed O/C Open/Closed
Cat	The ASME Code category or categories of the valve as defined in Reference 1.4.5.

Function

"Active" or "Passive", used to designate whether the valve is active or passive in fulfillment of its safety function. The terms "active valves" and "passive valves" are defined in Reference 1.4.5.

Testing Requirements

Test

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

Abbreviations used are:

BDC	Bidirectional Check Valve test (non-safety related closure test)
BDO	Bidirectional Check Valve test (non-safety related open test)
CVC	Check Valve Exercise Test - Closed
CVO	Check Valve Exercise Test - Open
FSTC	Fail-Safe Exercise Test - Closed
FSTO	Fail-Safe Exercise Test - Open
LT1	Seat Leakage Test
LJ	Appendix J Seat Leakage Test
PIT	Position Indication Verification Test
RT	Relief Valve Test
SC	Exercise closed (w/o stroke timing)
SO	Exercise open (w/o stroke timing)
STC	Exercise/Stroke-Time Closed
STO	Exercise/Stroke-Time Open
DI	Disassembly / Inspect
CM	Condition Monitoring

- Freq

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

LJ	Per Appendix J (App J also used)
CM	Per CVCM Program
CS	Cold Shutdown
Q	Quarterly
R[*n*]	Once Every *n* Refuel Outages
[*n*]Yr	Once Every *n* Years
SAMP	Sampling
Y	Annual

- Dev

  A relief request number is listed when a specific code requirements is determined to be impracticable. Relief request numbers for valves are prefixed with "V" or "G" (See Attachments 4 and 5). Deferred testing justifications refers to cold shutdown and refueling outage justifications. These justifications are listed when the test frequency is cold shutdown or refueling instead of quarterly and are prefixed with "J" (see Attachments 9 and 11).

- Comments

  A Technical Position is indicated when clarifying approaches and positions are presented. These positions are prefixed with "TP" for Technical Position (see Attachments 12 and 13).

4 INSERVICE TESTING PLAN FOR DYNAMIC RESTRAINTS (SNUBBERS)

Snubber Inservice Testing Plan Description

The FCS Inservice Testing Program for Snubbers meets the requirements of Subsections ISTA and ISTD of the ASME OM Code – 2004 Edition with OMb – 2006 Addenda. This Program includes those restraints installed in safety class systems as noted in station P&ID's and as listed in Attachment 17.

The Program establishes the examination, test and monitoring intervals and parameters to be measured in accordance with ISTA and ISTD. No relief requests are required.

- All snubbers will be visually examined to determine operational readiness with-frequency based on Table ISTD 4252-1 or Code Case OMN-13. All snubbers are categorized as one population for examination.

- The snubber population is divided into two Defined Test Plan Groups (DTPG) in accordance with ISTD-5200. One DTPG consists of all snubbers attached to steam generators and reactor coolant pumps, for which the 10% Sample Plan is applied in accordance with ISTD-5300. The balance of the snubber population governed by this Program is tested as one DTPG in accordance with the 37 Sample Plan in accordance with ISTD-5400.

- A representative sample of snubbers from the two DTPGs and listed in Attachment 17 will be selected as the initial test sample each refueling outage per ASME OM Code –subsection ISTD – 5200.

- The service life of all snubbers will be evaluated at least once every fuel cycle to ensure that no snubbers are kept in service beyond their established service life in accordance with ISTD-6000.

- All records of snubber examinations, testing, and service live monitoring will be permanently retained.

- Hydraulic snubber seals will be replaced on a frequency based on manufacturer's recommendations for acceptable service life and on plant specific seal life studies in the different operating environments in accordance with ISTD-6200.

Further detail relative to the Snubber testing program is provided in:

- FCS-SNUB-PLAN-INT5, IST Program Plan Dynamic Restraints (Snubbers)
- ER-FC-SNUB-001, IST Program Procedure Dynamic Restraints (Snubbers)

SECTION 5.0

ATTACHMENTS

ATTACHMENT 1

SYSTEM AND P&ID LISTING

Description	System	P&ID
Auxiliary Feedwater	AFW	11405-M-253
Compressed Air	CA	11405-M-13
Component Cooling Water	CCW	11405-M-10
Charging	CH	E-23866-210-120/121
Containment Spray	CS	E-23866-210-130
Demineralized Water	DW	11405-M-5
Diesel Generator Fuel Oil	FO	11405-M-262
Feedwater	FW	11405-M-253
Hydrogen Gas	HG	11405-M-42
Instrument Air	IA	11405-M-13
Main Steam	MS	11405-M-252
Nitrogen Gas	NG	11405-M-42
Reactor Coolant	RC	E-23866-210-110
Raw Water	RW	11405-M-100
Diesel Generator Starting Air	SA	B120F07001
Safety Injection	SI	E-23866-210-130
Primary Sample	SL	11405-M-12
Service Water	SW	11405-M-259
Ventilating Air	VA	11405-M-1
Waste Disposal	WD	11405-M-98

ATTACHMENT 2

PUMP RELIEF REQUEST INDEX

RELIEF REQUEST NUMBER	RELIEF REQUEST TITLE	APPROVAL DATE
G-1	Inservice Testing Frequency per Code Case OMN-20	2.19.16
P-1	Low Pressure Safety Injection and Containment Spray Pumps Vibration Limits	2.19.16
P-2	Adjusting Hydraulic Parameters to Specified Reference Points per Code Case OMN-21	2.19.16

ATTACHMENT 3

PUMP RELIEF REQUESTS

10 CFR 50.55a Request Number G-1
Inservice Test Frequency Per Code Case OMN-20
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
-- Hardship or Unusual Difficulty without Compensating Increase in Level of Quality and Safety --

1. ASME Code Component(s) Affected

All pumps and valves contained within the Fort Calhoun Station (FCS) Inservice Testing (IST) Program scope.

2. Applicable Code Edition and Addenda

ASME OM Code-2004 Edition, through Addenda OMb-2006.

3. Applicable Code Requirement(s)

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.

ISTA-3120(a) – "The frequency for inservice testing shall be in accordance with the requirements of Section IST."

ISTB-3400 – Frequency of Inservice Tests; "An inservice test shall be run on each pump as specified in Table ISTB-3400-1". Table ISTB-3400-1 lists two frequencies – quarterly and biennially.

ISTC-3510 – Exercising Test Frequency; "Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months,..."

ISTC-3540 – Manual Valves; "Manual Valves shall be full-stroke exercised at least once every 2 years, except where adverse conditions may require the valve to be tested more frequently to ensure operational readiness."

ISTC-3630(a) – Frequency; "Tests shall be conducted at least once every 2 years."

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

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, I-1320(a) – Test Frequencies, Class 1 Pressure Relief Valves; "Class 1 pressure relief valves shall be tested at least once every 5 years..."

Appendix I, I-1330 – Test Frequency, Class 1 Nonreclosing Pressure Relief Devices; "Class 1 nonreclosing pressure relief devices shall be replaced every 5 years..."

Appendix I, I-1340 – Test Frequency, Class 1 Pressure Relief Valves that are used for Thermal Relief Application; Refers to I-1320 for test frequency.

Appendix I, I-1350 – Test Frequency, Classes 2 and 3 Pressure Relief Valves; "Classes 2 and 3 pressure relief valves, with the exception of PWR main steam safety valves, shall be tested every 10 years, ..."

10 CFR 50.55a Request Number G-1
Inservice Test Frequency Per Code Case OMN-20
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
-- Hardship or Unusual Difficulty without Compensating Increase in Level of Quality and Safety --

Appendix I, I-1360 – Test Frequency, Classes 2 and 3 Nonreclosing Pressure Relief Devices; "Classes 2 and 3 nonreclosing pressure relief devices shall be replaced every 5 years, ..."

Appendix I, I-1370 – Test Frequency, Classes 2 and 3 Primary Containment Vacuum Relief Valves; "Tests shall be performed on all Classes 2 and 3 containment vacuum relief valves at each refueling outage or every 2 years, ..."

Appendix I, I-1380 – Test Frequency, Classes 2 and 3 Vacuum Relief Valves Except for Primary Containment Vacuum Relief Valves; "All Classes 2 and 3 vacuum relief valves shall be tested every 2 years, ..."

Appendix I, I-1390 – Test Frequency, Classes 2 and 3 Pressure Relief Devices that are used for Thermal Relief Application; "Tests shall be performed on all Classes 2 and 3 relief devices used in thermal relief application every 10 years, ..."

Appendix II, II-4000(a)(1)(e) – Performance Improvement Activities; Subparagraph (1)(e) requires the identification of the interval for each activity.

Appendix II, II-4000(b)(1)(e) – Optimization of Condition Monitoring Activities; Subparagraph (1)(e) requires the identification of the interval for each activity.

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards," paragraph (z)(2), an alternative is requested to the frequency specifications of the ASME OM Code. The basis of this request is that the Code requirements present an undue hardship without a compensating increase in the level of quality or safety.

ASME OM Code Section IST establishes the inservice test frequencies for all components within the scope of the Code. The frequencies (e.g., quarterly) have always been interpreted as "nominal" frequencies (generally as defined in Table 3.2 of NUREG 1482, Revision 2) and Owners routinely applied the surveillance extension time period (i.e., grace period) contained in the plant Technical Specifications (TS) Surveillance Requirements (SRs). The TS typically allow 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 (TS SR 3.0.1 at FCS). However, regulatory issues have been raised concerning the applicability of the TS "Grace Period" to ASME OM Code required inservice test frequencies.

The lack of a tolerance band on the ASME OM Code inservice test frequencies 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 be and should be performed.

10 CFR 50.55a Request Number G-1
Inservice Test Frequency Per Code Case OMN-20
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
-- Hardship or Unusual Difficulty without Compensating Increase in Level of Quality and Safety --

The NRC recognized this potential issue in the TS by allowing a frequency tolerance as described in FCS TS SR 3.0.1. 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.

5. Proposed Alternative and Basis for Use

FCS proposes the use of ASME OM Code Case OMN-20 for flexibility in IST scheduling. OMN-20 was published in the 2012 edition of the ASME OM Code and is applicable to all earlier editions and addenda.

The ASME OM Code establishes component test frequencies that are based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or 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 ASME OM Code Section IST with a specified time period between tests as shown in the table below.

Frequency	Specified Time Period Between Tests (all values are 'not to exceed'; no minimum periods are specified)
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

10 CFR 50.55a Request Number G-1
Inservice Test Frequency Per Code Case OMN-20
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
-- Hardship or Unusual Difficulty without Compensating Increase in Level of Quality and Safety --

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 above.

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.

b. Components whose test frequencies are based on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.) may not have their period between tests extended except as allowed by the ASME OM Code.

As currently written, ASME OM Code requirements do not allow testing period extensions that provide an allowance for the performance of ASME OM Code testing. As a result, this places an unusual hardship on FCS's ability to schedule and perform ASME OM Code testing without a compensating increase in the level of quality and safety.

6. Duration of Proposed Alternative

The proposed alternative identified will be utilized during the entire fifth 120 month Inservice Test interval (beginning June 7, 2016 and concluding on June 6, 2026). Note that the fourth IST interval was previously extended as documented in Reference 2.

10 CFR 50.55a Request Number G-1
Inservice Test Frequency Per Code Case OMN-20
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
-- Hardship or Unusual Difficulty without Compensating Increase in Level of Quality and Safety --

7. Precedence

Similar requests were approved for:

a. Callaway Plant Unit 1, (Docket No. 50-483), Request No. PR-04, as discussed in NRC Safety Evaluation Report (SER) dated July 15, 2014 (TAC Nos. MF2784 through MF2789). (ML14178A769).

b. Dresden Nuclear Power Station, 10 CFR 50.55a Request RV-01, NRC SER dated October 31, 2013, TAC Nos. ME9865, ME9866, ME9869, ME9870 and ME9872. (ML13297A515).

c. Three Mile Island Nuclear Station, 10 CFR 50.55a request VR-01, NRC SER dated August 15, 2013, TAC Nos. MF0046, MF0047 and MF0048. (ML13227A024).

d. Quad Cities Nuclear Power Station, Units 1 and 2 (NRC Dockets 50-254 and 50- 265), 10 CFR 50.55a Request No. RV-01, as discussed in NRC SER dated February 14, 2013 (TAC Nos. ME7981 through ME7995). (ML13042A348).

8. References

1. Fort Calhoun Station Technical Specification Surveillance Requirements:
   a. Section 3.0.1 (25% extension)
   b. Section 3.0.2 (surveillance intervals)
   c. Section 3.0.3 (3.0.1 and 3.0.2 applicable to all codes and standards referenced in TS)
2. Letter from OPPD, (L. Cortopossi) to NRC (Document Control Desk), Revised In- service Inspection (ISI) and In-service Test (IST) Interval End Dates as a Result of Extended Refueling Outage, dated January 21, 2014 (LIC-14-0002). (ML14022A258).
3. NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants: Inservice Testing of Pumps and Valves and Inservice Examination and Testing of Dynamic Restraints (Snubbers) at Nuclear Power Plants, dated October 2013, (ML13295A020).
4. ASME OM Code 2004 Edition through Addenda OMb-2006.

10 CFR 50.55a Request Number P-1
Low Pressure Safety Injection and Containment Spray Pumps Vibration Limits
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
--Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety--

1. ASME Code Component(s) Affected

PUMP	FUNCTION	PUMP TYPE	SYSTEM	ASME CLASS	ISTB-2000 GROUP
SI-1A, 1B	Low Pressure Safety Injection	Horizontal Centrifugal	Safety Injection	2	A
SI-3A, 3B, 3C	Containment Spray	Horizontal Centrifugal	Containment Spray	2	A

2. Applicable Code Edition and Addenda

ASME OM Code 2004 Edition through 2006 Addenda

3. Applicable Code Requirement

ISTB Table ISTB-5121-1, Centrifugal Pumps Test Acceptance Criteria.

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards," paragraph (z)(2), relief is requested from the requirement of ASME OM Code Table ISTB-5121-1 absolute vibration limits during Group A pump testing. Table ISTB-5121-1 specifies the vibration limits for centrifugal pumps operating at or above 600 rpm are the following for both the Group A and the comprehensive pump test:

Reference Value	Acceptable	Alert	Required Action
V_r	$\leq 2.5\ V_r$	$>2.5\ V_r$ - $6.0\ V_r$ or >0.325 - 0.70 in/sec	$>6.0 V_r$ or >0.70 in/sec

The absolute limits for vibration of .325 in / sec for Alert and .70 in / sec for Required Action are too restrictive for the Ft. Calhoun Low Pressure Safety Injection (LPSI) and Containment Spray (CS) pumps during Group A testing as they are normally above those limits when tested. No relief is requested for Comprehensive Pump Test (CPT) Table ISTB-5121-1 vibration limits since vibration levels subside at these higher flow conditions.

These pumps have exhibited these higher vibration levels their entire service life when operated on mini-flow, which is the normal alignment for Group A testing. The LPSI and CS pumps are all of very similar design. All pumps are Ingersoll Rand Model 6UCL.

10 CFR 50.55a Request Number P-1
Low Pressure Safety Injection and Containment Spray Pumps Vibration Limits
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
--Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety--

The pumps are horizontal centrifugal single stage pumps. Pump hydraulic characteristics are as follows:

SYSTEM	DESIGN FLOW (gpm)	DESIGN HEAD (ft)	MINIMUM FLOW	SHUTOFF HEAD
LPSI	1500	403	200	450
CS	1700	450	200	500

Extensive analysis of these pump's vibration characteristics was performed in 1994, when Fort Calhoun Station (FCS) was first required to comply with these ASME OM Code vibration limits. That analysis was documented in the Reference 1 letter transmitted to the NRC. It was determined that the dominant contribution to this vibration during minimum Group A test conditions was incipient cavitation caused by operating a high energy pump with a corresponding low net positive suction head. Complying with the Table ISTB-5121-1 would cause unusual difficulty as those pumps normally exceed those vibration levels and have historically done so while providing reliable and safe service. A review of Inservice Test (IST) history to date has determined these pumps have never exceeded the Required Action limits of ISTB-5121-1 during Group A or Comprehensive Pump Tests (CPTs). The CPT Required Action levels of Table ISTB- 5121-1 were not modified by relief request, thus during CPTs these pumps have not reached Required Action vibration or hydraulic levels even when normal Table ISTB-5121-1 limits are applied. As another measure of these pumps reliability, during the current 4th IST interval there have been no Maintenance Rule Functional Failures for any of the LPSI and CS pumps. Finally, during 2011 – 2013 while FCS was in an extended refueling outage internal inspections and pump refurbishment was performed for both LPSI (SI-1A and SI-1B) and 2 of three CS (SI-3B and SI-3C) pumps. The internal inspections revealed no abnormal accelerated degradation due to operating on mini-flow / Group A conditions. These were the only instances of LPSI / CS pump internal refurbishment during the 4th IST interval.

This 10 CFR 50.55a, paragraph (z)(2), relief is requested from the requirement of ASME OM Code Table ISTB-5121-1 Group A since compliance with absolute vibration limits would result in an unusual hardship (i.e., re-design of systems) without a commensurate increase in the level of quality or safety.

5. Proposed Alternative and Basis for Use

FCS will continue to adhere to the Table ISTB-5121-1 vibration limits during CPTs. During Group A testing, the >.325 in / sec Alert Range limit and the > .0.70 Required Action limit will be replaced with an Alert Range limit of >.80 in / sec and a Required Action limit of > 1.1 in / sec.

10 CFR 50.55a Request Number P-1
Low Pressure Safety Injection and Containment Spray Pumps Vibration Limits
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
--Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety--

Using the provisions of this relief request as an alternative to the specific requirements of Table ISTB-5121-1 identified above will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety. These pumps have performed reliably throughout their service life at these higher vibration levels with no history of significant degradation. Therefore, pursuant to 10 CFR 50.55a(z)(2), Ft. Calhoun Station requests relief from the specific ISTB requirements identified in this request.

6. Duration of Proposed Alternative

This proposed alternative will be utilized for the entire fifth 120 month Inservice Test interval (June 7, 2016 – June 6, 2026). Note that the fourth interval was extended as documented in the Reference 2 letter.

7. Precedents

A similar 10 CFR 50.55a request was previously approved for the fourth 120 Month Interval at Ft. Calhoun Station as Pump Relief Request E5. That approval was documented in the Reference 3 NRC safety evaluation report (SER).

8. References

1. Letter from OPPD (W. G. Gates) to NRC (Document Control Desk), "Request for Relief from Vibration Limits for Quarterly Minimum Recirculation ISI Surveillance Tests of Low Pressure Safety Injection (LPSI) and Containment Spray Pumps," dated August 3, 1994.(LIC-94-0159)
2. Letter from OPPD (L. Cortopassi) to NRC (Document Control Desk), "Revised In- service Inspection (ISI) and In-service Test (IST) Interval End Dates as a Result of Extended Refueling Outage," dated January 21, 2014. (ML14022A258)
3. Letter from NRC (Stephen Dembeck) to OPPD (R. T. Ridenoure), "Safety Evaluation for the Fourth 10-Year Interval Inservice Inspection Plan – Fort Calhoun Station (TAC NO. MB7241)," dated February 19, 2004. (ML040570291)

10 CFR 50.55a Request Number P-2

Adjusting Hydraulic Parameters to Specified Reference Points per Code Case OMN-21
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(1)
--Alternative Provides an Acceptable Level of Quality and Safety--

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

All pumps tested within the Fort Calhoun Station (FCS) Inservice Test (IST) program. A summary list of pumps currently included in that scope is provided below:

Pump Number	Description	Pump Type	ASME Code Class	OM Code Category
FW-6 & 10	Auxiliary Feedwater Pump	Centrifugal	3	B
AC-3A, 3B & 3C	Component Cooling Water Pump	Centrifugal	3	A
CH-1A, 1B & 1C	Charging Pump	Positive Displacement	2	A
CH-4A & 4B	Boric Acid Pump	Centrifugal	2	A
AC-10A, 10B, 10C & 10D	Raw Water Pump	Vertical Line Shaft	3	A
SI-1A & 1B	Low Pressure Safety Injection Pump	Centrifugal	2	A
SI-2A, 2B & 2C	High Pressure Safety Injection Pump	Centrifugal	2	B
SI-3A, 3B & 3C	Containment Spray Pump	Centrifugal	2	A
FO-4A-1 & 2, FO-4B-1 & 2	Diesel Fuel Oil Transfer Pumps	Positive Displacement	3	B

2. **Applicable Code Edition and Addenda**

ASME OM Code 2004 Edition through 2006 Addenda

10 CFR 50.55a Request Number P-2
Adjusting Hydraulic Parameters to Specified Reference Points per Code Case OMN-21
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(1)
--Alternative Provides an Acceptable Level of Quality and Safety--

3. Applicable Code Requirements

ISTB-5121, "Group A Test Procedure", subparagraph (b) states in part: The system resistance shall be varied until flow rate or alternatively, differential pressure equals the reference point.

ISTB-5122, "Group B Test Procedure", subparagraph (c) states: The system resistance may be varied as necessary to achieve the reference point.

ISTB-5123, "Comprehensive Test Procedure", subparagraph (b) states, in part: For centrifugal and vertical line shaft pumps, the system resistance shall be varied until flow rate or alternatively, differential pressure equals the reference point.

ISTB-5221, "Group A Test Procedure", subparagraph (b) states, in part: The system resistance shall be varied until flow rate or alternatively, differential pressure equals the reference point.

ISTB-5222, "Group B Test Procedure", subparagraph (c) states: The system resistance may be varied as necessary to achieve the reference point.

ISTB-5223, "Comprehensive Test Procedure", subparagraph (b) states in part: The system resistance shall be varied until flow rate or alternatively, differential pressure equals the reference point.

ISTB-5321, "Group A Test Procedure", subparagraph (b) states in part: The resistance of the system shall be varied until the discharge pressure equals the reference point.

ISTB-5322, "Group B Test Procedure", subparagraph (c) states in part: System resistance shall be varied as necessary to achieve the reference point.

ISTB-5323, "Comprehensive Test Procedure", subparagraph (b) states in part: The resistance of the system shall be varied until the discharge pressure equals the reference point.

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards," paragraph (z)(1), an alternative is proposed to the pump testing reference value requirements of the ASME OM Code. The basis of the request is that the proposed alternative would provide an acceptable level of quality and safety. Specifically, this alternative is requested for all inservice testing of IST Program pumps identified above.

For pump testing, there is difficulty adjusting system throttle valves with sufficient precision to achieve exact flow, differential pressure or discharge pressure to exact reference values during subsequent IST exams. Section ISTB of the ASME OM Code does not allow for variance from a fixed reference value for pump testing. However, NUREG-1482, Revision 2, Section 5.3, acknowledges that certain pump system designs do not allow for the licensee to set the flow, differential pressure or discharge pressure at an exact value because of limitations in the instruments and controls for maintaining steady flow.

ASME OM Code Case OMN-21 provides guidance for adjusting flow, differential pressure or discharge pressure to reference values within a specified tolerance during Inservice Testing. The Code Case states "It is the opinion of the Committee that when it is impractical to operate a pump at a specified reference point and adjust the resistance of the system to a specified reference point for either flow rate, differential pressure or discharge pressure, the pump may be operated as close as practical to the specified reference point with the following requirements. The Owner shall adjust the system resistance to as close as practical to the specified reference point where the variance from the reference point does not exceed plus 2% or minus 1% of the reference point when the reference point is flow rate, or plus 1% or minus 2% of the reference point when the reference point is differential pressure or discharge pressure".

5. Proposed Alternative and Basis for Use

FCS prefers to perform future Inservice Pump testing in a manner consistent with the requirements as stated in ASME OM Code Case OMN-21. Specifically, for those tests in which flow is adjusted to the Reference value, tests will be conducted such that flow rate is adjusted as close as practical to the reference value and within procedural limits of plus 2% / minus 1% of the reference value. Conversely, if the Reference parameter is differential pressure or discharge pressure, tests will be conducted such that differential pressure or discharge pressure is adjusted as close as practical to the reference value and within procedural limits of plus 1% / minus 2% of the reference value.

Code Case OMN-21 was approved by the ASME Operations and Maintenance Standards Committee on April 20, 2012. The applicability of Code Case OMN-21 is the ASME OM Code 1995 Edition through 2011 Addenda. The language from Code Case OMN-21 has been included in the ASME OM Code 2012 Edition.

Using the provisions of this request, as described above, as an alternative to the specific requirements of ISTB-5121, ISTB-5122, ISTB-5123, ISTB-5221, ISTB-5222, ISTB-5223, ISTB-5321, ISTB-5322 and ISTB-5323 will provide adequate indication of pump performance and continue to provide an acceptable level of quality and safety.

10 CFR 50.55a Request Number P-2
Adjusting Hydraulic Parameters to Specified Reference Points per Code Case OMN-21
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(1)
--Alternative Provides an Acceptable Level of Quality and Safety--

6. Duration of Proposed Alternative

This proposed alternative will be utilized for the entire fifth 120 month IST interval (June 7, 2016 – June 6, 2026). Note that this interval was extended as documented in letter from OPPD (L. Cortopassi) to NRC dated (Document Control Desk) dated January 21, 2014, (ML14022A258).

7. Precedents

Callaway Plant, Unit 1 – Safety Evaluation – Requests for Relief PR-01 through PR-06, Alternatives to ASME OM Code Requirements for Inservice Testing for the Fourth Program Interval (TAC Nos. MF2784, MF2785, MF2786, MF2787, MF2788 and MF2789) July 15, 2014. PR-06 requested use of Code Case OMN-21 for pump ISTs. This report may be found in ADAMS via accession number ML14178A769.

ATTACHMENT 4

VALVE RELIEF REQUEST INDEX

RELIEF REQUEST NUMBER	RELIEF REQUEST TITLE	APPROVAL DATE
G-1	Inservice Testing Frequency per Code Case OMN-20	2.19.16

ATTACHMENT 5

VALVE RELIEF REQUESTS

10 CFR 50.55a Request Number G-1
Inservice Test Frequency Per Code Case OMN-20
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
-- Hardship or Unusual Difficulty without Compensating Increase in Level of Quality and Safety --

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

All pumps and valves contained within the Fort Calhoun Station (FCS) Inservice Testing (IST) Program scope.

2. **Applicable Code Edition and Addenda**

ASME OM Code-2004 Edition, through Addenda OMb-2006.

3. **Applicable Code Requirement(s)**

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.

ISTA-3120(a) – "The frequency for inservice testing shall be in accordance with the requirements of Section IST."

ISTB-3400 – Frequency of Inservice Tests; "An inservice test shall be run on each pump as specified in Table ISTB-3400-1". Table ISTB-3400-1 lists two frequencies – quarterly and biennially.

ISTC-3510 – Exercising Test Frequency; "Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months,..."

ISTC-3540 – Manual Valves; "Manual Valves shall be full-stroke exercised at least once every 2 years, except where adverse conditions may require the valve to be tested more frequently to ensure operational readiness."

ISTC-3630(a) – Frequency; "Tests shall be conducted at least once every 2 years."

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

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, I-1320(a) – Test Frequencies, Class 1 Pressure Relief Valves; "Class 1 pressure relief valves shall be tested at least once every 5 years..."

Appendix I, I-1330 – Test Frequency, Class 1 Nonreclosing Pressure Relief Devices; "Class 1 nonreclosing pressure relief devices shall be replaced every 5 years..."

Appendix I, I-1340 – Test Frequency, Class 1 Pressure Relief Valves that are used for Thermal Relief Application; Refers to I-1320 for test frequency.

Appendix I, I-1350 – Test Frequency, Classes 2 and 3 Pressure Relief Valves; "Classes 2 and 3 pressure relief valves, with the exception of PWR main steam safety valves, shall be tested every 10 years, ..."

Appendix I, I-1360 – Test Frequency, Classes 2 and 3 Nonreclosing Pressure Relief Devices; "Classes 2 and 3 nonreclosing pressure relief devices shall be replaced every 5 years, ..."

Appendix I, I-1370 – Test Frequency, Classes 2 and 3 Primary Containment Vacuum Relief Valves; "Tests shall be performed on all Classes 2 and 3 containment vacuum relief valves at each refueling outage or every 2 years, ..."

Appendix I, I-1380 – Test Frequency, Classes 2 and 3 Vacuum Relief Valves Except for Primary Containment Vacuum Relief Valves; "All Classes 2 and 3 vacuum relief valves shall be tested every 2 years, ..."

Appendix I, I-1390 – Test Frequency, Classes 2 and 3 Pressure Relief Devices that are used for Thermal Relief Application; "Tests shall be performed on all Classes 2 and 3 relief devices used in thermal relief application every 10 years, ..."

Appendix II, II-4000(a)(1)(e) – Performance Improvement Activities; Subparagraph (1)(e) requires the identification of the interval for each activity.

Appendix II, II-4000(b)(1)(e) – Optimization of Condition Monitoring Activities; Subparagraph (1)(e) requires the identification of the interval for each activity.

4. Reason for Request

Pursuant to 10 CFR 50.55a, "Codes and Standards," paragraph (z)(2), an alternative is requested to the frequency specifications of the ASME OM Code. The basis of this request is that the Code requirements present an undue hardship without a compensating increase in the level of quality or safety.

ASME OM Code Section IST establishes the inservice test frequencies for all components within the scope of the Code. The frequencies (e.g., quarterly) have always been interpreted as "nominal" frequencies (generally as defined in Table 3.2 of NUREG 1482, Revision 2) and Owners routinely applied the surveillance extension time period (i.e., grace period) contained in the plant Technical Specifications (TS) Surveillance Requirements (SRs). The TS typically allow 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 (TS SR 3.0.1 at FCS). However, regulatory issues have been raised concerning the applicability of the TS "Grace Period" to ASME OM Code required inservice test frequencies.

The lack of a tolerance band on the ASME OM Code inservice test frequencies 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 be and should be performed.

10 CFR 50.55a Request Number G-1
Inservice Test Frequency Per Code Case OMN-20
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
-- Hardship or Unusual Difficulty without Compensating Increase in Level of Quality and Safety --

The NRC recognized this potential issue in the TS by allowing a frequency tolerance as described in FCS TS SR 3.0.1. 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.

5. Proposed Alternative and Basis for Use

FCS proposes the use of ASME OM Code Case OMN-20 for flexibility in IST scheduling. OMN-20 was published in the 2012 edition of the ASME OM Code and is applicable to all earlier editions and addenda.

The ASME OM Code establishes component test frequencies that are based either on elapsed time periods (e.g., quarterly, 2 years, etc.) or 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 ASME OM Code Section IST with a specified time period between tests as shown in the table below.

Frequency	Specified Time Period Between Tests (all values are 'not to exceed'; no minimum periods are specified)
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

10 CFR 50.55a Request Number G-1
Inservice Test Frequency Per Code Case OMN-20
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
-- Hardship or Unusual Difficulty without Compensating Increase in Level of Quality and Safety --

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 above.

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.

b. Components whose test frequencies are based on the occurrence of plant conditions or events (e.g., cold shutdown, refueling outage, upon detection of a sample failure, following maintenance, etc.) may not have their period between tests extended except as allowed by the ASME OM Code.

As currently written, ASME OM Code requirements do not allow testing period extensions that provide an allowance for the performance of ASME OM Code testing. As a result, this places an unusual hardship on FCS's ability to schedule and perform ASME OM Code testing without a compensating increase in the level of quality and safety.

6. Duration of Proposed Alternative

The proposed alternative identified will be utilized during the entire fifth 120 month Inservice Test interval (beginning June 7, 2016 and concluding on June 6, 2026). Note that the fourth IST interval was previously extended as documented in Reference 2.

10 CFR 50.55a Request Number G-1
Inservice Test Frequency Per Code Case OMN-20
Proposed Alternative In Accordance with 10 CFR 50.55a(z)(2)
-- Hardship or Unusual Difficulty without Compensating Increase in Level of Quality and Safety --

7. Precedence

Similar requests were approved for:

a. Callaway Plant Unit 1, (Docket No. 50-483), Request No. PR-04, as discussed in NRC Safety Evaluation Report (SER) dated July 15, 2014 (TAC Nos. MF2784 through MF2789). (ML14178A769).

b. Dresden Nuclear Power Station, 10 CFR 50.55a Request RV-01, NRC SER dated October 31, 2013, TAC Nos. ME9865, ME9866, ME9869, ME9870 and ME9872. (ML13297A515).

c. Three Mile Island Nuclear Station, 10 CFR 50.55a request VR-01, NRC SER dated August 15, 2013, TAC Nos. MF0046, MF0047 and MF0048. (ML13227A024).

d. Quad Cities Nuclear Power Station, Units 1 and 2 (NRC Dockets 50-254 and 50- 265), 10 CFR 50.55a Request No. RV-01, as discussed in NRC SER dated February 14, 2013 (TAC Nos. ME7981 through ME7995). (ML13042A348).

8. References

5. Fort Calhoun Station Technical Specification Surveillance Requirements:
   a. Section 3.0.1 (25% extension)
   b. Section 3.0.2 (surveillance intervals)
   c. Section 3.0.3 (3.0.1 and 3.0.2 applicable to all codes and standards referenced in TS)
6. Letter from OPPD, (L. Cortopossi) to NRC (Document Control Desk), Revised In- service Inspection (ISI) and In-service Test (IST) Interval End Dates as a Result of Extended Refueling Outage, dated January 21, 2014 (LIC-14-0002). (ML14022A258).
7. NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants: Inservice Testing of Pumps and Valves and Inservice Examination and Testing of Dynamic Restraints (Snubbers) at Nuclear Power Plants, dated October 2013, (ML13295A020).
8. ASME OM Code 2004 Edition through Addenda OMb-2006.

ATTACHMENT 6

RELIEF REQUEST RAIs AND SERs

RELIEF REQUEST SUBMITTAL

- Letter, OPPD (L. P. Cortopassi) to NRC, Dated 8.27.15, Subject: Submittal of Relief Requests Associated with the Fifth Inservice Testing Interval. (LIC-15-0089)

NRC REQUEST FOR ADDITIONAL INFORMATION (RAI)

- Letter, NRC (C. F. Lyon) to OPPD (L. P. Cortopassi), dated 11.24.15, Subject: Fort Calhoun Station No. 1 – Request for Additional Information RE: Fifth Inservice Testing Interval Relief Requests P-1 and P-2 (CAC NOS. MF6651 and MF6652)

FCS RAI RESPONSE

- Letter, OPPD (L. P. Cortopassi) to NRC, dated 1.11.16, Subject: Response to NRC Request for Additional Information RE: Fifth Interval Inservice Testing Interval Relief Requests P-1 and P-2 (CAC NOS. MF6651 and MF6652). (LIC-15-0147).

NRC RELIEF REQUEST SAFETY EVALUATION REPORT

- Letter, NRC (R. J. Pascarelli) to OPPD (S.M. Marik), dated 2.29.16, Subject: Fort Calhoun Station No. 1 – Request for Relief G-1, P-1 and P-2 for the Fifth Inservice Testing Interval (CAC NOS. MF6651, MF6652 and MF6653). (NRC-16-0015).

NRC-16-0015

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

February 19, 2016

FEB 1 2016

Mr. Shane M. Marik
Site Vice President and Chief Nuclear Officer
Omaha Public Power District
Fort Calhoun Station
9610 Power Lane, Mail Stop FC-2-4
Blair, NE 68008

SUBJECT: FORT CALHOUN STATION, UNIT NO. 1 – REQUESTS FOR RELIEF G-1, P-1, AND P-2 FOR THE FIFTH INSERVICE TESTING INTERVAL (CAC NOS. MF6651, MF6652, AND MF6653)

Dear Mr. Marik:

By letter dated August 27, 2015, as supplemented by letter dated January 11, 2016, Omaha Public Power District (the licensee) submitted requests for relief G-1, P-1, and P-2 to the U.S. Nuclear Regulatory Commission (NRC) for the fifth 10-year inservice testing (IST) interval at Fort Calhoun Station, Unit No. 1 (FCS).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use the proposed alternative in request P-2 on the basis that the alternative provides an acceptable level of quality and safety. Pursuant to 10 CFR 50.55a(z)(2), the licensee requested to use the proposed alternatives in requests G-1 and P-1 on the basis that the requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code) present an undue hardship without a compensating increase in the level of quality or safety. In G-1, the licensee proposed to use alternative testing frequency in accordance with OM Code Case OMN-20, "Inservice Test Frequency." In P-1, the licensee proposed to use alternative vibration limits for the low pressure safety injection and containment spray pumps. In P-2, the licensee proposed to use alternative hydraulic parameter reference points in accordance with OM Code Case OMN-21, "Alternate Requirements for Adjusting Hydraulic Parameters to Specified Reference Points."

The NRC staff has reviewed the subject requests and concludes, as set forth in the enclosed safety evaluation, that for alternative request P-2 for FCS, the proposed alternative provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1) for request P-2. Also, the NRC staff determined that for alternative requests G-1 and P-1 for FCS, the proposed alternatives provide reasonable assurance that the affected components are operationally ready. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC staff authorizes the use of alternative requests G-1, P-1, and P-2 for FCS for the fifth 10-year IST program interval, which begins on June 7, 2016, and is scheduled to end on June 6, 2026.

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

If you have any questions, please contact Fred Lyon at 301-415-2296 or via e-mail at Fred.Lyon@nrc.gov.

Sincerely,

Robert J. Pascarelli, Chief
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosure:
Safety Evaluation

cc w/encl: Distribution via Listserv

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUESTS FOR RELIEF G-1, P-1, AND P-2

FOR THE FIFTH 10-YEAR INSERVICE TESTING PROGRAM INTERVAL

OMAHA PUBLIC POWER DISTRICT

FORT CALHOUN STATION, UNIT NO. 1

DOCKET NO. 50-285

1.0 INTRODUCTION

By letter dated August 27, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15239A214), supplemented by letter dated January 11, 2016 (ADAMS Accession No. ML16011A431), Omaha Public Power District (OPPD, the licensee), submitted alternatives to the requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants (OM Code), associated with pump inservice testing (IST) at Fort Calhoun Station, Unit No. 1 (FCS).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(z)(1), the licensee requested to use the proposed alternative in request P-2 on the basis that the alternative provides an acceptable level of quality and safety. Pursuant to 10 CFR 50.55a(z)(2), the licensee requested to use the proposed alternatives in requests G-1 and P-1 on the basis that the ASME OM Code requirements present an undue hardship without a compensating increase in the level of quality or safety.

2.0 REGULATORY EVALUATION

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

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

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

3.0 TECHNICAL EVALUATION

3.1 Licensee's Alternative Request G-1

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

- ISTA-3120, "Inservice Test Interval," (a) states, "The frequency for inservice testing shall be in accordance with the requirements of Section IST."

- ISTB-3400, "Frequency of Inservice Tests," states, "An inservice test shall be run on each pump as specified in Table ISTB-3400-1."

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

- ISTC-3540, "Manual Valves," states, "Manual valves shall be full-stroke exercised at least once every 2 years, except where adverse conditions may require the valve to be tested more frequently to ensure operational readiness. Any increased testing frequency shall be specified by the Owner. The valve shall exhibit the required change of obturator position."

- ISTC- 3630, "Leakage Rate for Other Than Containment Isolation Valves," (a) "Frequency," states, "Tests shall be conducted at least once every 2 years."

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

- ISTC-5221, "Valve Obturator Movement," (c)(3) states, "At least one valve from each group shall be disassembled and examined at each refueling outage; all valves in each group shall be disassembled and examined at least once every 8 years."

- Appendix I, I-1320, "Test Frequencies, Class 1 Pressure Relief Valves," (a), "5-Year Test Interval," states, in part, "Class 1 pressure relief valves shall be tested at least once every 5 years, starting with initial electric power generation."

- Appendix I, I-1330, "Test Frequency, Class 1 Nonreclosing Pressure Relief Devices," states, "Class 1 nonreclosing pressure relief devices shall be replaced

every 5 years unless historical data indicates a requirement for more frequent replacement."

- Appendix I, I-1340, "Test Frequency, Class 1 Pressure Relief Valves That Are Used for Thermal Relief Application," states, "Tests shall be performed in accordance with I-1320, Test Frequencies, Class 1 Pressure Relief Valves."

- Appendix I, I-1350, "Test Frequency, Classes 2 and 3 Pressure Relief Valves," (a), "10-Year Test Interval," states, in part, "Classes 2 and 3 pressure relief valves, with the exception of PWR main steam safety valves, shall be tested every ten years, starting with initial power generation."

- Appendix I, I-1360, "Test Frequency, Classes 2 and 3 Nonreclosing Pressure Relief Devices," states, "Classes 2 and 3 nonreclosing pressure relief devices shall be replaced every 5 years, unless historical data indicates a requirement for more frequent replacement."

- Appendix I, I-1370, "Test Frequency, Classes 2 and 3 Primary Containment Vacuum Relief Valves," states, "(a) Tests shall be performed on all Classes 2 and 3 containment vacuum relief valves at each refueling outage or every 2 years, whichever is sooner, unless historical data requires more frequent testing. (b) Leak tests shall be performed on all Classes 2 and 3 containment vacuum relief valves at a frequency designated by the Owner in accordance with Table ISTC-3500-1."

- Appendix I, I-1380, "Test Frequency, Classes 2 and 3 Vacuum Relief Valves, Except for Primary Containment Vacuum Relief Valves," states, "All Classes 2 and 3 vacuum relief valves shall be tested every 2 years, unless performance data suggest the need for a more appropriate test interval."

- Appendix I, I-1390, "Test Frequency, Classes 2 and 3 Pressure Relief Devices That Are Used for Thermal Relief Application," states, "Tests shall be performed on all Classes 2 and 3 relief devices used in thermal relief application every 10 years, unless performance data indicate more frequent testing is necessary. In lieu of tests the Owner may replace the relief devices at a frequency of every 10 years, unless performance data indicate more frequent replacements are necessary."

- Appendix II, II-4000, "Condition-Monitoring Activities," (a), "Performance Improvement Activities," (1), states, in part, "If sufficient information is not currently available to complete the analysis required in II-3000, or if this analysis is inconclusive, then the following activities shall be performed at sufficient intervals over an interim period of the next 5 years or two refueling outages, whichever is less, to determine the cause of failure or the maintenance patterns."

- Appendix II, II-4000, "Condition-Monitoring Activities," (b), "Optimization of Condition-Monitoring Activities," (1)(e), states, "Identify the interval of each activity. Interval extensions shall be limited to one fuel cycle per extension.

> Intervals shall not exceed the maximum intervals shown in Table II-4000-1. All valves in a group sampling plan must be tested or examined again, before the interval can be extended again, or until the maximum interval would be exceeded. The requirements of ISTA-3120, Inservice Test Interval, do not apply."

The licensee has requested to use the proposed alternative for all pumps and valves contained within the FCS IST Program scope.

The FCS fifth 10-year IST program interval begins on June 7, 2016 and is scheduled to end on June 6, 2026. The applicable ASME OM Code edition and addenda for the FCS fifth 10-year IST program interval is the 2004 Edition through the 2006 Addenda.

Reason for Request

Pursuant to 10 CFR 50.55a(z)(2), the licensee requested an alternative to the frequency specifications of the ASME OM Code. The basis of the alternative request is that the ASME OM Code requirement presents an undue hardship without a compensating increase in the level of quality or safety.

ASME OM Code Section 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 (generally as defined in the Table 3.2 of NUREG-1482, Revision 2, "Guidelines for Inservice Testing at Nuclear Power Plants," October 2013 (ADAMS Accession No. ML13295A020)) and Owners routinely applied the surveillance extension time period (i.e., grace period) contained in the plant technical specifications (TSs) surveillance requirements (SRs). The TS typically allow for a less than or equal to 25 percent extension of the surveillance test interval to accommodate plant conditions that may not be suitable for conducting the surveillance (SR 3.0.2). 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 Administrative Controls.

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 is within its applicability. Therefore, to avoid this conflict, the surveillance test should be performed when it can be and should be performed.

The NRC recognized this potential issue in the TS by allowing a frequency tolerance as described in FCS TS SR 3.0.1. The lack of a similar tolerance applied to ASME 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 ASME 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.

Proposed Alternative

The licensee proposed to adopt the wording of ASME OM Code Case OMN-20, repeated below, for determining acceptable tolerances for pump and valve test frequencies. This code case was approved by the ASME OM Code Standards Committee in February 2012. The proposed alternative will be utilized for the entire fifth 10-year interval and will apply to the various frequency specifications of the ASME OM Code for all pumps and valves contained within the IST Program scope.

Code Case OMN-20
Inservice Test Frequency

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.

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 Code 2004 Edition through OMb-2006 Addenda and all earlier editions and addenda of ASME OM Code.

NRC Staff Evaluation

Historically, licensees have applied and the NRC staff has accepted the standard TS definitions for IST intervals (including allowable interval extensions) to ASME OM Code required testing (Reference NUREG-1482, Revision 2, Section 3.1.3). Recently, the NRC staff reconsidered the allowance of the TS testing intervals and interval extensions, for IST not associated with TS SRs. As noted in Regulatory Issue Summary (RIS) 2012-10, "NRC Staff Position on Applying Surveillance Requirements 3.0.2 and 3.0.3 to Administrative Controls Program Tests," dated August 23, 2012 (ADAMS Accession No. ML12079A393), the NRC determined that programmatic test frequencies cannot be extended in accordance with the TS SR 3.0.2. This includes all IST described in the ASME OM Code not specifically required by the TS SRs.

Following this development, the NRC staff sponsored and co-authored an ASME OM Code inquiry and code case to modify the ASME OM Code to include TS-like test interval definitions and interval extension criteria. The resultant ASME OM Code Case OMN-20, as shown above, was approved by the ASME Operation and Maintenance Standards Committee and published in the 2012 Edition of the ASME OM Code. The licensee proposes to use the ASME OM Code Case OMN-20 entirely from the 2012 Edition of the ASME OM Code for grace period associated with IST requirements. The NRC staff notes that currently it has not approved Code Case OMN-20 in Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code."

Implementation of ASME OM Code Case OMN-20 requires implementation of this code case in its entirety, including the above stated restrictions/limitations, without exceptions. Requiring the licensee to meet the ASME OM Code requirements, without an allowance for defined frequency and frequency extensions for IST of pumps and valves, results in a hardship without a compensating increase in the level of quality and safety. Based on the prior acceptance by the NRC staff of the similar TS test interval definitions and interval extension criteria, the staff finds that implementation of the test interval definitions and interval extension criteria contained in ASME OM Code Case OMN-20 is acceptable. Allowing usage of ASME Code Case OMN-20

provides reasonable assurance of operational readiness of pumps and valves subject to the ASME OM Code IST.

Based on the above, the NRC staff concludes that the proposed alternative provides reasonable assurance that the affected pumps and valves are operationally ready.

3.2 Licensee's Alternative Request P-1

Table ISTB-5121-1, "Centrifugal Pump Test Acceptance Criteria," provides the Acceptable Range, the Alert Range, and the Required Action Range for centrifugal pump vibration tests.

The licensee has requested an alternative to the Alert Range and the Required Action Range for Group A vibration testing for the pumps listed in Table 1.

Table 1

Pump No.	Pump Name	ASME OM Code Group	ASME Code Class	Pump Type
SI-1A & 1B	Low Pressure Safety Injection (LPSI) Pump	A	2	Horizontal Centrifugal
SI-3A, 3B, & 3C	Containment Spray (CS) Pump	A	2	Horizontal Centrifugal

Reason for Request

Table ISTB-5121-1 specifies the vibration limits for centrifugal pumps operating at or above 600 revolutions per minute (rpm) are the following for both the Group A and the comprehensive pump test (CPT):

Table 2

Vibration Reference Value	Acceptable Range	Alert Range	Required Action Range
V_r	$\leq 2.5\ V_r$	$>2.5\ V_r - 6.0\ V_r$ or >0.325 – 0.70 inches per second (in/sec)	$>6.0\ V_r$ or >0.70 in/sec

The absolute limits for vibration of 0.325 in/sec for the Alert Range and 0.70 in/sec for the Required Action Range are too restrictive for the FCS LPSI and CS pumps during Group A testing as they are normally above those limits when tested. No alternative is requested for CPT Table ISTB-5121-1 vibration limits since vibration levels subside at these higher flow conditions.

These pumps have exhibited these higher vibration levels their entire service life when operated on mini-flow, which is the normal alignment for Group A testing. The LPSI pump minimum flow line must be used when performing Group A testing during power operations because the only other flow path is to the reactor coolant system (RCS) using shutdown cooling alignment. This flow path cannot be used because the LPCI pump discharge pressure cannot overcome RCS

pressure. The CS pump minimum flow line must be used when performing Group A testing during power operations because the other flow paths would either result in water damage to equipment in the containment or are not permitted by the TS. The minimum flow lines ensure that the LPSI and CS pumps do not experience a no-flow condition, which would lead to pump damage. The minimum flow lines discharge back to the safety injection and refueling water tank. The LPSI and CS pumps are all of very similar design. All pumps are Ingersoll Rand Model 6UCL. The minimum flow rate for continuous unrestricted operation for the LPSI pumps, according to Flowserve, is 584 gallons per minute (gpm). The minimum flow rate for continuous unrestricted operation for the CS pumps is not defined, but it should be near the same as the LPSI pumps. The pumps are horizontal centrifugal single stage pumps. Pump hydraulic characteristics are as follows:

Table 3

System	Design Flow (gpm)	Design Head (ft)	Minimum Flow (gpm)	Shutoff Head (ft)
LPSI	1500	403	200	450
CS	1700	450	200	500

Extensive analysis of these pumps' vibration characteristics was performed in 1994, when FCS was first required to comply with these ASME OM Code vibration limits. That analysis was documented in a letter from OPPD to the NRC dated August 3, 1994 (ADAMS Legacy Library Accession No. 9408110165). It was determined that the dominant contribution to this vibration during minimum Group A test conditions was incipient cavitation caused by operating a high energy pump with a corresponding low net positive suction head. Also, spectral analysis performed on these pumps for the last 10 years does not show any discrete fault frequencies. Complying with the Table ISTB-5121-1 would cause unusual difficulty as those pumps normally exceed the Group A vibration levels and have historically done so while providing reliable and safe service. A review of fourth interval IST history to date has determined these pumps have never exceeded the modified Required Action limits during Group A tests and the Table ISTB-5121-1 Required Action limits during CPTs. The CPT Required Action levels of Table ISTB-5121-1 were not modified by the alternative request, thus during CPTs these pumps have not reached Required Action vibration or hydraulic levels even when normal Table ISTB-5121-1 limits are applied. As another measure of these pumps' reliability, during the current 4th IST interval there have been no Maintenance Rule Functional Failures for any of the LPSI and CS pumps. Finally, during 2011 - 2013 while FCS was in an extended refueling outage, internal inspections and pump refurbishment were performed for both LPSI (SI-1A and SI-1B) and two of three CS (SI-3B and SI-3C) pumps. The internal inspections revealed no abnormal accelerated degradation due to operating on mini-flow/Group A conditions. These were the only instances of LPSI/CS pump internal refurbishment during the 4th IST interval. For CS pump SI-3A, no generic condition existed which warranted its disassembly and inspection.

Proposed Alternative

The licensee is requesting that for Group A testing for the pumps in Table 1, the Alert Range limit will be changed to >0.80 in/sec, and the Required Action Range limit be changed to >1.1 in/sec. The licensee will adhere to the vibration limits in Table ISTB-5121-1 for the CPTs for these pumps.

NRC Staff Evaluation

The licensee is requesting to increase the Alert Range and Required Action Range vibration limits for the LPSI and CS pumps during Group A testing. The licensee stated that for Group A testing, these pumps are tested using the minimum flow line for each pump, because full flow testing can only be effectively performed while the pumps are being used for shutdown cooling when the unit is shut down. The minimum flow lines are installed to ensure that the pumps do not experience a no-flow condition, which would lead to pump damage. The pumps were not designed to operate on minimum flow for any extended period of time.

The licensee submitted the results of an extensive analysis of these pumps' vibration characteristics in 1994 (ADAMS Legacy Library Accession No. 9408110165) when this same alternative request was previously submitted and subsequently authorized for the third 10-year IST program interval. The NRC staff notes that this same alternative request was also authorized for the fourth 10-year IST program interval. The licensee concluded that vibration levels during quarterly testing for these pumps are significantly greater due in part to incipient cavitation caused by operating a high energy pump under low flow conditions. The licensee also stated that during the current (fourth) IST internal there have been no Maintenance Rule functional failures for any of the LPSI and CS pumps. Also, during the 2011 - 2013 extended refueling outage, internal inspections and pump refurbishment was performed for both of the LPSI pumps and two of the three CS pumps. The internal inspections did not reveal any abnormal accelerated degradation due to high vibration during Group A testing. For CS pump SI-3A, no generic condition existed which warranted its disassembly and inspection. Requiring the licensee to meet the ASME OM Code requirements would result in a hardship without a compensating increase in quality and safety because the additional testing that would have to be performed on a pump that typically operates at elevated vibration levels represents a condition that could possibly damage the pump by increased running on minimum flow.

The proposed testing provides reasonable assurance of operational readiness because the pumps will continue to be tested quarterly and the licensee will maintain the ASME OM Code Alert and Required Action limits for pump full flow testing during the biennial CPT. In addition, the licensee conducts periodic spectral analysis of these pumps to closely monitor the condition of the pumps. The spectral data takes into account complex signals as opposed to assuming pure harmonic motions for peak values measured in displacement or velocity, thus providing more detailed and complete vibration data over a large frequency band. This analysis exceeds the vibration monitoring requirements of the ASME OM Code. The results of the spectrum analysis data over the past ten years have not shown any discrete fault frequencies.

Based on the above, the NRC staff concludes that proposed alternative P-1 provides an acceptable level of quality and safety.

3.3 Licensee's Alternative Request P-2

The licensee has requested an alternative to the pump testing reference value requirements of ISTB-5121, ISTB-5122, ISTB-5123, ISTB-5221, ISTB-5222, ISTB-5223, ISTB-5321, ISTB-5322, and ISTB-5323. These requirements state:

- ISTB-5121, "Group A Test Procedure," (b) states, in part, "The resistance of the system shall be varied until the flow rate equals the reference point."
- ISTB-5122, "Group B Test Procedure," (c) states, in part, "System resistance may be varied as necessary to achieve the reference point."
- ISTB-5123, "Comprehensive Test Procedure," (b) states, in part, "For centrifugal and vertical line shaft pumps, the resistance of the system shall be varied until the flow rate equals the reference point."
- ISTB-5221, "Group A Test Procedure," (b) states, in part, "The resistance of the system shall be varied until the flow rate equals the reference point."
- ISTB-5222, "Group B Test Procedure," (c) states "System resistance may be varied as necessary to achieve the reference point."
- ISTB-5223, "Comprehensive Test Procedure," (b) states, in part, that "The resistance of the system shall be varied until the flow rate equals the reference point."
- ISTB-5321, "Group A Test Procedure," (b) states, in part, "The resistance of the system shall be varied until the discharge pressure equals the reference point."
- ISTB-5322, "Group B Test Procedure," (c) states "System resistance shall be varied as necessary to achieve the reference point."
- ISTB-5323, "Comprehensive Test Procedure," (b) states, in part, that "The resistance of the system shall be varied until the discharge pressure equals the reference point."

ASME OM Code Case, OMN-21, "Alternate Requirements for Adjusting Hydraulic Parameters to Specified Reference Points," states,

> It is the opinion of the Committee that when it is impractical to operate a pump at a specified reference point and adjust the resistance of the system to a specified reference point for either flow rate, differential pressure or discharge pressure, the pump may be operated as close as practical to the specified reference point with the following requirements. The Owner shall adjust the system resistance to as close as practical to the specified reference point where the variance from the reference point does not exceed +2% or -1% of the reference point when the reference point is flow rate, or +1% or -2% of the reference point when the reference point is differential pressure or discharge pressure.

The components affected by this alternative request are the pumps listed in Table 4 below.

Table 4

Pump No.	Pump Name	ASME OM Code Group	ASME Code Class	Pump Type
FW-6 & 10	Auxiliary Feedwater Pump	B	3	Centrifugal
AC-3A, 3B, & 3C	Component Cooling Water Pump	A	3	Centrifugal
CH-1A, 1B, & 1C	Charging Pump	A	2	Positive Displacement
CH-4A & 4B	Boric Acid Pump	A	2	Centrifugal
AC-10A, 10B, 10C, & 10D	Raw Water Pump	A	3	Vertical Line Shaft
SI-1A & 1B	Low Pressure Safety Injection Pump	A	2	Centrifugal
SI-2A, 2B & 2C	High Pressure Safety Injection Pump	B	2	Centrifugal
SI-3A, 3B, & 3C	Containment Spray Pump	A	2	Centrifugal
FO-4A-1 & 2	Diesel Fuel Oil Transfer Pump	B	3	Positive Displacement
FO-4B-1 & 2	Diesel Fuel Oil Transfer Pump	B	3	Positive Displacement

Reason for Request

In its letter dated August 27, 2015, the licensee stated, in part, that:

> For pump testing, there is difficulty adjusting system throttle valves with sufficient precision to achieve exact flow, differential pressure, or discharge pressure to exact reference values during subsequent IST exams. Section ISTB of the ASME OM Code does not allow for variance from a fixed reference value for pump testing. However, NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants," Revision 2, Section 5.3, acknowledges that certain pump system designs do not allow for the licensee to set the flow, differential pressure, or discharge pressure at an exact value because of limitations in the instruments and controls for maintaining steady flow.
>
> ASME OM Code Case OMN-21 provides guidance for adjusting flow, differential pressure, or discharge pressure to reference values within a specified tolerance

during IST. The Code Case states "It is the opinion of the Committee that when it is impractical to operate a pump at a specified reference point and adjust the resistance of the system to a specified reference point for either flow rate, differential pressure or discharge pressure, the pump may be operated as close as practical to the specified reference point with the following requirements. The Owner shall adjust the system resistance to as close as practical to the specified reference point where the variance from the reference point does not exceed plus 2% or minus 1% of the reference point when the reference point is flow rate, or plus 1% or minus 2% of the reference point when the reference point is differential pressure or discharge pressure."

Proposed Alternative

The licensee requested to perform IST for the pumps listed in Table 4 in a manner consistent with the requirements as stated in ASME OM Code Case OMN-21. The testing of the pumps listed in Table 4 in which flow is adjusted to the reference value, the tests will be performed such that flow rate is adjusted as close as practical to the reference value and within proceduralized limits of +2 percent / -1 percent of the reference value. The testing of the pumps listed in Table 4 in which the reference parameter is differential pressure or discharge pressure, the tests will be performed such that differential pressure or discharge pressure is adjusted as close as practical to the reference value and within proceduralized limits of +1 percent / -2 percent of the reference value.

The licensee's plant operators will still strive to achieve the exact test flow or differential pressure (or discharge pressure) reference values during testing. This will be completed to limit any deviation of trends as a result in fluctuation of reference value set points.

NRC Staff Evaluation

An inquiry was submitted to the ASME OM Code to determine what alternatives may be used when it is impractical to operate a pump at a specified reference point for either flow rate, differential pressure, or discharge pressure. ASME OM Code Case OMN-21 was developed to provide guidance on alternatives. The guidance in ASME OM Code Case OMN-21 states that when it is impractical to operate a pump at a specified reference point for either flow rate, differential pressure or discharge pressure, the pump may be operated as close as practical to the specified reference point with the following requirements. ASME OM Code Case OMN-21 specifies that the variance from the reference point shall not exceed +2 percent or -1 percent of the reference point when the reference point is flow rate, or +1 percent or -2 percent of the reference point when the reference point is differential pressure or discharge pressure.

ASME OM Code Case OMN-21 was approved by the ASME OM Standards Committee on April 20, 2012, with the NRC representative voting in the affirmative. The code case has not yet been incorporated into Regulatory Guide 1.192. The licensee proposes to adopt ASME OM Code Case OMN-21. The applicability of ASME OM Code Case OM-21 is the ASME OM Code 1995 Edition through the 2011 Addenda. The NRC staff notes that the language from ASME OM Code Case OMN-21 has been included in the ASME OM Code, 2012 Edition.

The NRC staff notes that in certain situations, it is not possible to operate a pump at a precise reference point. The NRC staff has reviewed the alternatives proposed in ASME OM Code

Case OMN-21 and found that the proposed alternatives are reasonable and appropriate when a pump cannot be operated as a specified reference point. Operation within the tolerance bands specified in ASME OM Code Case OMN-21 provides reasonable assurance that licensees will be able to utilize the data collected to detect degradation of the pumps. Based on the NRC staff's review of ASME OM Code Case OMN-21 and the licensee's commitment to use the bands specified in ASME OM Code Case OMN-21 for flow rate, differential pressure, and discharge pressure, the NRC staff concludes that implementation of the alternatives contained in ASME OM Code Case OMN-21 is acceptable for the pumps listed in Table 4. Therefore, the NRC staff concludes that the licensee's proposed alternative provides an acceptable level of quality and safety.

4.0 CONCLUSION

As set forth above, the NRC staff determined that for alternative request P-2 for FCS, the proposed alternative provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1) for request P-2. Therefore, the NRC staff authorizes the use of the alternative request P-2 for FCS for the fifth 10-year IST program interval, which begins on June 7, 2016, and is scheduled to end on June 6, 2026.

As set forth above, the NRC staff determined that for alternative requests G-1 and P-1 for FCS, the proposed alternatives provide reasonable assurance that the affected components are operationally ready. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(2). Therefore, the NRC staff authorizes the use of the alternative requests G-1 and P-1 for FCS for the fifth 10-year IST program interval, which begins on June 7, 2016, and is scheduled to end on June 6, 2026.

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

Principal Contributor: R. Wolfgang, NRR/DE/EPNB

Date: February 19, 2016

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

If you have any questions, please contact Fred Lyon at 301-415-2296 or via e-mail at Fred.Lyon@nrc.gov.

Sincerely,

/RA/

Robert J. Pascarelli, Chief
Plant Licensing Branch IV-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosure:
Safety Evaluation

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ATTACHMENT 7

CODE CASE INDEX

CODE CASE NUMBER	TITLE
OMN-13, Rev. 1	Requirements for Extending Snubber Inservice Visual Examination Interval at LWR Plants
OMN-16	Use of Pump Curve Testing
OMN-20	Inservice Test Frequency
OMN-21	Alternate Requirements for Adjusting Hydraulic Parameters to Specified Reference Points

ATTACHMENT 8

DEFERRED TESTING JUSTIFICATION INDEX

CSJ / ROJ NUMBER	TITLE
J1	HPSI Suction Check Valve Testing during Refueling
J2	Deleted
J3	HPSI Pump Discharge Check Valve Testing during Refueling
J4	LPSI Pump Discharge Check Valve Testing during Cold Shutdown
J5	Charging Check Valves Testing during Cold Shutdown
J6	Feedwater Inlet Check Valves Disassembly and Examination
J7	Auxiliary Feedwater Injection Check Valve Testing during Cold Shutdown
J8	Vessel Head and Pressurizer Vent Valves Exercise and Fail Safe Testing during Cold Shutdown
J9	Shutdown Cooling Check Valve Testing during Cold Shutdown
J10	HPSI to RC Loop Check Valve Testing during Cold Shutdown
J11	HPSI to RC Loop Check Valve Testing during Refueling
J12	Charging Check Valve Testing during Refueling
J13	Letdown Valve Exercising during Cold Shutdown
J14	Auxiliary Spray Check Valve Testing During Refueling
J15	RC Pump Bleed Off Isolation Valves Exercise and Fail Safe Testing during Refueling
J16	VCT/SIRWT Isolation Valves Exercise during Cold Shutdown
J17	IA Accumulator Check Valve and Auxiliary Pressurizer Spray Isolation Valve Testing during Cold Shutdown
J18	Boric Acid Isolation Valve Testing during Cold Shutdown
J19	HPSI Injection Header Check Valve Testing during Refueling
J20	IA Accumulator Check Valve and Containment Spray Isolation Valve Testing during Cold Shutdown
J21	Shutdown Cooling Isolation Valve Testing during Cold Shutdown
J22	SI Tank Leakage Coolers Isolation Valves Testing during Cold Shutdown
J23	RCP Cooler Isolation Valves, Instrument Air Supply Check Valves Exercising during Cold Shutdown
J24	Main Steam Isolation Check Valve Testing during Cold Shutdown
J25	Main Steam Isolation Bypass Valve Testing during Cold Shutdown
J26	Feedwater Isolation Valve Testing during Cold Shutdown
J27	Instrument Air Containment Isolation Valves Testing during Cold Shutdown
J28	Instrument Air Supply Check Valves Testing during Cold Shutdown
J29	IA Accumulator Check Valve and SIRWT Minimum Recirculation Isolation Valves Testing during Cold Shutdown
J30	Volume Control Tank Outlet Check Valve Testing during Cold Shutdown
J31	Containment Spray Pumps Discharge Check Valves Testing during Cold Shutdown
J32	Instrument Air Supply Header Check Valves Testing during Cold Shutdown

CSJ / ROJ NUMBER	TITLE
J33	Main Steam Stop Check Valves Disassembly and Examination
J34	Safety Injection/Instrument Air Valves Testing during Cold Shutdown
J35	Nitrogen Supply to SIT Check Valves Testing during Cold Shutdown
J36	Pressurizer Spray Check Valve Testing during Refueling
J37	Nuclear Detector CCW Isolation Valves Exercise and Fail Safe Testing during Cold Shutdown
J38	Containment Purge Inlet/Exhaust Isolation Valves Exercise and Fail Safe Testing during Cold Shutdown
J39	IA-HCV-2987-C; Instrument Air Supply Check Valve Exercise Test during Cold Shutdown
J40	LPSI Pump Minimum Recirculation Line Check Valve Exercise Test during Cold Shutdown
J41	Containment Spray Pump Minimum Recirculation Line Check Valve Exercise Test during Cold Shutdown
J42	HPSI Pump Minimum Recirculation Line Check Valve Exercise Test during Cold Shutdown
J43	Turbine-Driven Auxiliary Feedwater Pump Steam Supply Check Valve Exercise Test during Cold Shutdown

ATTACHMENT 9

DEFFERRED TESTING JUSTIFICATIONS

DEFERRED TESTING JUSTIFICATION
NUMBER: J1

System: Safety Injection

Valve(s): SI-100, SI-113

Category: C

Class: 2

Function: High Pressure Safety Injection (HPSI) Pump Suction Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves cannot be exercised to the full open position Quarterly during plant operation or during Cold Shutdowns, since to do so would require a flow path to the Reactor Coolant System (RCS). That flow path cannot be utilized during power operation because the High Pressure Safety Injection (HPSI) pumps do not develop sufficient discharge pressure to overcome RCS pressure. This same flow path cannot be utilized during Cold Shutdowns because there is insufficient volume in the RCS to accommodate the flow required and a low temperature overpressure condition of the RCS could result.

Alternative Testing Frequency: These check valves will be partial-stroke exercised open, using the minimum recirculation flow path Quarterly during normal operations, and full-stroke exercised open and closed during Refueling Outages.

This exercising open/close during Refueling Outages is in accordance with the requirements set forth in ISTC-3522.

DEFERRED TESTING JUSTIFICATION
NUMBER: J2

Deleted

DEFERRED TESTING JUSTIFICATION
NUMBER: J3

System: Safety Injection

Valve(s): SI-102, SI-108, SI-115

Category: C

Class: 2

Function: HPSI Pump Discharge Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves cannot be exercised open or closed during plant operation, Quarterly or during Cold Shutdowns, since to do so would require a flow path to the RCS. That flow path cannot be utilized during power operation because the HPSI pumps do not develop sufficient discharge pressure to overcome RCS pressure. This same flow path cannot be utilized during Cold Shutdowns because there is insufficient volume in the RCS to accommodate the flow required, and a low temperature overpressure condition of the RCS could result. Additionally, these valves cannot be exercised during Quarterly pump tests or minimum flow because the minimum flow lines branch off upstream of the check valves and no flow occurs through these valves.

Alternative Testing Frequency: These check valves will be exercised open and closed during Refueling Outages when the Reactor Vessel head is removed. This will provide an expansion volume to accommodate the flow required.

DEFERRED TESTING JUSTIFICATION
NUMBER: J4

System: Safety Injection

Valve(s): SI-121, SI-129

Category: C

Class: 2

Function: LPSI Pump Discharge Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves cannot be exercised in the open or closed direction Quarterly during power operation because there is no flow path available except during shutdown cooling. Additionally, these valves cannot be exercised open or closed during Quarterly pump tests or using the minimum flow line because the minimum flow lines branch off upstream of the check valves and no flow occurs through these valves.

Alternative Testing Frequency: These check valves will be full-stroke exercised open and closed during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J5

System: Charging

Valve(s): CH-143, CH-155, CH-156

Category: C

Class: 2

Function: CH-143 - Charging Pump Boric Acid Supply Check Valve

CH-155- Charging Pump Boric Acid Gravity Feed Check Valve

CH-156 - Charging Pump Safety Injection and Refueling Water Tank (SIRWT) Suction Check Valve

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves serve to permit direct feed of concentrated boric acid solution to the charging pump suction header. These check valves cannot be exercised open Quarterly during power operation. The only flow path through these valves is into the RCS; exercising would result in injecting highly concentrated boric acid into the RCS. Injecting concentrated boric acid into the RCS during power operation could cause an uncontrolled reactivity excursion, a plant shutdown, or a plant trip.

Alternative Testing Frequency: These check valves will be full-stroke exercised open and closed during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J6

System: Feedwater

Valve(s): FW-161, FW-162

Category: C

Class: 2

Function: Steam Generator Feedwater Inlet Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves function to prevent the loss of inventory of the Steam Generator in the event of a line break upstream between valves HCV-1385 (HCV-1386) and check valve FW-161 (FW-162). These check valves cannot be full-stroke exercised closed Quarterly during power operation because the valves are the only feedwater supply flow paths to the steam generators. During power operation, the feedwater paths to the steam generators must not be isolated as this would remove the "heat sink" for the Reactor Coolant System (RCS).

Alternative Testing Frequency: These valves are proven to be open during the operating cycle since they are the feed path to the Steam Generators. The valves are tested in the closed direction each Cold Shutdown, using a leakage test. (ISTC-3522)

DEFERRED TESTING JUSTIFICATION
NUMBER: J7

System: Auxiliary Feedwater

Valve(s): FW-163, FW-164

Category: C

Class: 2

Function: Steam Generator Auxiliary Feedwater Injection Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves open for auxiliary feedwater (AFW) flow to the Steam Generators. Exercising these valves during power operation would result in cold water injection to a portion of the Steam Generators normally at 400° - 500° F, which would cause unnecessary and possibly damaging thermal stresses in the Steam Generators.

The check valves do not have a safety function in the closed direction, as there are two containment isolation valves upstream of each of the check valves which are normally closed. In addition, there is an AFW pump check valve upstream of the containment isolation valves which is exercised closed quarterly in accordance with the FCS IST Program Plan. As a result of the above mentioned IST tests, FCS has addressed adequately the concern of "thermal binding" of the AFW pumps and has determined that FW-163 and FW-164 do not provide a safety-related function in the reverse flow direction. It should also be noted that the discharge piping temperature upstream of FW-163 and FW-164 is monitored on a regular basis, further ensuring that the AFW pumps will not experience "thermal binding."

Alternative Testing Frequency: These check valves will be exercised to the open and closed positions during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J8

System: Reactor Coolant

Valve(s): HCV-176, HCV-177, HVC-178, HCV-179, HCV-180, HCV-181

Category: B

Class: 2

Function: Reactor Vessel Head and Pressurizer Vents

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: These valves are intended to be used to vent the Reactor Pressure Vessel (RPV) head and pressurizer. These valves are normally locked closed during operation. They fail closed on loss of all AC power.

It is not practicable to test these valves at power, as a failure of a valve to close would result in single valve isolation of the RCS. During this single valve operation, the plant would not be able to test the remaining vent valves due to the potential of a small break Loss of Coolant Accident (LOCA) if these valves failed open when stroke-time tested at power.

Therefore, partial or full-stroke exercising, or fail safe testing during normal operation (quarterly) is impracticable.

Alternate Testing Frequency: These valves will be stroke-timed exercised in the open and closed directions and fail safe tested closed during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J9

System: Safety Injection

Valve(s): SI-194, SI-197, SI-200, SI-203

Category: A/C

Class: 1

Function: Shutdown Cooling Injection Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves cannot be exercised open Quarterly during power operation because no flow path is available at operating pressure due to system configuration. Since the Safety Injection (SI) pumps are not able to develop sufficient discharge pressure to overcome RCS pressure, the valves are not able to be exercised. Valves SI-194, SI-197, SI-200 and SI-203 are Pressure Isolation Valves (PIVs) as defined by NRC Generic Letter (GL) 89-04 and as listed in the FCS Technical Specifications.

Alternate Testing Frequency: These check valves are full-stroke exercised open and closed during Cold Shutdown when the Shutdown Cooling system is in service. These check valves will be leak tested during Cold Shutdown in accordance with the requirements of FCS Technical Specification 2.1, Table 2-9. This leakage test verifies the closure position of these check valves.

DEFERRED TESTING JUSTIFICATION
NUMBER: J10

System: Safety Injection

Valve(s): SI-195, SI-198, SI-201, SI-204

Category: A/C

Class: 1

Function: High Pressure Safety Injection to Reactor Coolant Loop Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves cannot be exercised open Quarterly during power operation because the only flow path available is into the RCS. Since the HPSI pumps do not develop sufficient discharge pressure to overcome RCS operating pressure, the valves cannot be exercised during Cold Shutdown because the RCS does not contain an adequate expansion volume and a low temperature overpressurization (LTOP) of the RCS could result Valves SI-195, SI-198, SI-201 and SI-204 are pressure isolation valves (PIV's) as defined by NRC GL 89-04 and as listed in the FCS Technical Specifications.

Alternate Testing Frequency: These check valves will be full-stroke exercised open and closed during Refueling Outages when the RCS is depressurized and the Reactor Pressure Vessel (RPV) Head is removed in order to provide an expansion volume to accommodate the flow required. These check valves will be leak tested during Cold Shutdown in accordance with the requirements of FCS Technical Specification 2.1, Table 2-9. This leakage test verifies the closure position of these check valves.

DEFERRED TESTING JUSTIFICATION
NUMBER: J11

System: Safety Injection

Valve(s): SI-196, SI-199, SI-202, SI-205, SI-343, CH-469

Category: C

Class: 1 - SI-196, SI-199, SI-202, SI-205, CH-469

2 - SI-343

Function: High Pressure Safety Injection to Reactor Coolant Loop Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: Valves SI-196, SI-199, SI-202, SI-205, and CH-469 function to prevent back flow through the Safety Injection (SI) pump discharge headers. These valves cannot be exercised open during power operation utilizing flow because the HPSI pumps do not develop sufficient discharge pressure to overcome RCS pressure. The charging pumps cannot be used during power operation because the flow path from the pumps would bypass the Regenerative Heat Exchanger and result in injecting cold water, causing thermal shock to the injection nozzles and a reactivity transient. This could result in an unnecessary plant trip. Check valve SI-343 cannot be exercised during Cold Shutdowns because using the HPSI pumps without an adequate vent path could cause an overpressurization of the RCS. The HPSI pumps are therefore tagged out to prevent inadvertent operation and potential overpressurization to the RCS.

Alternate Testing Frequency: Check valves SI-196, SI-199, SI-202, and SI-205 will be full-stroke exercised open and closed during Refueling Outages when the HPSI pumps are able to be utilized.

Both check valves, CH-469 and SI-343, will be full-stroke exercised open and closed during Refueling Outages using the charging pumps and the HPSI pumps, as necessary.

DEFERRED TESTING JUSTIFICATION
NUMBER: J12

System: Charging

Valve(s): CH-198, CH-203, CH-204

Category: C

Class: 1 –CH-203, CH-204; 2 - CH-198

Function: CH-198 – Charging Pump Discharge to RCS Check Valve
CH-203, CH-204 – Loop Charging Line to RCS Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: The check valve open test utilizes a HPSI pump to develop sufficient flow for the check valve open test. This check valve cannot be exercised open or closed (CH-198) during plant operations Quarterly or during Cold Shutdowns, since to do so would require the HPSI pumps to be run which would require a flow path to the RCS for the open test. That flow path cannot be utilized during power operation because the HPSI pumps do not develop sufficient discharge pressure to overcome RCS pressure. This same flow path cannot be utilized during Cold Shutdowns because there is insufficient volume in the RCS to accommodate the flow required and a low temperature overpressure condition of the RCS could result

Alternate Testing Frequency: The check valves will be full-stroke exercised in the open and closed directions during Refueling Outages when the Reactor Pressure Vessel (RPV) head is removed, using the HPSI pumps.

DEFERRED TESTING JUSTIFICATION
NUMBER: J13

System: Charging

Valve(s): TCV-202, HCV-204

Category: A

Class: 1 – TCV-202

2 – HCV-204

Function: TCV-202 – Letdown Temperature Control Valve

HCV-204 – Letdown Heat Exchanger Inlet Isolation Valve

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: These valves are used for RCS Loop 2A letdown isolation and temperature regulation. Exercising these valves or performing fail safe testing Quarterly during power operation could result in the termination of letdown flow. This would isolate the RCS purification process and could potentially cause a reactivity excursion. These valves cannot be partial-stroked because the valves are either fully open or fully closed.

Alternate Testing Frequency: These valves will be stroke-timed exercised in the closed direction and fail safe tested during Cold Shutdown in accordance with the FCS IST Program Plan implementing procedures.

DEFERRED TESTING JUSTIFICATION
NUMBER: J14

System: Charging

Valve(s): CH-205

Category: C

Class: 1

Function: Auxiliary Pressurizer Spray Check Valve

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: This check valve cannot be exercised during plant operations Quarterly or during Cold Shutdowns, since to do so would require a flow path to the RCS. That flow path cannot be utilized during power operation because the HPSI pumps do not develop sufficient discharge pressure to overcome RCS pressure. This same flow path cannot be utilized during Cold Shutdowns because there is insufficient volume in the RCS to accommodate the flow required and a low temperature overpressure condition of the RCS could result.

Alternate Testing Frequency: The check valves will be full-stroke exercised in the open and closed directions during Refueling Outages when the RVP head is removed, using the charging pumps and the HPSI pumps.

DEFERRED TESTING JUSTIFICATION
NUMBER: J15

System: Charging

Valve(s): HCV-206, HCV-241

Category: A

Class: 2

Function: Reactor Coolant Pump Control Bleed Off Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: The Reactor Coolant Pump (RCP) seals serve as an RCS pressure boundary, therefore, seal failure could result in unisolable coolant leakage from the RCS. Isolation of the RCP seal bleed-off by stroking these valves closed would cause the seal bleed-off line relief valve (CH-208) to lift, directing reactor coolant directly to the Reactor Coolant Drain Tank (RCDT). If the leakage remained unchecked, the RCDT relief valve could lift directing reactor coolant to the Containment floor, causing a Ventilation Isolation Actuation Signal (VIAS). Additionally, the temporary isolation of pump seal flow (until the relief valve lifted) would eliminate the ability of the RCP seal to break down RCS pressure and could potentially cause localized overheating of the seals. The pump seals can be damaged by overheating if seal water flow is stopped while the pumps are running. It is impracticable to exercise these valves Quarterly or during any plant conditions that could result in abnormal seal wear. This could lead to failure of the RCP seals, creating unisolable leakage equivalent to a small break LOCA.

Alternate Testing Frequency: The valves will be stroke-timed exercised and fail safe tested in the closed direction during Cold Shutdown, when the RCS is depressurized and the RCP's are secured.

DEFERRED TESTING JUSTIFICATION
NUMBER: J16

System: Charging

Valve(s): LCV-218-2, LCV-218-3

Category: B

Class: 2

Function: Volume Control Tank Outlet Isolation Valve and Charging Pump Suction from SIRWT Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves function to provide Volume Control Tank (VCT) level control and switch charging suction to the Safety Injection and Refueling Water Storage Tank (SIRWT). The valves cannot be stroke-tested Quarterly because doing so would terminate charging flow to the RCS and would have the potential for disrupting pressurizer level regulation or boron concentration regulation. Pressurizer level regulation disruption can lead to RCS pressure transients and disruption of boron concentration could cause reactivity excursions.

Alternate Testing Frequency: Valve LCV-218-2 will be stroke-timed exercised in the closed direction and valve LCV-218-3 will be stroke-timed exercised in the open direction during Cold Shutdowns.

DEFERRED TESTING JUSTIFICATION
NUMBER: J17

System: Charging

Valve(s): IA-HCV-240-C, HCV-240, HCV-249

Category: B - HCV-240, HCV-249

A/C – IA-HCV-240-C

Class: 1 - HCV-240, HCV-249

3 - IA-HCV-240-C

Function: IA-HCV-240-C – IA Accumulator Check Valve

HCV-240, HCV-249 – Auxiliary Pressurizer Spray Inlet Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: Valves HCV-240 and HCV-249 cannot be stroke-timed exercised or fail safe tested Quarterly during power operation because doing so will lead to large scale depressurization of the RCS and thermal shock of the pressurizer spray nozzle. The IA accumulator check valve (IA-HCV-240-C) cannot be exercised in the open direction Quarterly during power operation, as exercising of the check valve will cause HCV-240 to cycle. This could cause large scale depressurization of the RCS and thermal shock of the pressurizer spray nozzle.

Alternate Testing Frequency: Valve IA-HCV-240-C will be exercised in the open and closed directions during Cold Shutdowns. Valves HCV-240 and HCV-249 will be stroke-timed in both the open and closed and fail safe tested closed directions during Cold Shutdowns.

DEFERRED TESTING JUSTIFICATION
NUMBER: J18

System: Charging

Valve(s): HCV-268

Category: B

Class: 2

Function: Boric Acid to Charging Pump Suction Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves serve to isolate concentrated boric acid from the charging pump suction header. These valves cannot be stroke-timed exercised Quarterly during-power operation because doing so would allow concentrated boric acid solution to be injected into the RCS. Boration of the primary system during normal power operation would cause reactivity transients and possibly result in a plant shutdown. These valves cannot be partial-stroked for the same reason.

Alternate Testing Frequency: This valve will be stroke-timed exercised in the open direction during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J19

System: Safety Injection

Valve(s): SI-323

Category: C

Class: 2

Function: High Pressure Safety Injection Header Check Valve

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: This check valve functions to prevent back flow of charging flow to the lower design pressure HPSI piping when the alternate charging flow path is active. The only flow path available is into the RCS and since the HPSI pumps do not develop sufficient discharge pressure to overcome RCS operating pressure, this valve cannot be exercised Quarterly during power operation. This valve cannot be exercised during Cold Shutdowns because the RCS does not contain-an adequate expansion volume and a low-temperature overpressurization of the RCS could result.

Alternate Testing Frequency: This check valve will be exercised open and closed during Refueling Outages.

DEFERRED TESTING JUSTIFICATION
NUMBER: J20

System: Containment Spray

Valve(s): HCV-344, HCV-345

IA-HCV-344-C, IA-HCV-345-C

Category: A - HCV-344, HCV-345

C - IA-HCV-344-C, IA-HCV-345-C

Class: 2

Function: HCV-344, HCV-345 - Containment Spray Header Isolation Valves

IA-HCV-344-C, IA-HCV-345-C - IA Accumulator Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: Valves HCV-344 and HCV-345 serve as CS isolation. These valves cannot be stroke-tested Quarterly during power operation since the potential for spraying down the Containment is greatly increased. Spraying down the Containment could cause equipment damage, electrical grounds and unnecessary corrosion (due to electrical shorts) to equipment and equipment malfunctions and unnecessary plant trips. These valves represent the only boundary between the CS and SI pump headers and the CS nozzles when manual valves SI-177 and SI-178 are open. The valves cannot be partial-stroked for the same reason.

Valves IA-HCV-344-C and IA-HCV-345-C are the IA accumulator check valves for process valves HCV-344 and HCV-345, and function to allow the valves to be closed on loss of IA, if required. These check valves cannot be exercised Quarterly as required as this would stroke the process valves, HCV-344 and/or HCV-345.

Alternate Testing Frequency: Valve HCV-344 shall be stroke-timed in the open direction during Cold Shutdown. HCV-345 shall be stroke-timed in the open direction during Cold Shutdown. The IA check valves IA-HCV-344-C and IA-HCV-345-C shall be exercised in the open and closed direction during Cold Shutdown

DEFERRED TESTING JUSTIFICATION
NUMBER: J21

System: Safety Injection

Valve(s): HCV-347, HCV-348

Category: A

Class: 1

Function: Shutdown Cooling from Loop Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves cannot be stroke-timed exercised open or closed Quarterly during power operation because they are interlocked closed to ensure the integrity of the pressure boundary between Class 2501 and Class 301 piping when the RCS pressure is > 250 psia.

Alternate Testing Frequency: These valves will be stroke-timed exercised in the open and closed direction during Cold Shutdown prior to initiating Shutdown Cooling (<300°F and >250 psia) while the Steam Generator is still available for removing decay heat from the primary system.

DEFERRED TESTING JUSTIFICATION
NUMBER: J22

System: Component Cooling Water

Valve(s): HCV-425A, HCV-425B, HCV-425C, HCV-425D

Category: A

Class: 2

Function: SI Tank Leakage Coolers Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: These valves serve to isolate Containment Penetrations M-39 and M-53, Component Cooling Water (CCW) System penetrations. They cannot be stroke-timed exercised or fail safe tested Quarterly during power operation because failure of these valves in the closed position would terminate cooling flow to Safety Injection Tank leakage coolers. This would have the potential for lifting the relief valve (SI222) to the Reactor Coolant Drain Tank (RCDT) which could eventually cause reactor coolant to overflow to the Containment floor, causing a Ventilation Isolation Actuation Signal (VIAS). These valves cannot be partial-stroked because they are either fully opened or fully closed.

Alternate Testing Frequency: These valves will be stroke-timed exercised and fail safe tested in the closed direction during Cold Shutdowns.

DEFERRED TESTING JUSTIFICATION
NUMBER: J23

System: Component Cooling Water/Instrument Air

Valve(s): HCV-438A, HCV-438B, HCV-438C, HCV-438D, IA-HCV-438B-C,

IA-HCV-438D-C

Category: A - HCV-438A, HCV-438B, HCV-438C, HCV-438D

C - IA-HCV-438B-C, IA-HCV-438D-C

Class: 2 - HCV-438A, HCV-438B, HCV-438C, HCV-438D

3 - IA-HCV-438B-C, IA-HCV-438D-C

Function: RCP Cooler Isolation Valves, Instrument Air Supply Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves serve to isolate Containment Penetrations M-18 and M-19, RCP seal cooling water. Exercising these valves would isolate cooling water flow to the RC Pumps which could damage the pumps if they are operating. RC pump failure during power operation could result in a plant shutdown. Therefore, it is not practical to exercise these valves Quarterly during power operations. During some Cold Shutdowns, Reactor Coolant temperature may be held above 130° F and plant conditions may not allow further cool down or stopping all RC pumps. Exercising these valves during Cold Shutdowns when RC temperature is greater than 130° F or when any RC pump is running could result in RC pump damage. Therefore, it is not practical to exercise these valves when those plant conditions exist. These valves cannot be partial-stroked because they are either fully opened or fully closed.

The IA accumulator check valves cannot be exercised Quarterly during power operation as exercising these check valves will cause cycling of the process valves.

Alternate Testing Frequency: Valves HCV-438A, HCV-438B, HCV-438C and HCV-438D will be stroke-timed exercised in the closed direction during Cold Shutdown, provided the RCS is depressurized, RCS temperature is less than 130° F, and the RCP's are secured. IA accumulator check valves (IA-HCV-438B-C, IA-HCV.438D-C) will be exercised open and closed during Cold Shutdown, provided the RCS is depressurized, RCS temperature is less than 130°F and the RCP's are secured.

DEFERRED TESTING JUSTIFICATION
NUMBER: J24

System: Main Steam

Valve(s): HCV-1041A, HCV-1042A

Category: B

Class: 2

Function: Main Steam Isolation Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: These valves serve to isolate the Main Steam (MS) headers. They cannot be exercised or fail safe tested Quarterly during power operation because doing so would isolate steam flow in the Steam Generators and result in a turbine and reactor trip. These valves cannot be partial-stroked because they are either fully opened or fully closed.

Alternate Testing Frequency: These valves will be stroke-timed exercised and fail safe tested in the closed direction during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J25

System: Main Steam

Valve(s): HCV-1041C, HCV-1042C

Category: B

Class: 2

Function: Main Steam Isolation Valve Bypass Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves serve to isolate the Main Steam (MS) headers. They cannot be exercise tested Quarterly during power operation because doing so would isolate steam flow in the Steam Generators and result in a turbine and reactor trip. These valves cannot be partial-stroked because they are either fully opened or fully closed.

Alternate Testing Frequency: These valves will be stroke-timed exercised in the closed direction during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J26

System: Feedwater

Valve(s): HCV-1385, HCV-1386

HCV-1103, HCV-1104, HCV-1105, HCV-1106

Category: B

Class: 2 - HCV-1385, HCV-1386

N - HCV-1103, HCV-1104, HCV-1105, HCV-1106

Function: Feedwater Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: Valves HCV-1385, HCV-1386, HCV-1103, HCV-1104, HCV-1105 and HCV-1106 cannot be stroke-timed exercised Quarterly during power operation because doing so would isolate feedwater to Steam Generators resulting in a reactor trip. Additionally, valves HCV-1105 and HCV-1106 cannot be fail safe tested during normal power operations for the same reason. These valves cannot be partial-stroked because they are either fully opened or fully closed.

Alternate Testing Frequency: These valves will be stroke-timed exercised in the closed direction during Cold Shutdown. Additionally, valves HCV-1105 and HCV-1106 will be fail safe tested during Cold Shutdown in conjunction with the stroke time exercise test.

DEFERRED TESTING JUSTIFICATION
NUMBER: J27

System: Instrument Air

Valve(s): PCV-1849A, PCV-1849B

Category: A

Class: 2

Function: Instrument Air Containment Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: These valves serve to isolate IA pressure (via Penetration M-73) to containment systems. PCV-1849A (inboard) and PCV-1849B (outboard) were added during the refueling and maintenance outage (Fuel Cycle 12) in 1988 by Modification MR-FC-88-11 (OSAR 87-10). Stroke-time exercising and fail safe testing cannot be performed Quarterly during power operations or Cold Shutdown with RCS temperature greater than 130° F and the RCS is not depressurized. The valves cannot be partial-stroked, because they are either fully opened or fully closed.

The closing of these valves could:

(1) cause fluctuations in the pressure control of the pressurizer (PCV-103-1, PCV-103-2),

(2) result in damage to RCP seals (HCV-241),

(3) disrupt RCS letdown to the Chemical Volume Control System (CVCS) (TCV-202, LCV-101-1, LCV-101-2),

(4) damage the Nuclear Detector instrumentation (HCV-467A/C),

(5) cause level fluctuation in the SI Tank level (HCV-2916, HCV-2936, HCV-2956, HCV-2976), and

(6) cause loss of the Steam Generator Blowdown (HCV-1387A and HCV-1388A).

The ripple effect caused by the exercise stroking of PCV-1849A/B would be detrimental during power operation or when in Cold Shutdown with RCS temperature greater than 130° F and not depressurized.

DEFERRED TESTING JUSTIFICATION
NUMBER: J27

Alternate Testing Frequency: These valves will be stroke-timed exercised and fail safe tested in the closed direction during Cold Shutdown when the RCS temperature is less than 130° F with RCP's off and the RCS depressurized.

DEFERRED TESTING JUSTIFICATION
NUMBER: J28

System: Instrument Air

Valve(s): IA-HCV-238-C, IA-HCV-239-C

Category: A/C

Class: 3

Function: Instrument Air Supply Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves are the instrument air supply check valves on IA accumulators attached to HCV-238 and HCV-239, which are located inside the Containment. The process valves (HCV-238 and HCV-239) are remotely stroke-time exercised in both the open and closed directions Quarterly, but due to inaccessibility during power operation, the check valves are not able to be tested.

Alternate Testing Frequency: These check valves will be full-stroke exercised in the open and closed directions at Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J29

System: Safety Injection/Instrument Air

Valve(s): IA-HCV-385-C, IA-HCV-386-C

HCV-385, HCV-386

Category: A/C - IA-HCV-385-C, IA-HCV-386-C

A - HCV-385, HCV-386

Class: 3 - IA-HCV-385-C, IA-HCV-386-C

2 - HCV-385, HCV-386

Function: IA-HCV-385-C, IA-HCV-386-C - Instrument Air Supply Check Valves

HCV-385, HCV-386 – SIRWT Minimum Recirculation Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves (IA-HCV-385-C and IA-HCV-386-C) are check valves on IA accumulators attached to HCV-385 and HCV-386 (Safety Injection Mini Flow Bypass Isolation Valves). The test methodology for the IA accumulator check valves requires the process valves to be closed greater than one hour each. This isolates the SI minimum flow recirculation line, which, if the SI pumps start, could cause these pumps to operate at shutoff head. Therefore, the check valves are not able to be exercise tested Quarterly. Running the SI pumps at shutoff head could cause the pumps to overheat and cavitate. Prolonged closure of these valves could cause equipment damage.

These valves (HCV-385 and HCV-386) are Safety Injection Minimum Recirculation Flow isolation valves to the SIRWT (SI-5). Closing these valves isolates the SI pump minimum recirculation flow path. During the time when one or both minimum-recirculation isolation valves are closed and a real or inadvertent start of a Safety Injection Pump occurs the pump would be deadheaded. This could cause damage to the SI pump and potentially degrade the margin of safety inherent to the SI system. Although the probability that a small Break LOCA would occur at the same time is remote, Fort Calhoun Station will stroke time exercise HCV-385 and HCV-386 during Cold Shutdown. During normal operations, valves HCV-385 and HCV-386 are Normally Open, Fail Open, and are only required to close during a Recirculation Actuation Signal (RAS). It is not practicable to test these valves on a Quarterly basis at power

Alternate Testing Frequency: These check valves (IA-HCV-385-C and IA-HCV-386-C) will be full-stroke exercised in the open and closed directions at Cold Shutdown.

Valves HCV-385 and HCV-386 will be stroke-timed exercised in closed direction at Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J30

System: Charging

Valve(s): CH-166

Category: C

Class: 2

Function: Volume Control Tank Outlet Check Valve

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: This check valve serves to prevent a divergent path from the Boric Acid Injection system to the Volume Control Tank (VCT). A divergent path may reduce the concentration of boric acid required to be injected into the RCS.

This check valve cannot be exercised in the closed direction Quarterly during power operation. The only flow path through this valve is to the RCS, and would result in injecting highly concentrated boric acid into the RCS. Injecting concentrated boric acid into the RCS during power operation could cause an uncontrolled reactivity excursion, a plant shutdown, or a plant trip.

Alternate Testing Frequency: This check valve will be full-stroke exercised in the open and closed directions during Cold Shutdown in accordance with the FCS IST Program Plan.

DEFERRED TESTING JUSTIFICATION
NUMBER: J31

System: Containment Spray

Valve(s): SI-135, SI-143, SI-149

Category: C

Class: 2

Function: Containment Spray Pump Discharge Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves cannot be exercised open or close Quarterly during power operation because the only full flow path is into the CS headers. This would result in the spraying down of the equipment in containment, possibly causing equipment damage and requiring extensive cleanup. Also, these valves cannot be partial-stroke exercised during the Quarterly CS pump tests because the minimum flow lines branch off upstream of the check valves and therefore no flow occurs through these valves. Using the discharge tap downstream of the minimum flow lines will overflow the floor drains in the Auxiliary Building potentially creating an increase in radioactive contamination and background radiation levels.

Alternate Testing Frequency: These check valves will be full-stroke exercised in the open and closed directions during Cold Shutdown when the CS pumps are able to be aligned for shutdown cooling to the Shutdown Cooling Heat Exchangers (< 120° F primary temperature), in accordance with the FCS Technical Specifications.

DEFERRED TESTING JUSTIFICATION
NUMBER: J32

System: Instrument Air

Valve(s): IA-PCV-6680A-1 -C, IA-PCV-6680A-2-C, IA-PCV-6680B-1 -C,

IA-PCV-6680B-2-C, and IA-PCV-6682-C

IA-HCV-1107A-C, IA-HCV-1107B-C, IA-HCV-1108A-C

IA-HCV-1108B-C, IA-FCV-1368-C, and IA-FCV-1369-C

Category: A/C

Class: 3

Function: Instrument Air Head Supply Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These valves (IA-PCV-6680A-1-C/-2-C, -6680B-1-C/-2-C and IA-PCV-6682-C) cannot be exercised Quarterly during power operation, as exercising these check valves will cause isolation of the Control Room (CR) air filtration dampers. Failure of the CR air filtration dampers in a non-conservative position would cause the CR filtration system to be inoperable. This would require the plant to be in Cold Shutdown per Technical Specification (TS) 2.12. Failure of the dampers in the OPEN position would not allow the CR to be isolated during a toxic gas release. This would result in entry into Technical Specification 2.0.1.

Check valves IA-HCV-1107A/B-C, -1108A/B-C, and FCV-1368-C/1369-C cannot be exercised Quarterly during power operation as exercising these check valves will cause possible isolation of AFW and render the AFW system inoperable for an extended period of time, possibly requiring the plant to be in Cold Shutdown per Technical Specification 2.5. Failure of the isolation valves in the open direction would not allow the required flow rate to the Steam Generator assuming loss of FW-10. This would result in entry into Technical Specification 2.0.1, i.e., Notification of Unusual Event (NOUE).

Alternate Testing Frequency: These check valves will be full-stroke exercised in the open and closed directions during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J33

System: Main Steam

Valve(s): HCV-1041B, HCV-1042B

Category: C

Class: 2

Function: Main Steam Stop Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves are swing type check valves which are installed to provide a positive isolation of the Steam Generators. If Main Steam (MS) header pressure is greater than Steam Generator pressure, the check valves prevent reverse back flow into a faulted Steam Generator. The corrective maintenance history of these two check valves has been limited to gasket/bolt/nut replacements since installation. In addition, the check valves are 28 inch carbon steel Ametek, Inc. type check valves which see flow during normal operations. OPPD has previously disassembled and inspected each of these check valves once and the check valves were acceptable. In order to assess the condition of the check valves during sample disassembly and examination and to provide a consistent and precise method of gauging the check valves' physical and mechanical condition, a check list was developed and incorporated into the surveillance tests used for sample disassembly and inspection. An example of items evaluated on the check list are:

1) Whether valve discs are initially seated
2) A determination of obstructions
3) Cracking or linear indications
4) Loose/missing/broken parts
5) Whether obstruction to moving parts
6) Wear/Corrosion/Erosion
7) Presence of foreign material
8) Misalignment (if any) and effect on valve operation
9) Mechanical damage
10) Hinge Pin condition
11) Disc/seat condition
12) Perform manual exercise of discs

DEFERRED TESTING JUSTIFICATION
NUMBER: J33

Each check valve has been disassembled and inspected in the previous outages. The assessment of the valves' mechanical and physical condition is performed by FCS Inspectors qualified to VT-3 in accordance with ASME Section XI. In addition, the review/evaluation of any observed deficiencies/indications is performed by Engineering for a final acceptance of the valve's condition. In addition, a review of the installation of each check valve has been addressed using the "EPRI Applications Guideline for Check Valves in Nuclear Power Plants" and appropriate actions have been taken (i.e., Preventive Maintenance (PM) inspections) as a result of the completion of the design application for the check valves. Disassembly and reassembly of both valves (i.e., every Refueling Outage) introduces unnecessary potential for valve failure due to damage caused by maintenance without providing a commensurate increase in plant safety or check valve reliability. These check valves cannot be exercised Quarterly during power operation because doing so would cause steam to be isolated to the Main Steam header, causing the turbine to trip and resulting in a reactor trip. It is impractical to reverse flow test these check valves during Cold Shutdown; to do so would require the downstream side of the valves to have reverse flow sufficient to close the 600 pound, 28-inch disks. To close these disks would require extensive modifications to the secondary side of the Main Steam system to permit sufficient dP to close the valve disks. Another method would be to fill the downstream side of the valve disks with fluid. To do this would require extensive piping and support modifications because of excessive loading on the Main Steam piping. To perform any type of successful reverse flow test on these check valves would require extensive plant modifications and manpower, and would subject the Main Steam system to potentially detrimental conditions, without providing a commensurate increase in public safety or check valve reliability.

Alternative Testing Frequency: These valves will be exercised open and closed manually using disassembly and examination in accordance with ISTC-5221 (c). Since these valves are of the same manufacturer, design, service conditions, size, materials of construction and orientation they may be grouped together. In accordance with ISTC-5221 (c) (3) one valve from this group will be disassembled and examined at each refueling outage. During the disassembly process, the valve will be manually full stroke exercised to both the open and closed positions. Immediately prior to completing reassembly, the valve will be reverified to stroke through its full range of motion.

If the valve is not capable of full stroke motion or has unacceptable degradation of valve internals, an analysis will be performed. Other valves in the group that may also be affected by this failure mechanism will be disassembled and examined or tested during the same refueling outage.

DEFERRED TESTING JUSTIFICATION
NUMBER: J34

System: Safety Injection/Instrument Air

Valve(s): LCV-383-1, LCV-383-2, HCV-383-3, HCV-383-4

IA-LCV-383-1-C, IA-LCV-383-2-C

Category: A - LCV-383-1, LCV-383-2, HCV-383-3, HCV-383-4

C - IA-LCV-383-1-C, IA-LCV-383-2-C

Class: 2 - LCV-383-1, LCV-383-2, HCV-383-3, HCV-383-4

3 - IA-LCV-383-1-C, IA-LCV-383-2-C

Function: LCV-383-1, LCV-383-2; SIRWT Isolation Valves

HCV-383-3, HCV-383-4: Containment Sump Isolation Valves

IA-LCV-383-1-C, IA-LCV-383-2-C; Instrument Air Supply Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification:

Tech Spec Limitations

OP-ST-SI-3001, Attachment 5, prior to PC 42612 contained a caution stating that "Closing LCV-383-1 renders LPSI Pump SI-IB, HPSI Pump SI-2B, and CS pumps SI-3C and 3B INOPERABLE." The applicable Limiting Conditions for Operation (LCO) action statements of Technical Specifications 2.1.1, 2.3, 2.4 and 2.7 must be implemented.

Technical Specification 2.3(2) specifically states that during power operation, the Minimum Requirements may be modified to allow one of the following conditions to be true at any one time. If the system is not restored to meet the minimum

a. One low-pressure safety injection pump may be inoperable provided the pump is restored to operable status within 24 hours.

b. One high-pressure safety injection pump may be inoperable provided the pump is restored to operable status within 24 hours.

By performing this test at power, two provisions of Tech Spec 2.3(2) are violated concurrently, requiring entry into Technical Specification 2.0.1.

Operations reviewed the possibility of utilizing a dedicated operator during performance of this surveillance test. Using the guidance of the NRC Generic Letter 91-18, Operations Memo 93-11, and Standing Order G-100 (approved and issued), the following conclusions can be drawn. The Generic Letter information is explicit in stating that, generally, equipment is inoperable during surveillance. The use of a dedicated

operator must be reviewed to ensure that the operator and his necessary actions would result in a configuration where the system did not need to be considered inoperable. In the case of LCV-383-1 and -2, this determination cannot be made. Even if a dedicated operator were stationed at the valve and were to immediately return the valve to an open condition in the event of an accident signal, the open travel time of the valves is roughly 30 seconds. The sequencer timer for a HPSI pump is approximately 3 seconds, with LPSI pumps following shortly in less than 15 seconds. Adding in reaction time of the operator, even a few seconds, there is a high probability that more than one SI pump would start without a suction source. Practically speaking, the most prudent action to prevent equipment damage would be to place the respective pumps in pull-out. This, however, renders the pumps inoperable and the Tech Specs noted above apply. Thus, no positive operability determination can be made; instead, Tech Spec 2.0.1 again applies.

Testing of HCV-383-3 and -383-4 is performed in conjunction with the testing of LCV-383-1 and -383-2 (during the time frame when these valves are closed) because of the possibility that the check valves in the recirculation lines may not hold. If the check valve did not hold, and LCV-383-1 or -2 was left open, cycling HCV-383-3 or -4 to the open position could result in backing the SIRWT up into the containment sump. Among possible consequences of this is the violation of Technical Specification on SIRWT level. Consequently, it is preferable to close LCV-383-1/2 during cycling of HCV-383-3 or -4. Closing LCV-383-1/2 during power operation results in entry to Tech Spec LCO 2.0.1 (see discussion for LCV-383-1/2, above).

Testing of LCV-383-1-C and -383-2-C is performed to demonstrate the ability of the instrument air check valve to isolate instrument air and continue to hold the valve closed with backup nitrogen. The purpose of the test is to demonstrate the ability of nitrogen to hold the valve closed, and therefore the test must be performed with LCV-383-1/2 in the closed condition. The closure of LCV-383-1/2 during power operation results in entry to Tech Spec 2.0.1 (see discussion for LCV-383-1/2, above). Therefore, testing of these check valves must be deferred to a Cold Shutdown/Refueling condition.

Alternative Testing Frequency: Valves (LCV-383-1, LCV-383-2) will be stroke-time exercised in the closed direction at cold shutdown frequency.

Valves (HCV-383-3, HCV-383-4) will be stroke-time exercised in the open direction at Cold Shutdown frequency.

Valves (IA-LCV-383-1-C, IA-LCV-383-2-C) will be exercised in the open and closed directions at Cold Shutdown frequency.

DEFERRED TESTING JUSTIFICATION
NUMBER: J35

System: Nitrogen Gas

Valve(s): NG-142, NG-144, NG-146, NG-148

Category: A/C

Class: 2

Function: Nitrogen supply to Safety Injection Tanks

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: Check valves NG-142, NG-144, NG-146 and NG-148 function to prevent back flow through the check valves and the nitrogen (N_2) supply to the SI Tanks during an accident condition. The check valves prevent loss of N2 from the SI Tanks during an accident condition. These check valves cannot be full-stroke exercised Quarterly, as the containment would be inaccessible during power operation and the SI Tanks would be required to be made inoperable in order to perform this test. The SI Tanks are required to function in order to provide adequate protection to the plant personnel and the general public during a postulated loss of coolant accident (LOCA).

Alternative Testing Frequency: Check valves, NG-142, NG-144, NG-146 and NG-148 will be full-stroke exercised open and closed during Cold Shutdowns.

DEFERRED TESTING JUSTIFICATION
NUMBER: J36

System: Reactor Coolant

Valve(s): RC-374

Category: A/C

Class: 1

Function: Pressurizer Spray Line Check Valve

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: This check valve (RC-374) functions to prevent or minimize a loss of flow through the Pressurizer Spray Line from the Pressurizer Auxiliary Spray Line to the Reactor Coolant System Cold Legs when Auxiliary Spray is required (i.e., during Hot Leg injection).

The check valve cannot be full-stroke exercised closed during plant operations Quarterly or during Cold Shutdowns, since to do so would require a flow path to the RCS using the Auxiliary Pressurizer Spray Line. That flow path cannot be utilized during power operation as it could cause a cold water injection event to the Pressurizer resulting in a large fluctuation of power due to the decreased temperature and could cause an uncontrolled reactivity addition. The increased reactivity could cause an increase in power and/or reactivity addition and ultimately a plant/reactor trip. The flow path (Pressurizer Auxiliary Spray) cannot be utilized during power operation or Cold Shutdown since to test RC-374 closed requires the High Pressure Safety Injection (HPSI) Pumps to be run. The HPSI pumps cannot be run during power operations as the pumps do not have enough suction pressure to overcome RCS pressure. In addition, the check valve is not able to be tested during Cold Shutdown because using the HPSI pumps without an adequate vent path could cause an overpressurization of the RCS. Using the Charging Pumps only to quantify leakage would not provide a sufficient flow to adequately verify check valve closure.

Alternative Testing Frequency: Check valve RC-374 will be exercised in the open and closed directions during Refueling Outages using the HPSI Pumps.

DEFERRED TESTING JUSTIFICATION
NUMBER: J37

System: Component Cooling Water

Valve(s): HCV-467A, HCV-467B, HCV-467C, HCV-467D

Category: A

Class: 2

Function: Nuclear Detector Cooling Water Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: These valves serve to isolate containment Penetrations M-15 and M-11, Component Cooling Water (CCW) penetrations. These valves cannot be stroke time exercised or fail safe tested Quarterly during power operation because failure of these valves during testing would render the Nuclear Detector Well Cooling Units inoperable and require the Plant to take emergency action within eight minutes. This would cause the Nuclear Instrumentation to have erratic indication. Should the Nuclear Detector Well Cooling Units fail, the LCO specified in Technical Specifications 2.13 would be entered and could result in a Plant shutdown. These valves would only be required to close during a Containment Isolation Actuation Signal coincident with a loss of CCW, a highly unlikely scenario. Testing these valves during power operation is not practicable.

Alternative Testing Frequency: These valves will be stroke time exercised and fail safe tested during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J38

System: Ventilating Air

Valve(s): PCV-742A, PCV-742B, PCV-742C, PCV-742D

Category: A

Class: 2

Function: Containment Purge Inlet/Exhaust Isolation Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

ISTC-3560, Fail Safe Testing. Valves with fail safe actuators shall be tested in accordance with the frequency of ISTC-3510.

Basis for Justification: These valves are 42 inch butterfly valves which are normally closed and locked closed during power operation or when Containment Integrity is required. These valves have a passive safety function in the closed direction during all conditions except Containment Purge operations. These valves are only required to function as "active" during Containment Purge operations.

These valves are required to be leakage tested per Appendix J every time they are exercised. Stroke time exercising and/or fail safe testing of these valves during normal plant operation could cause loss of Containment Integrity and is prohibited by Technical Specifications and administrative controls.

Alternative Testing Frequency: These valves will be stroke time exercised and fail safe tested during Cold Shutdown.

DEFERRED TESTING JUSTIFICATION
NUMBER: J39

System: Safety Injection/Instrument Air

Valve: IA-HCV-2987-C

Category: A - IA-HCV-2987-C

Class: 3 - IA-HCV-2987-C

Function: IA-HCV-2987-C; Instrument Air Supply Check Valve

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification:

Tech Spec Limitations

To conduct functional testing of IA-HCV-2987-C, HPSI pumps SI-2A, SI-2B and SI-2C must be secured

Technical Specification 2.3 minimum requirements include operability of HPSI pumps when in power operation.

Alternative Testing Frequency: Valve IA-HCV-2987-C will be exercised in the closed direction at cold shutdown frequency.

DEFERRED TESTING JUSTIFICATION
NUMBER: J40

System: Safety Injection

Valve(s): SI-303, SI-304

Category: C

Class: 2

Function: LPSI Pump Minimum Recirculation Line Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves cannot be exercised in the closed direction during power operation. Closure testing requires pressurizing shared SI pump minimum recirculation piping and requires closure of the SIRWT recirculation isolation valves (HCV-385 and HCV-386). These actions would make all SI pumps inoperable and is not allowed during power operation.

Alternative Testing Frequency: These valves will be exercised closed during Cold Shutdown periods when LPSI pumps are able to be aligned for shutdown cooling.

ISTC-3522(a) allows the open test to be performed at the same interval as the close test. For these valves FCS has elected to perform the open test at a Quarterly interval.

DEFERRED TESTING JUSTIFICATION
NUMBER: J41

System: Safety Injection

Valve(s): SI-300, SI-301 & SI-302

Category: C

Class: 2

Function: Containment Spray Pump Minimum Recirculation Line Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves cannot be exercised in the closed direction during power operation. Closure testing requires pressurizing shared SI pump minimum recirculation piping and requires closure of the SIRWT recirculation isolation valves (HCV-385 and HCV-386). These actions would make all SI pumps inoperable and is not allowed during power operation.

Alternative Testing Frequency: These valves will be exercised closed during Cold Shutdown periods when Containment Spray pumps are able to be aligned for shutdown cooling.

ISTC-3522(a) allows the open test to be performed at the same interval as the close test. For these valves FCS has elected to perform the open test at a Quarterly interval.

DEFERRED TESTING JUSTIFICATION
NUMBER: J42

System: Safety Injection

Valve(s): SI-104, SI-110 & SI-117

Category: C

Class: 2

Function: HPSI Pump Minimum Recirculation Line Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves cannot be exercised in the closed direction during power operation. Closure testing requires pressurizing shared SI pump minimum recirculation piping and requires closure of the SIRWT recirculation isolation valves (HCV-385 and HCV-386). These actions would make all SI pumps inoperable and is not allowed during power operation.

Alternative Testing Frequency: These valves will be exercised closed during Cold Shutdown periods when safety injection can be aligned for shutdown cooling.

ISTC-3522(a) allows the open test to be performed at the same interval as the close test. For these valves FCS has elected to perform the open test at a Quarterly interval.

DEFERRED TESTING JUSTIFICATION
NUMBER: J43

System: Main Steam

Valve(s): MS-351, MS-352

Category: C

Class: 3

Function: Turbine-Driven Auxiliary Feedwater Pump Steam Supply Check Valves

Test Requirements: ISTC-3510, Exercising Test Frequency. Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months.

Basis for Justification: These check valves cannot be exercised in the closed direction during power operation. Closure testing requires Main Steam Header piping upstream of the valves to be depressurized and vented which is not possible during power operation.

Alternative Testing Frequency: These valves will be exercised closed during Cold Shutdown periods when Main Steam Header piping can be depressurized and vented.

ISTC-3522(a) allows the open test to be performed at the same interval as the close test. For these valves FCS has elected to perform the open test at a Quarterly interval.

ATTACHMENT 10

INSERVICE TESTING PLAN GENERAL NOTES INDEX

IST General Note	Title
1.0	Containment Isolation Valves
2.0	Pressure Isolation Valves
3.0	Solenoid Valves Associated With Power Operated Valves

ATTACHMENT 11

INSERVICE TESTING PLAN GENERAL NOTES

Inservice Testing Plan General Notes

1.0 Containment Isolation Valves

Containment isolation valves (CIV) falling within the scope of the Code are leakage tested in accordance with the ISTC 3620, Category A. The seat leakage testing performed on these valves meets the intent of ASME OM Code, however the actual test procedures will be conducted in accordance with the 10CFR50, Appendix J, Type C, CIV test program. All CIV's have been categorized as A-Active or P-Passive, and will, as a minimum, be leakage tested per 10CFR50, Appendix J. Passive valves will in general have no other testing performed.

2.0 Pressure Isolation Valves

The purpose of the plant Pressure Isolation Valves (PIV's) is to reduce the possibility of an inter-system LOCA which would occur by pressurizing low pressure systems to pressures exceeding their design limits. These Category A valves will be leakage tested per ISTC 3630.

3.0 Solenoid Valves Associated With Power Operated Valves

Solenoid valves associated with air or hydraulic operated valves are excluded from the IST Program. These solenoid valves are considered skid mounted components tested when the major component is tested in accordance with ISTA 2000 and ISTC 1200. These solenoid valves are considered to demonstrate their performance as part of the operation of the valve assembly. Stroke time testing of the air or hydraulic operated valve demonstrates the acceptable performance of the associated solenoid valve.

ATTACHMENT 12

TECHNICAL POSITION INDEX

Technical Position	Description
TP 01	Bi-directional Testing of Check Valves
TP 02	Deleted
TP 03	Skid Mounted Components
TP 04	Solenoid Valves
TP 05	Fail Safe Testing
TP 06	Pump Categories In Accordance With ISTB

ATTACHMENT 13

TECHNICAL POSITIONS

TECHNICAL POSITION
NUMBER: TP 01

COMPONENT IDENTIFICATION/FUNCTION

Bi-directional Check Valve Testing

POSITION

Fort Calhoun Station IST Program Plan lists the safety position for all valves. The test type specifies the exercise direction for each exercise test performed. For check valves, verification of the open and closed functions is performed regardless of safety function. In accordance with ISTC 5220, the following testing is performed:

1. Check valves having a safety function in both the Open and Closed directions

   The check valve is exercised to the full open or to the position required to fulfill its function with flow, and verified that the obturator has traveled to the seat on cessation or reversal of flow.

2. Check valves having a safety function in only the Open direction

   The check valve is exercised to the full open or to the position required to fulfill its function with flow and verified to close.

3. Check valves having a safety function in only the Closed direction

   The check valve is exercised to at least the partial open position (normal or expected system flow) with flow, and verified that the obturator has traveled to the seat on cessation or reversal of flow.

Observations are made by observing direct indicators or by other positive means. Check valves will be tested at an interval where it is practicable to perform both the open and closed tests.

TECHNICAL POSITION
NUMBER: TP 02

Deleted

TECHNICAL POSITION
NUMBER: TP 03

COMPONENT IDENTIFICATION/FUNCTION

Skid Mounted Components

Fuel Oil Transfer Pump Foot Valves FO-218 and FO-219

Diesel Generator Air Start Valves SA-141, SA-142, SA-147, SA-148, SA-191, SA-192, SA-197, SA-198, SA-202, SA-203, SA-252, SA-253

POSITION

These valves are considered skid mounted and/or component subassemblies of a safety related major component (Diesel Generator). These valves will be verified operational based on satisfactory operational testing on the major component. Corrective actions will be in accordance with the Technical Specification Limiting Condition For Operation (LCO) for the major component. These valves are excluded from the Inservice Testing program in accordance with ASME OM Code 2004, through 2006 Addenda ISTA-2000 and ISTC-1200.

TECHNICAL POSITION
NUMBER: TP 04

COMPONENT IDENTIFICATION/FUNCTION

Solenoid Valves

POSITION

Solenoid-operated valves used to control an air-operated valve are excluded from the Inservice Testing Program in accordance with ASME OM Code 2004, through 2006 Addenda ISTA 2000 and ISTC 1200. These valves are considered skid-mounted and are integral to or support operation of the major component. These valves are tested as part of the major component test plan.

These valves do not have position indication and are used only to control air to/from the main valve's control air system. Degradation and/or failure of these valves is assessed during operability testing of the main valve. Although these solenoid valves are not individually stroke timed, their periodic exercising is performed when the main valve is tested.

TECHNICAL POSITION
NUMBER: TP 05

COMPONENT IDENTIFICATION/FUNCTION

Fail Safe testing of Category A and B valves

DESCRIPTION

Fort Calhoun Station, IST Program valves that fail open or closed upon loss of actuator power use the fail-safe mechanism to stroke the valve to its safety position. For example, an air-operated valve that fails closed may use air to open the valve against spring force. When the actuator control switch is placed in the closed position, air is vented from the diaphragm and the spring moves the obturator to the closed position.

For fail-safe valves, since placing the control switch in the OPEN position for fail-open valves, and the CLOSED position for fail-closed valves, results in a loss of actuator power, the fail-safe testing requirements of ASME OM Code 2004, through 2006 Addenda ISTC 3560 will be satisfied during stroke testing of the valve.

TECHNICAL POSITION
NUMBER: TP 06

COMPONENT IDENTIFICATION/FUNCTION

Pump Categories per ISTB 1300

POSITION

Fort Calhoun Station has grouped the pumps tested in the IST Program in accordance with the requirements of ISTB 1300.

Group A pumps are those pumps in standby systems that are operated *continuously* or *routinely* during normal operation, cold shutdown, or refueling operations. The following pumps are categorized as Group A at Fort Calhoun Station:

AC-3A	Component Cooling Water Pump
AC-3B	Component Cooling Water Pump
AC-3C	Component Cooling Water Pump
CH-1A	Charging Pump
CH-1B	Charging Pump
CH-1C	Charging Pump
AC-10A	Raw Water Pump
AC-10B	Raw Water Pump
AC-10C	Raw Water Pump
AC-10D	Raw Water Pump
SI-1A	Low Pressure Safety Injection Pump
SI-1B	Low Pressure Safety Injection Pump
SI-3A	Containment Spray Pump
SI-3B	Containment Spray Pump
SI-3C	Containment Spray Pump
CH-4A	Boric Acid Pump
CH-4B	Boric Acid Pump

Group B pumps are those pumps in standby systems that are not operated routinely except for testing. The following pumps are categorized as Group B at Fort Calhoun Station:

FW-6	Auxiliary Feedwater Pump – Motor Driven
FW-10	Auxiliary Feedwater Pump – Turbine Driven
SI-2A	High Pressure Safety Injection Pump
SI-2B	High Pressure Safety Injection Pump
SI-2C	High Pressure Safety Injection Pump

ATTACHMENT 14

INSERVICE TESTING PUMP TABLE

Fort Calhoun

Pump Table

AFW - Auxiliary Feedwater System

Component	PID(Coord)	Code Class	Group	Test Parameters: Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
FW-10	M-253-4 (B5)	3	B	No	Yes	Yes	Yes	Yes	OP-ST-AFW-3011	Q		Comprehensive Test
AUXILIARY FEEDWATER PUMP; (TURBINE-DRIVEN)				No	Yes	Yes	Yes	Yes	OP-ST-AFW-3011	Q		Comprehensive Test
Pump Type: Centrifugal				No	Yes	Yes	Yes	Yes	OP-ST-AFW-3011	Q		Comprehensive Test
FW-6	M-253-4 (C6)	3	B	No	Yes	Yes	Yes	No	OP-ST-AFW-3009	Q		Comprehensive Test
AUXILIARY FEEDWATER PUMP ; (MOTOR-DRIVEN)				No	Yes	Yes	Yes	No	OP-ST-AFW-3009	Q		Comprehensive Test
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-AFW-3009	Q		Comprehensive Test

Fort Calhoun

Pump Table

CCW - Component Cooling Water System

Component	PID(Coord)	Code Class	Group	Test Parameters: Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
AC-3A	M-10-2 (E6)	3	A	No	Yes	Yes	Yes	No	OP-ST-CCW-3002	Q		
COMPONENT COOLING WATER PUMP				No	Yes	Yes	Yes	No	OP-ST-CCW-3002	Q		
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-CCW-3002	Q		
				No	Yes	Yes	Yes	No	OP-ST-CCW-3002A	2YR		
				No	Yes	Yes	Yes	No	OP-ST-CCW-3002A	2YR		
				No	Yes	Yes	Yes	No	OP-ST-CCW-3002A	2YR		
AC-3B	M-10-2 (D6)	3	A	No	Yes	Yes	Yes	No	OP-ST-CCW-3012	Q		
COMPONENT COOLING WATER PUMP				No	Yes	Yes	Yes	No	OP-ST-CCW-3012	Q		
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-CCW-3012	Q		
				No	Yes	Yes	Yes	No	OP-ST-CCW-3012A	2YR		
				No	Yes	Yes	Yes	No	OP-ST-CCW-3012A	2YR		
				No	Yes	Yes	Yes	No	OP-ST-CCW-3012A	2YR		
AC-3C	M-10-2 (C6)	3	A	No	Yes	Yes	Yes	No	OP-ST-CCW-3022	Q		
COMPONENT COOLING WATER PUMP				No	Yes	Yes	Yes	No	OP-ST-CCW-3022	Q		
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-CCW-3022	Q		
				No	Yes	Yes	Yes	No	OP-ST-CCW-30222A	2YR		
				No	Yes	Yes	Yes	No	OP-ST-CCW-3022A	2YR		
				No	Yes	Yes	Yes	No	OP-ST-CCW-3022A	2YR		

Fort Calhoun

Pump Table

CH - Chemical and Volume Control

Component	PID(Coord)	Code Class	Group	Test Parameters: Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
CH-1A CHARGING PUMP "A" Pump Type: PD	210-120-1 (A6)	2	A	Yes	No	Yes	Yes	No	OP-ST-CH-3003A	Q		Comprehensive Test
				Yes	No	Yes	Yes	No	OP-ST-CH-3003A	Q		Comprehensive Test
				Yes	No	Yes	Yes	No	OP-ST-CH-3003A	Q		Comprehensive Test
CH-1B CHARGING PUMP "B" Pump Type: PD	210-120-1 (E6)	2	A	Yes	No	Yes	Yes	No	OP-ST-CH-3003B	Q		Comprehensive Test
				Yes	No	Yes	Yes	No	OP-ST-CH-3003B	Q		Comprehensive Test
				Yes	No	Yes	Yes	No	OP-ST-CH-3003B	Q		Comprehensive Test
CH-1C CHARGING PUMP "C" Pump Type: PD	210-120-1 (C6)	2	A	Yes	No	Yes	Yes	No	OP-ST-CH-3003B	Q		Comprehensive Test
				Yes	No	Yes	Yes	No	OP-ST-CH-3003B	Q		Comprehensive Test
				Yes	No	Yes	Yes	No	OP-ST-CH-3003B	Q		Comprehensive Test
CH-4A BORIC ACID PUMP Pump Type: Centrifugal	210-121-1 (A3)	2	A	No	Yes	Yes	Yes	No	OP-ST-CH-3008A	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-CH-3008A	Q		Comprehensive Test
CH-4B BORIC ACID PUMP Pump Type: Centrifugal	210-121-1 (B6)	2	A	No	Yes	Yes	Yes	No	OP-ST-CH-3008B	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-CH-3008B	Q		Comprehensive Test

Fort Calhoun

Pump Table

FO - (Diesel Generator) Fuel Oil System

Component	PID(Coord)	Code Class	Group	Test Parameters: Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
FO-4A-1	M-262-1 (D6)	3	B	No	No	No	No	No	OP-ST-DG-0001	Q		Skid Mounted Component
D1 FUEL OIL TRANSFER PUMP #1				No	No	No	No	No	OP-ST-DG-0001	Q		Skid Mounted Component
Pump Type: PD												
FO-4A-2	M-262-1 (F6)	3	B	No	No	No	No	No	OP-ST-DG-0001	Q		Skid Mounted Component
D2 FUEL OIL TRANSFER PUMP #1				No	No	No	No	No	OP-ST-DG-0001	Q		Skid Mounted Component
Pump Type: PD												
FO-4B-1	M-262-1 (C6)	3	B	No	No	No	No	No	OP-ST-DG-0001	Q		Skid Mounted Component
D1 FUEL OIL TRANSFER PUMP #2				No	No	No	No	No	OP-ST-DG-0001	Q		Skid Mounted Component
Pump Type: PD												
FO-4B-2	M-262-1 (E6)	3	B	No	No	No	No	No	OP-ST-DG-0001	Q		Skid Mounted Component
D2 FUEL OIL TRANSFER PUMP #2				No	No	No	No	No	OP-ST-DG-0001	Q		Skid Mounted Component
Pump Type: PD												

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Pump Table

RW - Raw Water System

Component	PID(Coord)	Code Class	Group	Test Parameters: Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
AC-10A RAW WATER PUMP Pump Type: Vertical	M-100 (A7)	3	A	No	Yes	Yes	Yes	No	OP-ST-RW-3001	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-RW-3001	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-RW-3001	Q		Comprehensive Test
AC-10B RAW WATER PUMP Pump Type: Vertical	M-100 (A6)	3	A	No	Yes	Yes	Yes	No	OP-ST-RW-3011	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-RW-3011	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-RW-3011	Q		Comprehensive Test
AC-10C RAW WATER PUMP Pump Type: Vertical	M-100 (A5)	3	A	No	Yes	Yes	Yes	No	OP-ST-RW-3021	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-RW-3021	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-RW-3021	Q		Comprehensive Test
AC-10D RAW WATER PUMP Pump Type: Vertical	M-100 (A4)	3	A	No	Yes	Yes	Yes	No	OP-ST-RW-3031	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-RW-3031	Q		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-RW-3031	Q		Comprehensive Test

Fort Calhoun

Pump Table

SI - Safety Injection System

Component	PID(Coord)	Code Class	Group	Test Parameters: Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
SI-1A	210-130-1 (B3)	2	A	No	Yes	Yes	Yes	No	OP-ST-SI-3021	Q	P - 01	Min flow
LOW PRESSURE SAFETY INJECTION PUMP				No	Yes	Yes	Yes	No	OP-ST-SI-3021	Q		Min flow
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test
SI-1B	210-130-1 (A3)	2	A	No	Yes	Yes	Yes	No	OP-ST-SI-3022	Q	P - 01	Min flow
LOW PRESSURE SAFETY INJECTION PUMP				No	Yes	Yes	Yes	No	OP-ST-SI-3022	Q		Min flow
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test
SI-2A	210-130-3 (E3)	2	B	No	Yes	Yes	Yes	No	OP-ST-SI-3007	RO		Comprehensive Test
HIGH PRESSURE SAFETY INJECTION PUMP				No	Yes	Yes	Yes	No	OP-ST-SI-3007	RO		Comprehensive Test
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-SI-3021	Q		Min flow
				No	Yes	Yes	Yes	No	OP-ST-SI-3021	Q		Min flow
SI-2B	210-130-3 (C3)	2	B	No	Yes	Yes	Yes	No	OP-ST-SI-3007	RO		Comprehensive Test
HIGH PRESSURE SAFETY INJECTION PUMP				No	Yes	Yes	Yes	No	OP-ST-SI-3007	RO		Comprehensive Test
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-SI-3022	Q		Min flow
				No	Yes	Yes	Yes	No	OP-ST-SI-3022	Q		Min flow
SI-2C	210-130-3 (D3)	2	B	No	Yes	Yes	Yes	No	OP-ST-SI-3007	RO		Comprehensive Test
HIGH PRESSURE SAFETY INJECTION PUMP				No	Yes	Yes	Yes	No	OP-ST-SI-3007	RO		Comprehensive Test
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-SI-3021	Q		Min flow
				No	Yes	Yes	Yes	No	OP-ST-SI-3021	Q		Min flow
SI-3A	210-130 (C3)	2	A	No	Yes	Yes	Yes	No	OP-ST-SI-3021	Q	P - 01	Min flow
CONTAINMENT SPRAY PUMP				No	Yes	Yes	Yes	No	OP-ST-SI-3021	Q		Min flow
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test

Fort Calhoun

Pump Table

SI - Safety Injection System

Component	PID(Coord)	Code Class	Group	Test Parameters: Disch. Press	DP	Flow	VIB	Speed	Procedure	Freq	Code Dev.	Comments
SI-3B	210-130 (D3)	2	A	No	Yes	Yes	Yes	No	OP-ST-SI-3022	Q	P - 01	Min flow
CONTAINMENT SPRAY PUMP				No	Yes	Yes	Yes	No	OP-ST-SI-3022	Q		Min flow
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test
SI-3C	210-130 (E3)	2	A	No	Yes	Yes	Yes	No	OP-ST-SI-3022	Q	P - 01	Min flow
CONTAINMENT SPRAY PUMP				No	Yes	Yes	Yes	No	OP-ST-SI-3022	Q		Min flow
Pump Type: Centrifugal				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test
				No	Yes	Yes	Yes	No	OP-ST-SI-3003	CS		Comprehensive Test

ATTACHMENT 15

INSERVICE TESTING VALVE TABLE

Fort Calhoun

Valve Table

AFW - Auxiliary Feedwater System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
FCV-1368 AUX FEEDPUMP FW-6 RECIRC CONTROL VALVE	3	N	B	A	1	GA	A	M-253-4 (C6)	NO	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-AFW-3006 OP-ST-AFW-3006 OP-ST-AFW-3006 OP-ST-VX-3002	
FCV-1369 TURB-DRIVEN AUX FEED PUMP FW-10 RECIRCULATION VALVE	3	N	B	A	2	GA	A	M-253-4 (B5)	NO	O	FO	FSTO STO PIT	Q Q 2YR		OP-ST-AFW-3006 OP-ST-AFW-3006 OP-ST-VX-3002	
FW-1443 AFW Containment Penetration M-97 Relief Valve	2	N	C	A	0.75	RL	R	M-253-4 (F8)	NC	O/C	NA	RV	R02		PE-ST-VX-3003	
FW-1444 AFW Containment Penetration M-91 Relief Valve	2	N	C	A	0.75	RL	R	M-253-4 (F7)	NC	O/C	NA	RV	R02		PE-ST-VX-3003	
FW-1525 AUX FEEDWATER PUMP FW-10 : LUBE OIL PUMP LO-56 ; SUPPLY LINE RE	3	N	C	A	0.75	RL	R	E-4144 (E3)	NC	O	NA	RV	R02		PE-ST-VX-3003	
FW-163 STEAM GENERATOR RC-2B AUXILIARY FEEDWATER INLET CHECK VALVE	2	N	C	A	3	CK	C	M-253-1 (D5)	NC	O	N/A	BDC CVO	CS CS	J - 07 J - 07	OP-ST-AFW-3013 OP-ST-AFW-3007	
FW-164 STEAM GENERATOR RC-2A AUXILIARY FEEDWATER INLET CHECK VALVE	2	N	C	A	3	CK	C	M-253-1 (D6)	NC	O	N/A	BDC CVO	CS CS	J - 07 J - 07	OP-ST-AFW-3013 OP-ST-AFW-3007	
FW-173 MOTOR-DRIVEN AUX FEED PUMP FW-6 DISCHARGE CHECK VALVE	3	N	AC	A	4	CK	C	M-253-4 (C6)	NC	O/C	N/A	CVC-FP CVC-IP CVC-PD CVC-Time CVO LT	Q Q Q Q Q CS		OP-ST-AFW-3011 OP-ST-AFW-3011 OP-ST-AFW-3011 OP-ST-AFW-3011 OP-ST-AFW-3009 OP-ST-AFW-3014	
FW-174 TURB-DRIVEN AUX FEED PUMP FW-10 DISCHARGE CHECK VALVE	3	N	AC	A	4	CK	C	M-253-4 (C5)	NC	O/C	N/A	CVC-FP CVC-IP CVC-PD CVC-Time CVO LT	Q Q Q Q Q CS		OP-ST-AFW-3009 OP-ST-AFW-3009 OP-ST-AFW-3009 OP-ST-AFW-3009 OP-ST-AFW-3011 OP-ST-AFW-3014	

Fort Calhoun

Valve Table

AFW - Auxiliary Feedwater System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
FW-2034 AFW/EMGY FEEDWATER STORAGE TNK FW-19 VACUUM BREAKER	3	N	C	A	2	CK	C	11405-M-254 SH 2 (D6)	NC	O	N/A	INSP	R01		PE-ST-VX-3011A	Added by EC 58229
FW-658 EMGY FEEDWATER STORAGE TNK FW-19; VACUUM BREAKER	3	N	C	A	1.5	CK	C	M-254-2 (D5)	NC	O	N/A	INSP	R01		PE-ST-VX-3011B	
HCV-1107A STEAM GEN RC-2A ; AUXILIARY FEEDWATER INLET VALVE	2	N	B	A	3	GL	A	M-253-1 (C6)	NC	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-AFW-3010 OP-ST-AFW-3010 OP-ST-AFW-3010 OP-ST-VX-3028	
HCV-1107B AUXILIARY FEEDWATER CONTROL VALVE FOR SG 2A	2	N	B	A	3	GL	A	M-253-4 (E8)	NC	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-AFW-3010 OP-ST-AFW-3010 OP-ST-AFW-3010 OP-ST-VX-3028	
HCV-1108A STEAM GEN RC-2B ; AUXILIARY FEEDWATER INLET VALVE	2	N	B	A	3	GL	A	M-253-1 (C5)	NC	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-AFW-3010 OP-ST-AFW-3010 OP-ST-AFW-3010 OP-ST-VX-3028	
HCV-1108B AUXILIARY FEEDWATER CONTROL VALVE FOR SG 2B	2	N	B	A	3	GL	A	M-253-4 (E7)	NC	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-AFW-3010 OP-ST-AFW-3010 OP-ST-AFW-3010 OP-ST-VX-3028	
HCV-1384 MAIN AND AUXILIARY FEEDWATER ; CROSSCONNECT VALVE	3	N	B	A	4	GA	M	M-253-4 (D7)	NC	C	FAI	STC STO PIT	Q Q 2YR		OP-ST-AFW-3006 OP-ST-AFW-3006 OP-ST-VX-3002	

Fort Calhoun

Valve Table

CA - Compressed Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord		Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CA-555	2	N	A	P	4	GA	H	M-13	(F3)	NC	C	N/A	LJ-C	60 mo		IC-ST-AE-3174	
CONTAINMENT; SERVICE AIR SUPPLY HEADER ; INBOARD ISOLATION VALV																	
HCV-1749	2	N	A	A	4	GL	A	M-13	(F4)	NC	C	FC	FSTC	Q		OP-ST-CA-3001	
CONTAINMENT SERVICE AIR HEADER ; OUTBOARD ISOLATION VALVE													STC	Q		OP-ST-CA-3001	
													LJ-C	60 mo		IC-ST-AE-3174	
													PIT	2YR		OP-ST-VX-3003	

Fort Calhoun

Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
AC-101	3	N	C	A	12	CK	C	M-10-2	O/C	O/C	N/A	CVC-FP	Q		OP-ST-CCW-3012	
COMP COOLING WATER PUMP AC-3A DISCHARGE CHECK VALVE								(E6)				CVC-IP	Q		OP-ST-CCW-3012	
												CVC-PD	Q		OP-ST-CCW-3012	
												CVC-Time	Q		OP-ST-CCW-3012	
												CVO	Q		OP-ST-CCW-3002	
AC-104	3	N	C	A	12	CK	C	M-10-2	O/C	O/C	N/A	CVC-FP	Q		OP-ST-CCW-3002	
COMP COOLING WATER PUMP AC-3B DISCHARGE CHECK VALVE								(D6)				CVC-IP	Q		OP-ST-CCW-3002	
												CVC-PD	Q		OP-ST-CCW-3002	
												CVC-Time	Q		OP-ST-CCW-3002	
												CVO	Q		OP-ST-CCW-3012	
AC-107	3	N	C	A	12	CK	C	M-10-2	O/C	O/C	N/A	CVC-FP	Q		OP-ST-CCW-3002	
COMP COOLING WATER PUMP AC-3C DISCHARGE CHECK VALVE								(C6)				CVC-IP	Q		OP-ST-CCW-3002	
												CVC-PD	Q		OP-ST-CCW-3002	
												CVC-Time	Q		OP-ST-CCW-3002	
												CVO	Q		OP-ST-CCW-3022	
AC-1310	3	N	B	A	.75	GA	Man	M-10-2	NC	O/C	NA	SC	2YR		OI-CC-1	
COMP COOLING AC-37 EXPANSION TANK DRAIN								(F6)				SO	2YR		OI-CC-1	
AC-1323	3	N	B	A	.75	GA	Man	M-10-2	NC	O/C	NA	SC	2YR		OI-CC-1	
COMP COOLING AC-38 EXP TANK DRAIN								(E6)				SO	2YR		OI-CC-1	
AC-1327	3	N	B	A	.75	GA	Man	M-10-2	NC	O/C	NA	SC	2YR		OI-CC-1	
COMP COOLING AC-39 EXP TANK DRAIN								(D6)				SO	2YR		OI-CC-1	
AC-164	3	N	C	A	0.75	RL	R	M-10-1	NC	O/C	N/A	RV	Y08		PE-ST-VX-3007	
CONTROL ROOM VA UNIT VA-46A ; CCW INLET RELIEF VALVE								(D6)								
AC-165	3	N	C	A	0.75	RL	R	M-10-1	NC	O/C	N/A	RV	Y08		PE-ST-VX-3007	
CONTROL ROOM VA UNIT VA-46B ; CCW INLET RELIEF VALVE								(C6)								
AC-166	2	N	C	A	0.750	RL	R	M-40-2	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
RCP RC-3A SEAL COOLER ; CCW INLET RELIEF VALVE								(D6)								

Fort Calhoun

Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
AC-167 RCP RC-3B SEAL COOLER ; CCW INLET RELIEF VALVE	2	N	C	A	0.750	RL	R	M-40-2 (C6)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
AC-168 RCP RC-3C SEAL COOLER ; CCW INLET RELIEF VALVE	2	N	C	A	0.750	RL	R	M-40-2 (B6)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
AC-169 RCP RC-3D SEAL COOLER ; CCW INLET RELIEF VALVE	2	N	C	A	0.750	RL	R	M-40-2 (A6)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
AC-170 SAMPLE HT EXCHS SL-8A & 8B ; CCW INLET HEADER ; RELIEF VALVE	3	N	C	A	0.75	RL	R	M-10-3 (F5)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
AC-173 WASTE GAS COMPRESSOR WD-28A SEAL WATER HT EXCH CCW INLET RELIEF	3	N	C	A	0.75	RL	R	M-10-3 (E7)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
AC-178 WASTE GAS COMPRESSOR WD-28B SEAL WATER HT EXCH CCW INLET RELIEF	3	N	C	A	0.75	RL	R	M-10-3 (E8)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
AC-183 SAMPLE HEAT EXCHANGER SL-3 ; CCW INLET RELIEF VALVE	3	N	C	A	0.75	RL	R	M-10-3 (F4)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
AC-258 LETDOWN HEAT EXCHANGER CH-7 CCW INLET RELIEF VALVE	3	N	C	A	0.75	RL	R	M-10-3 (E8)	NC	O/C	N/A	RV	Y04		PE-PM-VX-0429	
AC-283 CNTMT VA-1A COOLING COIL ; CCW INLET RELIEF VALVE	2	N	C	A	0.75	RL	R	M-40-1 (F7)	NC	O/C	N/A	RV	R06		PE-ST-VX-3007	
AC-284 CNTMT VA-1B COOLING COIL ; CCW INLET RELIEF VALVE	2	N	C	A	0.75	RL	R	M-40-1 (E7)	NC	O/C	N/A	RV	R06		PE-ST-VX-3007	

Fort Calhoun

Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
AC-285 CNTMT VA-8A COOLING COIL ; CCW INLET RELIEF VALVE	2	N	C	A	0.75	RL	R	M-40-1 (E6)	NC	O/C	N/A	RV	R06		PE-ST-VX-3007	
AC-286 CNTMT VA-8B COOLING COIL ; CCW INLET RELIEF VALVE	2	N	C	A	0.75	RL	R	M-40-1 (E5)	NC	O/C	N/A	RV	R06		PE-ST-VX-3007	
AC-291 RCP RC-3A LUBE OIL COOLER ; CCW INLET RELIEF VALVE	2	N	C	A	0.75	RL	R	M-40-2 (D6)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
AC-292 RCP RC-3B LUBE OIL COOLER ; CCW INLET RELIEF VALVE	2	N	C	A	0.75	RL	R	M-40-2 (D6)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
AC-293 RCP RC-3C LUBE OIL COOLER ; CCW INLET RELIEF VALVE	2	N	C	A	0.75	RL	R	M-40-2 (A6)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
AC-294 RCP RC-3D LUBE OIL COOLER ; CCW INLET RELIEF VALVE	2	N	C	A	0.75	RL	R	M-40-2 (A6)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
AC-336 CHARGING PUMP CH-1A OIL COOLER CCW INLET RELIEF VALVE	3	N	C	A	0.5	RL	R	M-10-3 (F1)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
AC-337 CHARGING PUMP CH-1B OIL COOLER CCW INLET RELIEF VALVE	3	N	C	A	0.5	RL	R	M-10-3 (F2)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
AC-338 CHARGING PUMP CH-1C COOLER CCW INLET RELIEF	3	N	C	A	0.5	RL	R	M-10-3 (F3)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
AC-341 COMP COOLING WTR SURGE TANK AC-2 N2 RELIEF VALVE TO VENT HEADER	3	N	C	A	1	RL	R	M-10-2 (C8)	NC	O/C	N/A	RV	R04		PE-ST-VX-3001	

Fort Calhoun

Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency RR/CSJ/ROJ	Procedure	Comments / Notes
AC-364 COMP COOLING WTR SURGE TANK AC-2; RECIRCULATION RELIEF VALVE	3	N	C	A	2	RL	R	M-10-2 (D4)	NC	O/C	N/A	RV	R04	PE-ST-VX-3001	
AC-391 COMP COOLING WTR SURGE TANK AC-2 DEMINERALIZED MAKE-UP WATER	3	N	A/C	A	1.5	CK	C	M-10-2 (E4) INL	NC	C	N/A	BDO	Q	SE-ST-CCW-3003	
												CVC-FP	Q	SE-ST-CCW-3003	
												CVC-IP	Q	SE-ST-CCW-3003	
												CVC-PD	Q	SE-ST-CCW-3003	
												CVC-Time	Q	SE-ST-CCW-3003	
												LT1	2YR	SE-ST-CCW-3003	
HCV-2808A LPSI PUMP SI-1A BRG CLR ; CCW INLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (E5)	NO	N/A	FO	FSTO	Q	OP-ST-CCW-3001A	
												STO	Q	OP-ST-CCW-3001A	
												PIT	2YR	OP-ST-VX-3005A	
HCV-2808B LPSI PUMP SI-1A BRG CLR ; CCW OUTLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (B5)	NO	N/A	FO	FSTO	Q	OP-ST-CCW-3001B	
												STO	Q	OP-ST-CCW-3001B	
												PIT	2YR	OP-ST-VX-3005B	
HCV-2809A LPSI PUMP SI-1B BRG CLR ; CCW INLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (E4)	NO	N/A	FO	FSTO	Q	OP-ST-CCW-3001A	
												STO	Q	OP-ST-CCW-3001A	
												PIT	2YR	OP-ST-VX-3005A	
HCV-2809B LPSI PUMP SI-1B BRG CLR ; CCW OUTLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (B4)	NO	N/A	FO	FSTO	Q	OP-ST-CCW-3001B	
												STO	Q	OP-ST-CCW-3001B	
												PIT	2YR	OP-ST-VX-3005B	
HCV-2810A HPSI PUMP SI-2A BRG CLR ; CCW INLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (E3)	NO	N/A	FO	FSTO	Q	OP-ST-CCW-3001A	
												STO	Q	OP-ST-CCW-3001A	
												PIT	2YR	OP-ST-VX-3005A	
HCV-2810B HPSI PUMP SI-2A BRG CLR ; CCW OUTLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (B3)	NO	N/A	FO	FSTO	Q	OP-ST-CCW-3001B	
												STO	Q	OP-ST-CCW-3001B	
												PIT	2YR	OP-ST-VX-3005B	
HCV-2811A HPSI PUMP SI-2B BRG CLR ; CCW INLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (E2)	NO	N/A	FO	FSTO	Q	OP-ST-CCW-3001A	
												STO	Q	OP-ST-CCW-3001A	
												PIT	2YR	OP-ST-VX-3005A	
HCV-2811B HPSI PUMP SI-2B BRG CLR ; CCW OUTLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (B2)	NO	N/A	FO	FSTO	Q	OP-ST-CCW-3001B	
												STO	Q	OP-ST-CCW-3001B	
												PIT	2YR	OP-ST-VX-3005B	

Fort Calhoun

Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2812A HPSI PUMP SI-2C BRG CLR ; CCW INLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (E1)	NO	N/A	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-2812B HPSI PUMP SI-2C BRG CLR ; CCW OUTLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (B1)	NO	N/A	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001B OP-ST-CCW-3001B OP-ST-VX-3005B	
HCV-2813A CNTMT SPRAY PUMP SI-3A BRG CLR ; CCW INLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (E6)	NO	N/A	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-2813B CNTMT SPRAY PUMP SI-3A BRG CLR ; CCW OUTLET VALVE	3	Y	B	NA	1.5	GL	A	M-10-4 (B6)	NO	N/A	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001B OP-ST-CCW-3001B OP-ST-VX-3005B	
HCV-2814A INLET CONT SPRAY SI-3B	3	Y	B	NA	1.5	GL	A	M-10-4 (E8)	NO	N/A	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-2814B OUTLET CONT SPRAY SI-3B	3	Y	B	NA	1.5	GL	A	M-10-4 (B8)	NO	N/A	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001B OP-ST-CCW-3001B OP-ST-VX-3005B	
HCV-2815A CNTMT SPRAY PUMP SI-3C BRG CLR ; CCW INLET VALVE	3	N	B	NA	1.5	GL	A	M-10-4 (E7)	NO	N/A	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-2815B CNTMT SPRAY PUMP SI-3C BRG CLR ; CCW OUTLET VALVE	3	N	B	NA	1.5	GL	A	M-10-4 (B7)	NO	N/A	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001B OP-ST-CCW-3001B OP-ST-VX-3005B	
HCV-2898A CONTROL ROOM VA UNIT VA-46A ; CCW INLET VALVE	3	N	B	A	2	GL	A	M-10-1 (D6)	NO	C	FC	FSTC STC PIT	Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-2898B CONTROL ROOM VA UNIT VA-46A ; CCW OUTLET VALVE	3	N	B	A	2	GL	A	M-10-1 (D4)	NO	C	FC	FSTC STC PIT	Q Q 2YR		OP-ST-CCW-3001B OP-ST-CCW-3001B OP-ST-VX-3005B	

Fort Calhoun

Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2899A CONTROL ROOM VA UNIT VA-46B ; CCW INLET VALVE	3	N	B	A	2	GL	A	M-10-1 (C6)	NO	C	FC	FSTC STC PIT	Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-2899B CONTROL ROOM VA UNIT VA-46B ; CCW OUTLET VALVE	3	N	B	A	2	GL	A	M-10-1 (C4)	NO	C	FC	FSTC STC PIT	Q Q 2YR		OP-ST-CCW-3001B OP-ST-CCW-3001B OP-ST-VX-3005B	
HCV-400A CNTMT VA-1A COOLING COIL ; CCW INLET VALVE	2	N	B	A	8	BU	A	M-40-1 (C7)	NO	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-CCW-3005A OP-ST-CCW-3005A OP-ST-CCW-3005A OP-ST-VX-3007A	
HCV-400B CNTMT VA-1A COOLING COIL ; CCW INLET VALVE	2	N	B	A	8	BU	A	M-40-1 (B7)	NO	O	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3005A OP-ST-CCW-3005A OP-ST-VX-3007A	
HCV-400C CNTMT VA-1A COOLING COIL; CCW OUTLET VALVE	2	N	B	A	8	BU	A	M-40-1 (C2)	NO	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-CCW-3005B OP-ST-CCW-3005B OP-ST-CCW-3005B OP-ST-VX-3007B	
HCV-400D CONTAINMENT COOLING COIL VA-1A COMP. COOLING WATER RETURN ISO	2	N	B	A	8	BU	A	M-40-1 (B2)	NO	O	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3005B OP-ST-CCW-3005B OP-ST-VX-3007B	
HCV-401A CONTAINMENT COOLING COIL VA-1B COOLING WATER SUPPLY ISOLATION	2	N	B	A	8	BU	A	M-40-1 (C7)	NO	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-CCW-3006A OP-ST-CCW-3006A OP-ST-CCW-3006A OP-ST-VX-3007A	
HCV-401B CONTAINMENT COOLING COIL VA-1B COMP. COOLING WATER INLET ISO	2	N	B	A	8	BU	A	M-40-1 (B7)	NO	O	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3006A OP-ST-CCW-3006A OP-ST-VX-3007A	
HCV-401C CNTMT VA-1B COOLING COIL ; CCW OUTLET VALVE	2	N	B	A	8	BU	A	M-40-1 (C3)	NO	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-CCW-3006B OP-ST-CCW-3006B OP-ST-CCW-3006B OP-ST-VX-3007B	
HCV-401D CONTAINMENT COOLING COIL VA-1B COMP. COOLING WATER RETURN	2	N	B	A	8	BU	A	M-40-1 (B3)	NO	O	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3006B OP-ST-CCW-3006B OP-ST-VX-3007B	

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Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-402A	2	N	B	A	6	BU	A	M-40-1	NO	O/C	FO	FSTO	Q		OP-ST-CCW-3005A	
CNTMT VA-8A COOLING COIL ; CCW INLET VALVE								(C6)				STC	Q		OP-ST-CCW-3005A	
												STO	Q		OP-ST-CCW-3005A	
												PIT	2YR		OP-ST-VX-3007A	
HCV-402B	2	N	B	A	6	BU	A	M-40-1	NO	O	FO	FSTO	Q		OP-ST-CCW-3005A	
CNTMT VA-8A COOLING COIL ; CCW INLET VALVE								(B6)				STO	Q		OP-ST-CCW-3005A	
												PIT	2YR		OP-ST-VX-3007A	
HCV-402C	2	N	B	A	6	BL	A	M-40-1	NO	O/C	FO	FSTO	Q		OP-ST-CCW-3005B	
CNTMT VA-8A COOLING COIL ; CCW OUTLET VALVE								(C4)				STC	Q		OP-ST-CCW-3005B	
												STO	Q		OP-ST-CCW-3005B	
												PIT	2YR		OP-ST-VX-3007B	
HCV-402D	2	N	B	A	6	BU	A	M-40-1	NO	O	FO	FSTO	Q		OP-ST-CCW-3005B	
CNTMT VA-8A COOLING COIL ; CCW OUTLET VALVE								(B4)				STO	Q		OP-ST-CCW-3005B	
												PIT	2YR		OP-ST-VX-3007B	
HCV-403A	2	N	B	A	6	BU	A	M-40-1	NO	O/C	FO	FSTO	Q		OP-ST-CCW-3006A	
CNTMT VA-8B COOLING COIL ; CCW INLET VALVE								(C5)				STC	Q		OP-ST-CCW-3006A	
												STO	Q		OP-ST-CCW-3006A	
												PIT	2YR		OP-ST-VX-3007A	
HCV-403B	2	N	B	A	6	BU	A	M-40-1	NO	O	FO	FSTO	Q		OP-ST-CCW-3006A	
CNTMT VA-8B COOLING COIL ; CCW INLET VALVE								(B5)				STO	Q		OP-ST-CCW-3006A	
												PIT	2YR		OP-ST-VX-3007A	
HCV-403C	2	N	B	A	6	BL	A	M-40-1	NO	O/C	FO	FSTO	Q		OP-ST-CCW-3006B	
CNTMT VA-8B COOLING COIL ; CCW OUTLET VALVE								(C4)				STC	Q		OP-ST-CCW-3006B	
												STO	Q		OP-ST-CCW-3006B	
												PIT	2YR		OP-ST-VX-3007B	
HCV-403D	2	N	B	A	6	BU	A	M-40-1	NO	O	FO	FSTO	Q		OP-ST-CCW-3006B	
CNTMT VA-8B COOLING COIL ; CCW OUTLET VALVE								(B4)				STO	Q		OP-ST-CCW-3006B	
												PIT	2YR		OP-ST-VX-3007B	
HCV-425A	2	N	A	A	3	GL	A	M-40-3	NO	C	FC	FSTC	CS		OP-ST-CCW-3004	
SI LEAKAGE COOLERS SI-4A-D ; COMBINED CCW INLET HEADER ; INBOARD								(E9)				STC	CS	J - 22	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3139	
												PIT	2YR		OP-ST-VX-3006	
HCV-425B	2	N	A	A	3	GL	A	M-40-3	NO	C	FC	FSTC	CS		OP-ST-CCW-3004	
SI LEAKAGE COOLERS SI-4A-D ; COMBINED CCW INLET HEADER ; OUTBOARD								(E6)				STC	CS	J - 22	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3139	
												PIT	2YR		OP-ST-VX-3006	

Fort Calhoun

Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-425C	2	N	A	A	3	GL	A	M-40-3	NO	C	FC	FSTC	CS		OP-ST-CCW-3004	
SI LEAKAGE COOLERS SI-4A-D ; COMBINED CCW OUTLET HEADER ; INBOARD								(E4)				STC	CS	J - 22	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3139	
												PIT	2YR		OP-ST-VX-3006	
HCV-425D	2	N	A	A	3	GL	A	M-40-3	NO	C	FC	FSTC	CS		OP-ST-CCW-3004	
SI LEAKAGE COOLERS SI-4A-D ; COMBINED CCW OUTLET HEADER ; OUTBOARD								(E2)				STC	CS	J - 22	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3139	
												PIT	2YR		OP-ST-VX-3006	
HCV-438A	2	N	A	A	6	GL	A	M-40-2	NO	C	FO	FSTO	CS		OP-ST-CCW-3004	
RCP RC-3A-D LUBE OIL & SEAL CLRS; CCW INLET INBOARD ISOLATION VLV								(E8)				STC	CS	J - 23	OP-ST-CCW-3004	
												STO	CS	J - 23	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3118	
												PIT	2YR		OP-ST-VX-3006	
HCV-438B	2	N	A	A	6	GL	A	M-40-1	NO	C	FO	FSTO	CS		OP-ST-CCW-3004	
RCP RC-3A-D LUBE OIL & SEAL CLRS; CCW INLET OUTBOARD ISOLATION VLV								(A6)				STC	CS	J - 23	OP-ST-CCW-3004	
												STO	CS	J - 23	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3118	
												PIT	2YR		OP-ST-VX-3006	
HCV-438C	2	N	A	A	6	GL	A	M-40-2	NO	C	FO	FSTO	CS		OP-ST-CCW-3004	
RCP RC-3A-D LUBE OIL & SEAL CLRS; CCW OUTLET INBOARD ISOLATION VLV								(F2)				STC	CS	J - 23	OP-ST-CCW-3004	
												STO	CS	J - 23	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3118	
												PIT	2YR		OP-ST-VX-3006	
HCV-438D	2	N	A	A	6	GL	A	M-40-1	NO	C	FO	FSTO	CS		OP-ST-CCW-3004	
RCP RC-3A-D LUBE OIL & SEAL CLRS; CCW OUTLET OUTBOARD ISOL VLV								(A3)				STC	CS	J - 23	OP-ST-CCW-3004	
												STO	CS	J - 23	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3118	
												PIT	2YR		OP-ST-VX-3006	
HCV-467A	2	N	A	A	1.5	GL	A	M-40-3	NO	C	FC	FSTC	CS		OP-ST-CCW-3004	
DET WELL COOLING COILS VA-14A&B ; COMBINED CCW INLET HEADER ; IN								(E7)				STC	CS	J - 37	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3111	
												PIT	2YR		OP-ST-VX-3006	
HCV-467B	2	N	A	A	1.5	GL	A	M-40-1	NO	C	FC	FSTC	CS		OP-ST-CCW-3004	
DET WELL COOLING COILS VA-14A&B ; COMBINED CCW INLET HEADER ; OUT								(C8)				STC	CS	J - 37	OP-ST-CCW-3004	
												LJ-C	60 mo		IC-ST-AE-3111	
												PIT	2YR		OP-ST-VX-3006	

Fort Calhoun

Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-467C DET WELL COOLING COILS VA-14A&B ; COMBINED CCW OUTLET HEADER	2	N	A	A	1.5	GL	A	M-40-3 (E6)	NO	C	FC	FSTC STC LJ-C PIT	CS CS 60 mo 2YR	 J - 37 	OP-ST-CCW-3004 OP-ST-CCW-3004 IC-ST-AE-3111 OP-ST-VX-3006	
HCV-467D DET WELL COOLING COILS VA-14A&B ; COMBINED CCW OUTLET HEADER	2	N	A	A	1.5	GL	A	M-40-1 (A2)	NO	C	FC	FSTC STC LJ-C PIT	CS CS 60 mo 2YR	 J - 37 	OP-ST-CCW-3004 OP-ST-CCW-3004 IC-ST-AE-3111 OP-ST-VX-3006	
HCV-474 SI PUMPS SI-1A&B,2A,B&C ; CNTMT SPRAY PUMPS SI-3A-C BRG CLRS CCW	3	N	B	A	2	GL	A	M-10-3 (F8)	NO	O	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3006	
HCV-478 SPENT FUEL POOL HT EXCH AC-8 ; CCW OUTLET VALVE	3	N	B	A	8	BU	A	M-10-3 (D2)	NO	O	FO	STC PIT	Q 2YR		OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-480 SHUTDOWN COOLING HT EXCH AC-4A ; CCW INLET VALVE	3	N	B	A	14	BU	A	M-10-3 (C6)	NC	O	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-481 SHUTDOWN COOLING HT EXCH AC-4B ; CCW INLET VALVE	3	N	B	A	14	BU	A	M-10-3 (B7)	NC	O	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-484 SHUTDOWN COOLING HT EXCH AC-4A ; CCW OUTLET VALVE	3	N	B	A	14	BU	A	M-10-3 (B4)	NC	O	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-485 SHUTDOWN COOLING HT EXCH AC-4B ; CCW OUTLET VALVE	3	N	B	A	14	BU	A	M-10-3 (A5)	NC	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-489A COMP COOLING HT EXCH AC-1A ; CCW INLET VALVE	3	N	B	A	10	BU	A	M-10-3 (B2)	NO	O	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001A OP-ST-CCW-3001A OP-ST-VX-3005A	
HCV-489B COMP COOLING HT EXCH AC-1A ; CCW OUTLET VALVE	3	N	B	A	10	BU	A	M-10-2 (A6)	NO	O	FO	FSTO STO PIT	Q Q 2YR		OP-ST-CCW-3001B OP-ST-CCW-3001B OP-ST-VX-3005B	

Fort Calhoun

Valve Table

CCW - Component Cooling Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-490A	3	N	B	A	10	BU	A	M-10-3	NO	O	FO	FSTO	Q		OP-ST-CCW-3001A	
COMP COOLING HT EXCH AC-1B ; CCW INLET VALVE								(B2)				STO	Q		OP-ST-CCW-3001A	
												PIT	2YR		OP-ST-VX-3005A	
HCV-490B	3	N	B	A	10	BU	A	M-10-2	NO	O	FO	FSTO	Q		OP-ST-CCW-3001B	
COMP COOLING HT EXCH AC-1B ; CCW OUTLET VALVE								(A6)				STO	Q		OP-ST-CCW-3001B	
												PIT	2YR		OP-ST-VX-3005B	
HCV-491A	3	N	B	A	10	BU	A	M-10-3	NO	O	FO	FSTO	Q		OP-ST-CCW-3001A	
COMP COOLING HT EXCH AC-1C ; CCW INLET VALVE								(C2)				STO	Q		OP-ST-CCW-3001A	
												PIT	2YR		OP-ST-VX-3005A	
HCV-491B	3	N	B	A	10	BU	A	M-10-2	NO	O	FO	FSTO	Q		OP-ST-CCW-3001B	
COMP COOLING HT EXCH AC-1C ; CCW OUTLET VALVE								(B6)				STO	Q		OP-ST-CCW-3001B	
												PIT	2YR		OP-ST-VX-3005B	
HCV-492A	3	N	B	A	10	BU	A	M-10-3	NO	O	FO	FSTO	Q		OP-ST-CCW-3001A	
COMP COOLING HT EXCH AC-1D ; CCW INLET VALVE								(C2)				STO	Q		OP-ST-CCW-3001A	
												PIT	2YR		OP-ST-VX-3005A	
HCV-492B	3	N	B	A	10	BU	A	M-10-2	NO	O	FO	FSTO	Q		OP-ST-CCW-3001B	
COMP COOLING HT EXCH AC-1D ; CCW OUTLET VALVE								(C6)				STO	Q		OP-ST-CCW-3001B	
												PIT	2YR		OP-ST-VX-3005B	
HCV-497	3	N	B	A	6 inch	BU	A	M-10-3	NC	C	FC	FSTC	Q		OP-ST-CCW-3004	
COMP CLG HT EXCHS AC-1A-D ; CCW BYPASS LINE ISOLATION VALVE								(D2)				STC	Q		OP-ST-CCW-3004	
												PIT	2YR		OP-ST-VX-3006	
NG-113	3	N	A/C	A	1	CK	C	M-42-1	NC	C	N/A	BDO	Q		OP-ST-CCW-3003	
COMP COOLING WATER SURGE TANK AC-2 NITROGEN MAKEUP LINE								(D7)				CVC-FP	Q		SE-ST-CCW-3003	
												CVC-IP	Q		SE-ST-CCW-3003	
												CVC-PD	Q		SE-ST-CCW-3003	
												CVC-Time	Q		SE-ST-CCW-3003	
												LT1	2YR		SE-ST-CCW-3003	

Fort Calhoun

Valve Table

CH - Chemical and Volume Control

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CH-129 BORIC ACID PUMP CH-4A DISCHARGE CHECK VALVE	3	N	C	A	3	CK	C	210-121-1 (A6)	NC	O/C	N/A	CVC-FP CVC-IP CVC-PD CVC-Time CVO	Q Q Q Q Q		OP-ST-CH-3002 OP-ST-CH-3002 OP-ST-CH-3002 OP-ST-CH-3002 OP-ST-CH-3002	
CH-130 BORIC ACID PUMP CH-4B DISCHARGE CHECK VALVE	3	N	C	A	3	CK	C	210-121-1 (B7)	NC	O/C	N/A	CVC-FP CVC-IP CVC-PD CVC-Time CVO	Q Q Q Q Q		OP-ST-CH-3002 OP-ST-CH-3002 OP-ST-CH-3002 OP-ST-CH-3002 OP-ST-CH-3002	
CH-143 BORIC ACID PUMPS CH-4A & B ; DISCHARGE TO CHARGING SUCTION HEADER	2	N	C	A	3	CK	C	210-121-2 (B5)	NC	O	N/A	BDC CVO	CS CS	 J - 05	SE-ST-CH-3006 OP-ST-CH-3006	
CH-155 CHARG PUMPS CH-1A,B&C SUCT HDR ; GRAVITY FEED CHECK VALVE	2	N	C	A	3	CK	C	210-121-2 (A5)	NC	O	N/A	BDC CVO	CS CS	J - 05	SE-ST-CH-3006 OP-ST-CH-3006	
CH-156 CHARG PUMPS CH-1A,B&C SUCT HDR SAFETY INJECTION & BORIC ACID PP	2	N	C	A	3	CK	C	210-120-1 (B8)	NC	O	N/A	BDC CVO	CS CS	 J - 05	SE-ST-CH-3006 OP-ST-CH-3006	
CH-159 VOLUME CONTROL TANK CH-14 ; OUTLET RELIEF VALVE	3	N	C	NA	3	RL	R	210-120-1 (C2)	NC	N/A	N/A	RV	Y06		PE-PM-VX-0429	
CH-166 VOLUME CONTROL TANK CH-14 ; OUTLET CHECK VALVE	2	N	C	A	4	CK	C	210-120-1 (C2)	NO	C	N/A	BDO CVC-FP CVC-IP CVC-PD CVC-Time	Q CS CS CS CS	 J - 30	OP-ST-CH-3003A OP-ST-CH-3006 OP-ST-CH-3006 OP-ST-CH-3006 OP-ST-CH-3006	
CH-178 CHARGING PUMP CH-1C SUCTION RELIEF VALVE TO WASTE DISPOSAL SYSTEM	2	N	C	A	0.5	RL	R	210-120-1 (F4)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
CH-179 CHARGING PUMP CH-1B SUCTION RELIEF VALVE TO WASTE DISPOSAL SYSTEM	2	N	C	A	0.5	RL	R	210-120-1 (F4)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	

Fort Calhoun

Valve Table

CH - Chemical and Volume Control

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CH-180 CHARGING PUMP CH-1A SUCTION RELIEF VALVE TO WASTE DISPOSAL SYSTE	2	N	C	A	0.5	RL	R	210-120-1 (B4)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
CH-181 CHARGING PUMP CH-1C DISCHARGE RELIEF VALVE	2	N	C	NA	1.5	RL	R	210-120-1 (F7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3002	
CH-182 CHARGING PUMP CH-1B DISCHARGE RELIEF VALVE	2	N	C	A	1.5	RL	R	210-120-1 (D7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3002	
CH-183 CHARGING PUMP CH-1A DISCHARGE RELIEF VALVE	2	N	C	A	1.5	RL	R	210-120-1 (B7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3002	
CH-187 CHARGING PUMP CH-1C DISCHARGE CHECK VALVE	2	N	C	A	2	CK	C	210-120-1 (E7)	O/C	O/C	N/A	CVC-FP CVC-IP CVC-PD CVC-Time CVO	Q Q Q Q Q		OP-ST-CH-3003B OP-ST-CH-3003B OP-ST-CH-3003B OP-ST-CH-3003B OP-ST-CH-3003B	
CH-188 CHARGING PUMP CH-1B DISCHARGE CHECK VALVE	2	N	C	A	2	CK	C	210-120-1 (C7)	O/C	O/C	N/A	CVC-FP CVC-IP CVC-PD CVC-Time CVO	Q Q Q Q Q		OP-ST-CH-3003B OP-ST-CH-3003B OP-ST-CH-3003B OP-ST-CH-3003B OP-ST-CH-3003B	
CH-189 CHARGING PUMP CH-1A DISCHARGE CHECK VALVE	2	N	C	A	2	CK	C	210-120-1 (A7)	O/C	O/C	N/A	CVC-FP CVC-IP CVC-PD CVC-Time CVO	Q Q Q Q Q		OP-ST-CH-3003A OP-ST-CH-3003A OP-ST-CH-3003A OP-ST-CH-3003A OP-ST-CH-3003A	
CH-198 REGENERATIVE HEAT EXCHANGER CH-6; CHARGING LINE CHECK VALVE	2	N	C	A	2	CK	C	210-120-1A (A7)	NO	O/C	N/A	CVC-FP CVC-IP CVC-PD CVC-Time CVO	RO RO RO RO RO	 J - 12 J - 12	OP-ST-CH-3010 OP-ST-CH-3010 OP-ST-CH-3010 OP-ST-CH-3010 OP-ST-CH-3009	
CH-202 REACTOR COOLANT SYSTEM LOOP 1A ; CHARGING LINE STOP VLV HCV-[illegible]	1	N	C	A		RL	R	210-120-1A (E3)	O/C	O	N/A	RV	Y03		SE-PM-CH-0202	

Fort Calhoun

Valve Table

CH - Chemical and Volume Control

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
CH-203	1	N	C	A	2	CK	C	210-120-1A	NO	O/C	N/A	CVC-FP	RO		OP-ST-CH-3010	
REACTOR COOLANT SYSTEM LOOP 1A ; CHARGING LINE CHECK VALVE (F7)												CVC-IP	RO		OP-ST-CH-3010	
												CVC-PD	RO		OP-ST-CH-3010	
												CVC-Time	RO	J - 12	OP-ST-CH-3010	
												CVO	RO	J - 12	OP-ST-CH-3009	
CH-204	1	N	C	A	2	CK	C	210-120-1A	NO	O	N/A	BDC	RO	J - 12	OP-ST-CH-3010	
REACTOR COOLANT SYSTEM LOOP 2A ; CHARGING LINE CHECK VALVE (C7)												CVO	RO	J - 12	OP-ST-CH-3009	
CH-205	1	N	C	A	2	CK	C	210-120-1A	NC	O	N/A	BDC	RO	J - 14	OP-ST-CH-3010	
PRESSURIZER CH-4 ; AUXILIARY SPRAY CHECK VALVE								(E7)				CVO	RO	J - 14	OP-ST-CH-3009	
CH-208	2	N	C	A		RL	R	210-120-1A	NC	O/C	N/A	RV	Y03		PE-PM-VX-0429	
REACTOR COOLANT PMPS RC-3A,B,C&D; CONTROLLED BLEEDOFF RELIEF VALV								(F5)								
CH-219	2	N	C	P		RL	R	210-120-1	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
CHARGING PUMPS CH-1A,B&C SUCTION HEADER RELIEF VALVE TO WASTE DI								(F4)								
CH-223	2	N	A/C	A	2	RL	R	210-120-1A	NC	O/C	N/A	RV	Y03		PE-PM-VX-0429	
REGENERATIVE HEAT EXCHANGER CH-6; LETDOWN RELIEF VALVE ; TO RCDTS								(B4)				LJ	60 mo		IC-ST-AE-3102	
CH-224	3	N	C	NA	3	RL	R	210-120-1A	NC	N/A	N/A	RV	Y06		PE-PM-VX-0429	
LETDOWN HEAT EXCHANGER CH-7 ; LETDOWN RELIEF VALVE ; TO NEUTRALI								(F2)								
CH-469	1	N	C	A	2	CK	C	210-120-1A	NC	O	N/A	BDC	RO		PE-ST-CH-3003	
PRESSURIZER RC-4 AUX SPRAY INLET VALVE HCV-240 BYPASS LINE CHECK								(D7)				CVO	RO	J - 11	OP-ST-CH-3009	
FCV-269	2	N	B	A	3	GL	A	210-121-2	NC	C	FC	FSTC	Q		OP-ST-CH-3001	
VOLUME CONTROL TANK CH-14 ; BORIC ACID MAKE-UP INLET VALVE								(C7)				STC	Q		OP-ST-CH-3001	
												PIT	2YR		OP-ST-VX-3008	
HCV-204	2	N	A	A	2	GL	A	210-120-1A	NO	C	FC	FSTC	CS		OP-ST-CH-3005	
LETDOWN HEAT EXCHANGER CH-7 ; INLET VALVE								(A2)				STC	CS	J - 13	OP-ST-CH-3005	
												LJ-C	60 mo		IC-ST-AE-3102	
												PIT	2YR		OP-ST-VX-3009	

Fort Calhoun

Valve Table

CH - Chemical and Volume Control

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-206	2	N	A	A	0.75	GL	A	210-120-1A	NO	C	FC	FSTC	CS		OP-ST-CH-3005	
RX COOLANT PUMPS RC-3A,B,C&D ; CONTROLLED BLEEDOFF ; OUTBOARD ISO								(E3)				STC	CS	J - 15	OP-ST-CH-3005	
												LJ-C	60 mo		IC-ST-AE-3107	
												PIT	2YR		OP-ST-VX-3009	
HCV-238	1	N	B	A	2	GL	A	210-120-1A	NO	O/C	FO	FSTO	Q		OP-ST-CH-3001	
REACTOR COOLANT SYSTEM LOOP 1A ; CHARGING LINE STOP VALVE								(F7)				STC	Q		OP-ST-CH-3001	
												STO	Q		OP-ST-CH-3001	
												PIT	2YR		OP-ST-VX-3008	
HCV-239	1	N	B	A	2	GL	A	210-120-1A	NO	O/C	FO	FSTO	Q		OP-ST-CH-3001	
REACTOR COOLANT SYSTEM LOOP 2A ; CHARGING LINE STOP VALVE								(D7)				STC	Q		OP-ST-CH-3001	
												STO	Q		OP-ST-CH-3001	
												PIT	2YR		OP-ST-VX-3008	
HCV-240	1	N	B	A	2	GL	A	210-120-1A	NC	O/C	FC	FSTC	Q		OP-ST-CH-3005	
PRESSURIZER RC-4 ; AUXILIARY SPRAY INLET VALVE								(E7)				STC	CS	J - 17	OP-ST-CH-3005	
												STO	CS	J - 17	OP-ST-CH-3005	
												PIT	2YR		OP-ST-VX-3009	
HCV-241	2	N	A	A	0.75	GL	A	210-120-1A	NO	C	FC	FSTC	CS		OP-ST-CH-3005	
RX COOLANT PUMPS RC-3A,B,C&D ; CONTROLLED BLEEDOFF ; INBOARD ISO								(E3)				STC	CS	J - 15	OP-ST-CH-3005	
												LJ-C	60 mo		IC-ST-AE-3107	
												PIT	2YR		OP-ST-VX-3009	
HCV-247	2	N	B	A	2	GL	S	210-120-1A	NO	O/C	FO	FSTO	Q		OP-ST-CH-3001	
REACTOR COOLANT SYSTEM LOOP 1A ; CHARGING LINE STOP VALVE								(F7)				STC	Q		OP-ST-CH-3001	
												STO	Q		OP-ST-CH-3001	
												PIT	2YR		OP-ST-CH-3009	
HCV-248	2	N	B	A	2	GL	S	210-120-1A	NO	O/C	FO	FSTO	Q		OP-ST-CH-3001	
REACTOR COOLANT SYSTEM LOOP 2A ; CHARGING LINE STOP VALVE								(D7)				STC	Q		OP-ST-CH-3001	
												STO	Q		OP-ST-CH-3001	
												PIT	2YR		OP-ST-CH-3009	
HCV-249	1	N	B	A	2	GL	S	210-120-1A	NC	O/C	FC	FSTC	CS		OP-ST-CH-3005	
PRESSURIZER RC-4 ; AUX SPRAY INLET VALVE HCV-240 ; BYPASS VALVE								(D7)				STC	CS	J - 17	OP-ST-CH-3005	
												STO	CS	J - 17	OP-ST-CH-3005	
												PIT	2YR		OP-ST-CH-3009	
HCV-257	2	N	B	A	2	GL	A	210-121-1	NO	C	FC	FSTC	Q		OP-ST-CH-3001	
BORIC ACID STORAGE TANK CH-11B ; RECIRCULATION VALVE								(D7)				STC	Q		OP-ST-CH-3001	
												PIT	2YR		OP-ST-VX-3008	

Fort Calhoun

Valve Table

CH - Chemical and Volume Control

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-258 BORIC ACID STORAGE TANK CH-11B ; OUTLET ISOLATION VALVE	2	N	B	A	3	GA	M	210-121-1 (B5)	NC	O	FAI	STO PIT	Q 2YR		OP-ST-CH-3001 OP-ST-VX-3008	
HCV-264 BORIC ACID STORAGE TANK CH-11A ; RECIRCULATION VALVE	2	N	B	A	2	GL	A	210-121-1 (D4)	NO	C	FC	FSTC STC PIT	Q Q 2YR		OP-ST-CH-3001 OP-ST-CH-3001 OP-ST-VX-3008	
HCV-265 BORIC ACID STORAGE TANK CH-11A ; OUTLET ISOLATION VALVE	2	N	B	A	3	GA	M	210-121-1 (B3)	NC	O	FAI	STO PIT	Q 2YR		OP-ST-CH-3001 OP-ST-VX-3008	
HCV-268 BORIC ACID PUMP TO CHARGING SUCTION ISOL VALVE	2	N	B	A	3	GA	M	210-121-2 (B4)	NC	O	FAI	STO PIT	CS 2YR	J - 18	OP-ST-CH-3005 OP-ST-VX-3009	
LCV-218-2 VOLUME CONTROL TANK CH-14 ; OUTLET VALVE	2	N	B	A	4	GA	M	210-120-1 (C2)	NO	C	FAI	STC PIT	CS 2YR	J - 16	OP-ST-CH-3005 OP-ST-VX-3009	
LCV-218-3 CHARGING PUMPS CH-1A,B&C SUCT HDR ; SAFETY INJECTION & BORIC(E6)	2	N	B	A	3	GA	M	210-120-1 (E6)	NC	O/C	FAI	STO PIT	CS 2YR	J - 16	OP-ST-CH-3005 OP-ST-VX-3009	
TCV-202 REACTOR COOLANT SYSTEM LOOP 2A ; LETDOWN TEMPERATURE CONTROL VLV	1	N	A	A	2	GL	A	210-120-1A (E6)	NO	C	FC	FSTC STC LJ-C PIT	CS CS 60 mo 2YR	J - 13	OP-ST-CH-3005 OP-ST-CH-3005 IC-ST-AE-3102 OP-ST-VX-3009	

Fort Calhoun

Valve Table

DW - Demineralized Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-1559A	2	N	A	A	2.5	DI	A	M-5-2 (E5)	NC	C	FC	FSTC	Q		OP-ST-DW-3001	
DEMIN WATER SUPPLY ; CONTAINMENT ISOLATION VALVE												STC	Q		OP-ST-DW-3001	
												LJ-C	60 mo		IC-ST-AE-3180	
												PIT	2YR		OP-ST-VX-3010	
HCV-1559B	2	N	A	A	2.5	DI	A	M-5-2 (E5)	NC	C	FC	FSTC	Q		OP-ST-DW-3001	
DEMIN WATER SUPPLY ; CONTAINMENT ISOLATION VALVE												STC	Q		OP-ST-DW-3001	
												LJ-C	60 mo		IC-ST-AE-3180	
												PIT	2YR		OP-ST-VX-3010	
HCV-1560A	2	N	A	A	2	DI	A	M-5-2 (A4)	NC	C	FC	FSTC	Q		OP-ST-DW-3001	
DEAERATED WATER SUPPLY ; CONTAINMENT ISOLATION VALVE												STC	Q		OP-ST-DW-3001	
												LJ-C	60 mo		IC-ST-AE-3179	
												PIT	2YR		OP-ST-VX-3010	
HCV-1560B	2	N	A	A	2	DI	A	M-5-2 (A4)	NC	C	FC	FSTC	Q		OP-ST-DW-3001	
DEAERATED WATER SUPPLY ; CONTAINMENT ISOLATION VALVE												STC	Q		OP-ST-DW-3001	
												LJ-C	60 mo		IC-ST-AE-3179	
												PIT	2YR		OP-ST-VX-3010	

Fort Calhoun

Valve Table

FW - Feedwater System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
FW-161 STEAM GENERATOR RC-2B ; INLET CHECK VALVE	2	N	C	A	16	CK	C	M-253-1 (D4)	NO	C	N/A	BDO CVC-FP CVC-IP CVC-PD CVC-Time	Q CS CS CS CS	 J - 06	Regular Use SE-ST-FW-3002 SE-ST-FW-3002 SE-ST-FW-3002 SE-ST-FW-3002	
FW-162 STEAM GENERATOR RC-2A ; INLET CHECK VALVE	2	N	C	A	16	CK	C	M-253-1 (D6)	NO	C	N/A	BDO CVC-FP CVC-IP CVC-PD CVC-Time	Q CS CS CS CS	 J - 06	Regular Use SE-ST-FW-3002 SE-ST-FW-3002 SE-ST-FW-3002 SE-ST-FW-3002	
HCV-1103 SG 2A FEED REG VALVE FCV-1101 OUTLET ISOL VALVE	N	N	B	A	16	GA	M	M-253-1 (C3)	NO	C	FAI	STC PIT	CS 2YR	J - 26	OP-ST-FW-3002 OP-ST-VX-3011	
HCV-1104 SG 2B FEED REG VALVE FCV-1102 OUTLET ISOL VALVE	N	N	B	A	16	GA	M	M-253-1 (D3)	NO	C	FAI	STC PIT	CS 2YR	J - 26	OP-ST-FW-3002 OP-ST-VX-3011	
HCV-1105 STM GEN RC-2A ; FEED REG BYPASS VALVE	N	N	B	A	4	GL	A	M-253-1 (C3)	NC	C	FC	FSTC STC PIT	CS CS 2YR	 J - 26	OP-ST-FW-3002 OP-ST-FW-3002 OP-ST-VX-3011	
HCV-1106 STM GEN RC-2B ; FEED REG BYPASS VALVE	N	N	B	A	4	GL	A	M-253-1 (E3)	NC	C	FC	FSTC STC PIT	CS CS 2YR	 J - 26	OP-ST-FW-3002 OP-ST-FW-3002 OP-ST-VX-3011	
HCV-1385 SG RC-2B FEEDWATERISOLATION VALVE	2	N	B	A	16	GA	M	M-253-1 (D3)	NO	C	FAI	STC PIT	CS 2YR	J - 26	OP-ST-FW-3002 OP-ST-VX-3011	
HCV-1386 SG RC-2A FEEDWATER ISOLATION VALVE	2	N	B	A	16	GA	M	M-253-1 (C6)	NO	C	FAI	STC PIT	CS 2YR	J - 26	OP-ST-FW-3002 OP-ST-VX-3011	
HCV-1387A STEAM GENERATOR RC-2B ; BLWD ISOLATION VALVE	2	N	B	A	2	GL	A	M-253-1 (C3)	NO	C	FC	FSTC STC PIT	Q Q 2YR	 	OP-ST-BD-3000 OP-ST-BD-3000 OP-ST-VX-3027	
HCV-1387B STEAM GENERATOR RC-2B ; BLWD ISOLATION VALVE	2	N	B	A	2	GL	A	M-253-1 (B3)	NO	C	FC	FSTC STC PIT	Q Q 2YR	 	OP-ST-BD-3000 OP-ST-BD-3000 OP-ST-VX-3027	

Fort Calhoun

Valve Table

FW - Feedwater System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-1388A	2	N	B	A	2	GL	A	M-253-1	NO	C	FC	FSTC	Q		OP-ST-BD-3000	
STEAM GENERATOR RC-2A ; BLWD ISOLATION VALVE								(C8)				STC	Q		OP-ST-BD-3000	
												PIT	2YR		OP-ST-VX-3027	
HCV-1388B	2	N	B	A	2	GL	A	M-253-1	NO	C	FC	FSTC	Q		OP-ST-BD-3000	
STEAM GENERATOR RC-2A ; BLWD ISOLATION VALVE								(B8)				STC	Q		OP-ST-BD-3000	
												PIT	2YR		OP-ST-VX-3027	

Fort Calhoun

Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IA-3092 PERSONNEL AIR LOCK (PAL) INNER DOOR SEALS TEST TUBING ISOLATION	2	N	A	P	0.5	GL	H	M-264-4 (B5)	NC	C	N/A	LJ-C	30 mo		IC-ST-AE-3103	
IA-3093 PERSONNEL AIR LOCK (PAL) OUTER DOOR SEALS TEST TUBING ISOLATION	2	N	A	P	0.5	GL	H	M-264-4 (B5)	NC	C	N/A	LJ-C	30 mo		IC-ST-AE-3103	
IA-3094 PERSONNEL AIR LOCK (PAL) EMERGENCY AIR PIPE INLET ISOLATION VALVE	2	N	A	P	0.5	BL	H	M-264-4 (B5)	NC	C	N/A	LJ-C	30 mo		IC-ST-AE-3103	
IA-A/FIC-383-C A/FIC-383 INSTRUMENT AIR ; CHECK VALVE	3	N	A/C	A	0.5	CK	C	M-264-4 (D3)	O/C	C	N/A	BDO	Q		IC-ST-IA-3001	
												CVC-FP	Q		IC-ST-IA-3001	
												CVC-IP	Q		IC-ST-IA-3001	
												CVC-PD	Q		IC-ST-IA-3001	
												CVC-Time	Q		IC-ST-IA-3001	
												LT1	2YR		IC-ST-IA-3001	
IA-B/FIC-383-C CHECK VALVE	3	N	A/C	A	0.5	CK	C	M-264-4 (B3)	O/C	C	N/A	BDO	Q		IC-ST-IA-3001	
												CVC-FP	Q		IC-ST-IA-3001	
												CVC-IP	Q		IC-ST-IA-3001	
												CVC-PD	Q		IC-ST-IA-3001	
												CVC-Time	Q		IC-ST-IA-3001	
												LT1	2YR		IC-ST-IA-3001	
IA-C/FIC-383-C C/FIC-383 INSTRUMENT AIR ; CHECK VALVE	3	N	A/C	A	0.5	CK	C	M-264-4 (C3)	O/C	C	N/A	BDO	Q		IC-ST-IA-3001	
												CVC-FP	Q		IC-ST-IA-3001	
												CVC-IP	Q		IC-ST-IA-3001	
												CVC-PD	Q		IC-ST-IA-3001	
												CVC-Time	Q		IC-ST-IA-3001	
												LT1	2YR		IC-ST-IA-3001	
IA-D/FIC-383-C D/FIC-383 INSTRUMENT AIR ; CHECK VALVE	3	N	A/C	A	0.5	CK	C	M-264-4 (A3)	O/C	C	N/A	BDO	Q		IC-ST-IA-3001	
												CVC-FP	Q		IC-ST-IA-3001	
												CVC-IP	Q		IC-ST-IA-3001	
												CVC-PD	Q		IC-ST-IA-3001	
												CVC-Time	Q		IC-ST-IA-3001	
												LT1	2YR		IC-ST-IA-3001	

Fort Calhoun

Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IA-FCV-1368-C	3	N	A/C	A	0.5	CK	C	C-4175-8	NC	C	N/A	BDO	CS		IC-ST-AFW-3001	
AFW RECIRC VALVE FCV-1368 INSTRUMENT AIR CHECK VALVE								(D7)				CVC-FP	CS		IC-ST-AFW-3001	
												CVC-IP	CS		IC-ST-AFW-3001	
												CVC-PD	CS		IC-ST-AFW-3001	
												CVC-Time	CS	J - 32	IC-ST-AFW-3001	
												LT1	2YR		IC-ST-AFW-3001	
IA-FCV-1369-C	3	N	A/C	A	0.5	CK	C	C-4175-8	NC	C	N/A	BDO	CS		IC-ST-AFW-3001	
AFW RECIRC VALVE FCV-1369 INSTRUMENT AIR CHECK VALVE								(D7)				CVC-FP	CS		IC-ST-AFW-3001	
												CVC-IP	CS		IC-ST-AFW-3001	
												CVC-PD	CS		IC-ST-AFW-3001	
												CVC-Time	CS	J - 32	IC-ST-AFW-3001	
												LT1	2YR		IC-ST-AFW-3001	
IA-HCV-1107A-C	3	N	A/C	A	0.5	CK	C	C-4175-8	NC	C	N/A	BDO	CS		IC-ST-AFW-3002	
HCV-1107A INSTRUMENT AIR SUPPLY CHECK VALVE								(E7)				CVC-FP	CS		IC-ST-AFW-3002	
												CVC-IP	CS		IC-ST-AFW-3002	
												CVC-PD	CS		IC-ST-AFW-3002	
												CVC-Time	CS	J - 32	IC-ST-AFW-3002	
												LT1	2YR		IC-ST-AFW-3002	
IA-HCV-1107B-C	3	N	A/C	A	0.5	CK	C	C-4175-8	NC	C	N/A	BDO	CS		IC-ST-AFW-3002	
HCV-1107B INSTRUMENT AIR SUPPLY ; CHECK VALVE								(D7)				CVC-FP	CS		IC-ST-AFW-3002	
												CVC-IP	CS		IC-ST-AFW-3002	
												CVC-PD	CS		IC-ST-AFW-3002	
												CVC-Time	CS	J - 32	IC-ST-AFW-3002	
												LT1	2YR		IC-ST-AFW-3002	
IA-HCV-1108A-C	3	N	A/C	A	0.5	CK	C	C-4175-8	NC	C	N/A	BDO	CS		IC-ST-AFW-3002	
HCV-1108A INSTRUMENT AIR SUPPLY CHECK VALVE								(D7)				CVC-FP	CS		IC-ST-AFW-3002	
												CVC-IP	CS		IC-ST-AFW-3002	
												CVC-PD	CS		IC-ST-AFW-3002	
												CVC-Time	CS	J - 32	IC-ST-AFW-3002	
												LT1	2YR		IC-ST-AFW-3002	
IA-HCV-1108B-C	3	N	A/C	A	0.5	CK	C	C-4175-8	NC	C	N/A	BDO	CS		IC-ST-AFW-3002	
HCV-1108B INSTRUMENT AIR SUPPLY ; CHECK VALVE								(D7)				CVC-FP	CS		IC-ST-AFW-3002	
												CVC-IP	CS		IC-ST-AFW-3002	
												CVC-PD	CS		IC-ST-AFW-3002	
												CVC-Time	CS	J - 32	IC-ST-AFW-3002	
												LT1	2YR		IC-ST-AFW-3002	

Fort Calhoun

Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IA-HCV-238-C	3	N	A/C	A	0.5	CK	C	C-4175-8	O/C	C	N/A	BDO	CS		IC-ST-IA-3002	
HCV-238 INSTRUMENT AIR SUPPLY ; CHECK VALVE								(F7)				CVC-FP	CS		IC-ST-IA-3002	
												CVC-IP	CS		IC-ST-IA-3002	
												CVC-PD	CS		IC-ST-IA-3002	
												CVC-Time	CS	J - 28	IC-ST-IA-3002	
												LT1	2YR		IC-ST-IA-3002	
IA-HCV-239-C	3	N	A/C	A	0.5	CK	C	C-4175-8	O/C	C	N/A	BDO	CS		IC-ST-IA-3002	
HCV-239 INSTRUMENT AIR SUPPLY ; CHECK VALVE								(F7)				CVC-FP	CS		IC-ST-IA-3002	
												CVC-IP	CS		IC-ST-IA-3002	
												CVC-PD	CS		IC-ST-IA-3002	
												CVC-Time	CS	J - 28	IC-ST-IA-3002	
												LT1	2YR		IC-ST-IA-3002	
IA-HCV-240-C	3	N	A/C	A	0.5	CK	C	C-4175-8	O/C	C	N/A	BDO	CS		IC-ST-IA-3002	
HCV-240 INSTRUMENT AIR SUPPLY ; CHECK VALVE								(E7)				CVC-FP	CS		IC-ST-IA-3002	
												CVC-IP	CS		IC-ST-IA-3002	
												CVC-PD	CS		IC-ST-IA-3002	
												CVC-Time	CS	J - 17	IC-ST-IA-3002	
												LT1	2YR		IC-ST-IA-3002	
IA-HCV-2850-C	3	Y	A/C	A	0.5	CK	C	C-4175-7	NC	C	N/A	BDO	Q		IC-ST-IA-3003A	
HCV-2850 INSTRUMENT AIR SUPPLY ; CHECK VALVE								(D7)				CVC-FP	Q		IC-ST-IA-3003A	
												CVC-IP	Q		IC-ST-IA-3003A	
												CVC-PD	Q		IC-ST-IA-3003A	
												CVC-Time	Q		IC-ST-IA-3003A	
												LT1	2YR		IC-ST-IA-3003A	
IA-HCV-2851-C	3	Y	A/C	A	0.5	CK	C	C-4175-7	NC	C	N/A	BDO	Q		IC-ST-IA-3003B	
HCV-2851 INSTRUMENT AIR SUPPLY ; CHECK VALVE								(D7)				CVC-FP	Q		IC-ST-IA-3003B	
												CVC-IP	Q		IC-ST-IA-3003B	
												CVC-PD	Q		IC-ST-IA-3003B	
												CVC-Time	Q		IC-ST-IA-3003B	
												LT1	2YR		IC-ST-IA-3003B	
IA-HCV-2852-C	3	Y	A/C	A	0.5	CK	C	C-4175-7	NC	C	N/A	BDO	Q		IC-ST-IA-3003C	
HCV-2852 INSTRUMENT AIR SUPPLY ; CHECK VALVE								(D7)				CVC-FP	Q		IC-ST-IA-3003C	
												CVC-IP	Q		IC-ST-IA-3003C	
												CVC-PD	Q		IC-ST-IA-3003C	
												CVC-Time	Q		IC-ST-IA-3003C	
												LT1	2YR		IC-ST-IA-3003C	

Fort Calhoun

Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IA-HCV-2853-C	3	Y	A/C	A	0.5	CK	C	C-4175-7	NC	C	N/A	BDO	Q		IC-ST-IA-3003D	
HCV-2853 INSTRUMENT AIR SUPPLY ; CHECK VALVE								(D7)				CVC-FP	Q		IC-ST-IA-3003D	
												CVC-IP	Q		IC-ST-IA-3003D	
												CVC-PD	Q		IC-ST-IA-3003D	
												CVC-Time	Q		IC-ST-IA-3003D	
												LT1	2YR		IC-ST-IA-3003D	
IA-HCV-2898A-C	3	Y	A/C	A	0.5	CK	C	C-4175-7	NC	C	N/A	BDO	Q		IC-ST-IA-3008A	
CCW INLET VALVE HCV-2898A INSTRUMENT AIR CHECK VALVE								(B7)				CVC-FP	Q		IC-ST-IA-3008	
												CVC-IP	Q		IC-ST-IA-3008	
												CVC-PD	Q		IC-ST-IA-3008	
												CVC-Time	Q		IC-ST-IA-3008	
												LT1	2YR		IC-ST-IA-3008	
IA-HCV-2898B-C	3	Y	A/C	A	0.5	CK	C	C-4175-7	NC	C	N/A	BDO	Q		IC-ST-IA-3008A	
CCW OUTLET VALVE HCV-2898B INSTRUMENT AIR CHECK VALVE								(B7)				CVC-FP	Q		IC-ST-IA-3008	
												CVC-IP	Q		IC-ST-IA-3008	
												CVC-PD	Q		IC-ST-IA-3008	
												CVC-Time	Q		IC-ST-IA-3008	
												LT1	2YR		IC-ST-IA-3008	
IA-HCV-2899A-C	3	Y	A/C	A	0.5	CK	C	C-4175-7	NC	C	N/A	BDO	Q		IC-ST-IA-3008B	
CCW INLET VALVE HCV-2899A INSTRUMENT AIR CHECK VALVE								(B7)				CVC-FP	Q		IC-ST-IA-3008	
												CVC-IP	Q		IC-ST-IA-3008	
												CVC-PD	Q		IC-ST-IA-3008	
												CVC-Time	Q		IC-ST-IA-3008	
												LT1	2YR		IC-ST-IA-3008	
IA-HCV-2899B-C	3	N	A/C	A	0.5	CK	C	C-4175-7	NC	C	N/A	BDO	Q		IC-ST-IA-3008B	
CCW OUTLET VALVE HCV-2899B INSTRUMENT AIR CHECK VALVE								(B7)				CVC-FP	Q		IC-ST-IA-3008	
												CVC-IP	Q		IC-ST-IA-3008	
												CVC-PD	Q		IC-ST-IA-3008	
												CVC-Time	Q		IC-ST-IA-3008	
												LT1	2YR		IC-ST-IA-3008	
IA-HCV-2987-C	3	N	A/C	A	0.375	CK	C	C-4175-5	O/C	C	N/A	BDO	CS		IC-ST-IA-3005	
HCV-2987 Instrument Air Supply; Check Valve								(C7)				CVC-FP	CS		IC-ST-IA-3005	
												CVC-IP	CS		IC-ST-IA-3005	
												CVC-PD	CS		IC-ST-IA-3005	
												CVC-Time	CS	J - 39	IC-ST-IA-3005	
												LT1	2YR		IC-ST-IA-3005	

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Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IA-HCV-344-C	2	N	A/C	A	0.5	CK	C	C-4175-5 (E7)	O/C	C	N/A	LT1	Q		IC-ST-SI-3344	
HCV-344 INSTRUMENT AIR SUPPLY ; CHECK VALVE												BDO	CS		OP-ST-SI-3002	
												CVC-FP	CS		OP-ST-SI-3002	
												CVC-IP	CS		OP-ST-SI-3002	
												CVC-PD	CS		OP-ST-SI-3002	
												CVC-Time	CS	J - 20	OP-ST-SI-3002	
IA-HCV-345-C	2	N	A/C	A	0.5	CK	C	C-4175-5 (E7)	O/C	C	N/A	LT1	Q		IC-ST-SI-3345	
HCV-345 INSTRUMENT AIR SUPPLY ; CHECK VALVE												BDO	CS		OP-ST-SI-3002	
												CVC-FP	CS		OP-ST-SI-3002	
												CVC-IP	CS		OP-ST-SI-3002	
												CVC-PD	CS		OP-ST-SI-3002	
												CVC-Time	CS	J - 20	OP-ST-SI-3002	
IA-HCV-385-C	3	N	A/C	A	0.5	CK	C	C-4175-5 (E7)	O/C	C	N/A	BDO	CS		OP-ST-SI-3002	
HCV-385 INSTRUMENT AIR SUPPLY ; CHECK VALVE												CVC-FP	CS		OP-ST-SI-3002	
												CVC-IP	CS		OP-ST-SI-3002	
												CVC-PD	CS		OP-ST-SI-3002	
												CVC-Time	CS	J - 29	OP-ST-SI-3002	
												LT1	2YR		OP-ST-SI-3002	
IA-HCV-386-C	3	N	A/C	A	0.5	CK	C	C-4175-5 (E7)	O/C	C	N/A	BDO	CS		OP-ST-SI-3002	
HCV-386 INSTRUMENT AIR SUPPLY ; CHECK VALVE												CVC-FP	CS		OP-ST-SI-3002	
												CVC-IP	CS		OP-ST-SI-3002	
												CVC-PD	CS		OP-ST-SI-3002	
												CVC-Time	CS	J - 29	OP-ST-SI-3002	
												LT1	2YR		OP-ST-SI-3002	
IA-HCV-400A-C	3	N	C	A	0.25	CK	C	C-4175-6 (F7)	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010A	
CCW INLET VALVE HCV-400A INSTRUMENT AIR SUPPLY CHECK VALVE												CVC-FP	Q		IC-ST-IA-3010A	
												CVC-IP	Q		IC-ST-IA-3010A	
												CVC-PD	Q		IC-ST-IA-3010A	
												CVC-Time	Q		IC-ST-IA-3010A	
IA-HCV-400B-C	3	N	C	A	0.25	CK	C	C-4175-6 (F7)	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010A	
CCW INLET VALVE HCV-400B INSTRUMENT AIR SUPPLY CHECK VALVE												CVC-FP	Q		IC-ST-IA-3010A	
												CVC-IP	Q		IC-ST-IA-3010A	
												CVC-PD	Q		IC-ST-IA-3010A	
												CVC-Time	Q		IC-ST-IA-3010A	
IA-HCV-400C-TV	3	N	C	A	0.25	CK	C	C-4175-6 (F3)	NC	C	N/A	BDO	Q		OP-ST-CCW-3010A	
HCV-400C INSTRUMENT AIR SUPPLY ; TRIP VALVE												CVC-FP	Q		IC-ST-IA-3010A	
												CVC-IP	Q		IC-ST-IA-3010A	
												CVC-PD	Q		IC-ST-IA-3010A	
												CVC-Time	Q		IC-ST-IA-3010A	

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Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IA-HCV-400D-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010A	
CCW OUTLET VALVE HCV-400D INSTRUMENT AIR SUPPLY CHECK VALVE								(F7)				CVC-FP	Q		IC-ST-IA-3010A	
												CVC-IP	Q		IC-ST-IA-3010A	
												CVC-PD	Q		IC-ST-IA-3010A	
												CVC-Time	Q		IC-ST-IA-3010A	
IA-HCV-401A-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010B	
CCW INLET VALVE HCV-401A INSTRUMENT AIR CHECK VALVE								(F7)				CVC-FP	Q		IC-ST-IA-3010B	
												CVC-IP	Q		IC-ST-IA-3010B	
												CVC-PD	Q		IC-ST-IA-3010B	
												CVC-Time	Q		IC-ST-IA-3010B	
IA-HCV-401B-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010B	
CCW INLET VALVE HCV-401B INSTRUMENT AIR SUPPLY CHECK VALVE								(F7)				CVC-FP	Q		IC-ST-IA-3010B	
												CVC-IP	Q		IC-ST-IA-3010B	
												CVC-PD	Q		IC-ST-IA-3010B	
												CVC-Time	Q		IC-ST-IA-3010B	
IA-HCV-401C-TV	3	N	C	A	0.25	CK	C	C-4175-6	NC	C	N/A	BDO	Q		OP-ST-CCW-3010B	
HCV-401C INSTRUMENT AIR SUPPLY ; TRIP VALVE								(F3)				CVC-FP	Q		IC-ST-IA-3010B	
												CVC-IP	Q		IC-ST-IA-3010B	
												CVC-PD	Q		IC-ST-IA-3010B	
												CVC-Time	Q		IC-ST-IA-3010B	
IA-HCV-401D-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010B	
CCW OUTLET VALVE HCV-401D INSTRUMENT AIR SUPPLY CHECK VALVE								(F7)				CVC-FP	Q		IC-ST-IA-3010B	
												CVC-IP	Q		IC-ST-IA-3010B	
												CVC-PD	Q		IC-ST-IA-3010B	
												CVC-Time	Q		IC-ST-IA-3010B	
IA-HCV-402A-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010A	
CCW INLET VALVE HCV-402A INSTRUMENT AIR SUPPLY CHECK VALVE								(E7)				CVC-FP	Q		IC-ST-IA-3010A	
												CVC-IP	Q		IC-ST-IA-3010A	
												CVC-PD	Q		IC-ST-IA-3010A	
												CVC-Time	Q		IC-ST-IA-3010A	
IA-HCV-402B-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010A	
CCW INLET VALVE HCV-402B INSTRUMENT AIR SUPPLY CHECK VALVE								(E7)				CVC-FP	Q		IC-ST-IA-3010A	
												CVC-IP	Q		IC-ST-IA-3010A	
												CVC-PD	Q		IC-ST-IA-3010A	
												CVC-Time	Q		IC-ST-IA-3010A	

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Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IA-HCV-402C-TV	3	N	C	A	0.25	CK	C	C-4175-6	NC	C	N/A	BDO	Q		OP-ST-CCW-3010A	
HCV-402C INSTRUMENT AIR SUPPLY ; TRIP VALVE								(E3)				CVC-FP	Q		IC-ST-IA-3010A	
												CVC-IP	Q		IC-ST-IA-3010A	
												CVC-PD	Q		IC-ST-IA-3010A	
												CVC-Time	Q		IC-ST-IA-3010A	
IA-HCV-402D-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010A	
CCW OUTLET VALVE HCV-402D INSTRUMENT AIR SUPPLY CHECK VALVE								(E7)				CVC-FP	Q		IC-ST-IA-3010A	
												CVC-IP	Q		IC-ST-IA-3010A	
												CVC-PD	Q		IC-ST-IA-3010A	
												CVC-Time	Q		IC-ST-IA-3010A	
IA-HCV-403A-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010B	
CCW INLET VALVE HCV-403A INSTRUMENT AIR SUPPLY CHECK VALVE								(E7)				CVC-FP	Q		IC-ST-IA-3010B	
												CVC-IP	Q		IC-ST-IA-3010B	
												CVC-PD	Q		IC-ST-IA-3010B	
												CVC-Time	Q		IC-ST-IA-3010B	
IA-HCV-403B-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010B	
CCW INLET VALVE HCV-403B INSTRUMENT AIR SUPPLY CHECK VALVE								(E7)				CVC-FP	Q		IC-ST-IA-3010B	
												CVC-IP	Q		IC-ST-IA-3010B	
												CVC-PD	Q		IC-ST-IA-3010B	
												CVC-Time	Q		IC-ST-IA-3010B	
IA-HCV-403C-TV	3	N	C	A	0.25	CK	C	C-4175-6	NC	C	N/A	BDO	Q		OP-ST-CCW-3010B	
HCV-403C INSTRUMENT AIR SUPPLY ; TRIP VALVE								(E3)				CVC-FP	Q		IC-ST-IA-3010B	
												CVC-IP	Q		IC-ST-IA-3010B	
												CVC-PD	Q		IC-ST-IA-3010B	
												CVC-Time	Q		IC-ST-IA-3010B	
IA-HCV-403D-C	3	N	C	A	0.25	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3010B	
CCW OUTLET VALVE HCV-403D INSTRUMENT AIR SUPPLY CHECK VALVE								(E7)				CVC-FP	Q		IC-ST-IA-3010B	
												CVC-IP	Q		IC-ST-IA-3010B	
												CVC-PD	Q		IC-ST-IA-3010B	
												CVC-Time	Q		IC-ST-IA-3010B	
IA-HCV-438B-C	3	N	C	A	0.5	CK	C	C-4175-6	O/C	C	N/A	BDO	CS		OP-ST-CCW-3004	
HCV-438B INSTRUMENT AIR SUPPLY ; CHECK VALVE								(D7)				CVC-FP	CS		OP-ST-CCW-3004	
												CVC-IP	CS		OP-ST-CCW-3004	
												CVC-PD	CS		OP-ST-CCW-3004	
												CVC-Time	CS	J - 23	OP-ST-CCW-3004	

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Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IA-HCV-438D-C	3	N	C	A	0.5	CK	C	C-4175-6	O/C	C	N/A	BDO	CS		OP-ST-CCW-3004	
HCV-438D INSTRUMENT AIR SUPPLY ; CHECK VALVE								(D7)				CVC-FP	CS		OP-ST-CCW-3004	
												CVC-IP	CS		OP-ST-CCW-3004	
												CVC-PD	CS		OP-ST-CCW-3004	
												CVC-Time	CS	J - 23	OP-ST-CCW-3004	
IA-HCV-480-C	3	N	C	A	0.5	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3001A	
CCW INLET VALVE HCV-480 INSTRUMENT AIR SUPPLY CHECK VALVE								(B7)				CVC-FP	Q		IC-ST-CCW-3001	
												CVC-IP	Q		IC-ST-CCW-3001	
												CVC-PD	Q		IC-ST-CCW-3001	
												CVC-Time	Q		IC-ST-CCW-3001	
IA-HCV-481-C	3	N	C	A	0.5	CK	C	C-4175-6	O/C	C	N/A	BDO	Q		OP-ST-CCW-3001A	
CCW INLET VALVE HCV-481 INSTRUMENT AIR SUPPLY CHECK VALVE								(B7)				CVC-FP	Q		IC-ST-CCW-3001	
												CVC-IP	Q		IC-ST-CCW-3001	
												CVC-PD	Q		IC-ST-CCW-3001	
												CVC-Time	Q		IC-ST-CCW-3001	
IA-LCV-383-1-C	3	N	C	A	0.375	CK	C	C-4175-5	O/C	C	N/A	BDO	CS		OP-ST-SI-3002	
LCV-383-1 INSTRUMENT AIR SUPPLY ; CHECK VALVE								(E7)				CVC-FP	CS		OP-ST-SI-3002	
												CVC-IP	CS		OP-ST-SI-3002	
												CVC-PD	CS		OP-ST-SI-3002	
												CVC-Time	CS	J - 34	OP-ST-SI-3002	
												LT	CS		OP-ST-SI-3002	
IA-LCV-383-2-C	3	N	C	A	0.375	CK	C	C-4175-5	O/C	C	N/A	BDO	CS		OP-ST-SI-3002	
LCV-383-2 INSTRUMENT AIR SUPPLY ; CHECK VALVE								(E7)				CVC-FP	CS		OP-ST-SI-3002	
												CVC-IP	CS		OP-ST-SI-3002	
												CVC-PD	CS		OP-ST-SI-3002	
												CVC-Time	CS	J - 34	OP-ST-SI-3002	
												LT	CS		OP-ST-SI-3002	
IA-PCV-6680A-1-C	3	N	A/C	A	0.5	CK	C	P-49323	NC	C	N/A	BDO	CS		IC-ST-IA-3007	
Damper PCV-6680A-1 Accumulator Check Valve								(N/A)				CVC-FP	CS		IC-ST-IA-3007	
												CVC-IP	CS		IC-ST-IA-3007	
												CVC-PD	CS		IC-ST-IA-3007	
												CVC-Time	CS	J - 32	IC-ST-IA-3007	
												LT1	2YR		IC-ST-IA-3007	
IA-PCV-6680A-2-C	3	N	A/C	A	0.5	CK	C	P-49323	NC	C	N/A	BDO	CS		IC-ST-IA-3007	
Damper PCV-6680A-2 Accumulator Check Valve								(N/A)				CVC-FP	CS		IC-ST-IA-3007	
												CVC-IP	CS		IC-ST-IA-3007	
												CVC-PD	CS		IC-ST-IA-3007	
												CVC-Time	CS	J - 32	IC-ST-IA-3007	
												LT1	2YR		IC-ST-IA-3007	

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Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
IA-PCV-6680B-1-C Damper PCV-6680B-1 Accumulator Check Valve	3	N	A/C	A	0.5	CK	C	P-49323 (N/A)	NC	C	N/A	BDO	CS		IC-ST-IA-3007	
												CVC-FP	CS		IC-ST-IA-3007	
												CVC-IP	CS		IC-ST-IA-3007	
												CVC-PD	CS		IC-ST-IA-3007	
												CVC-Time	CS	J - 32	IC-ST-IA-3007	
												LT1	2YR		IC-ST-IA-3007	
IA-PCV-6680B-2-C Damper PCV-6680B-2 Accumulator Check Valve	3	N	A/C	A	0.5	CK	C	P-49323 (N/A)	NC	C	N/A	BDO	CS		IC-ST-IA-3007	
												CVC-FP	CS		IC-ST-IA-3007	
												CVC-IP	CS		IC-ST-IA-3007	
												CVC-PD	CS		IC-ST-IA-3007	
												CVC-Time	CS	J - 32	IC-ST-IA-3007	
												LT1	2YR		IC-ST-IA-3007	
IA-PCV-6682-C PCV-6682 INSTRUMENT AIR SUPPLY HEADER CHECK VALVE	3	N	A/C	A	0.5	CK	C	P-49323 (N/A)	NC	C	N/A	BDO	CS		IC-ST-IA-3007	
												CVC-FP	CS		IC-ST-IA-3007	
												CVC-IP	CS		IC-ST-IA-3007	
												CVC-PD	CS		IC-ST-IA-3007	
												CVC-Time	CS	J - 32	IC-ST-IA-3007	
												LT1	2YR		IC-ST-IA-3007	
IA-YCV-1045A-C YCV-1045A INSTRUMENT AIR SUPPLY ; CHECK VALVE	3	N	A/C	A	0.5	CK	C	C-4175-4 (B7)	O/C	C	N/A	BDO	Q		OP-ST-MS-3001	
												CVC-FP	Q		OP-ST-MS-3001	
												CVC-IP	Q		OP-ST-MS-3001	
												CVC-PD	Q		OP-ST-MS-3001	
												CVC-Time	Q		OP-ST-MS-3001	
												LT1	2YR		OP-ST-MS-3001	
IA-YCV-1045B-C YCV-1045B INSTRUMENT AIR SUPPLY ; CHECK VALVE	3	N	A/C	A	0.5	CK	C	C-4175-4 (B7)	O/C	C	N/A	BDO	Q		OP-ST-MS-3001	
												CVC-FP	Q		OP-ST-MS-3001	
												CVC-IP	Q		OP-ST-MS-3001	
												CVC-PD	Q		OP-ST-MS-3001	
												CVC-Time	Q		OP-ST-MS-3001	
												LT1	2YR		OP-ST-MS-3001	
IA-YCV-1045-C Instrument Air Accumulator Check Valve	3	N	A/C	A		CK	C	C-4175-4 (B7)	NC	C	N/A	BDO	Q		IC-ST-IA-3009	
												CVC-FP	Q		IC-ST-IA-3009	
												CVC-IP	Q		IC-ST-IA-3009	
												CVC-PD	Q		IC-ST-IA-3009	
												CVC-Time	Q		IC-ST-IA-3009	
												LT1	2YR		IS-ST-IA-3009	

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Valve Table

IA - Instument Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PCV-1849A CONTAINMENT IA SUPPLY INBOARD PRESSURE CONTROL VALVE	2	N	A	A	2	GL	A	M-264-1 (D8)	NO	C	FC	FSTC STC LJ-C PIT	CS CS 30 mo 2YR	J - 27	OP-ST-CA-3002 OP-ST-CA-3002 IC-ST-AE-3173 OP-ST-VX-3004	
PCV-1849A-20A PCV-1849A IA Supply Solenoid 3-Way Valve	2	N	A	A	0.5	3W	S	M-264-1 (D8)	NO	C	FC	LJ	30 mo		IC-ST-AE-3173	
PCV-1849A-20B PCV-1849A IA Supply Solenoid 3-Way Valve	2	N	A	A	0.5	3W	S	M-264-1 (D8)	O	C	FC	LJ	30 mo		IC-ST-AE-3173	
PCV-1849B CONTAINMENT INSTRUMENT AIR SUPPLY OUTBOARD PRESSURE CONTROL VALV	2	N	A	A	2	GL	A	M-264-1 (D5)	NO	C	FC	FSTC STC LJ-C PIT	CS CS 30 mo 2YR	J - 27	OP-ST-CA-3002 OP-ST-CA-3002 IC-ST-AE-3173 OP-ST-VX-3004	

Fort Calhoun

Valve Table

MS - Main Steam System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-1041A	2	N	B	A	28	CK	A	M-252-1	NO	C	FC	FSTC	CS	J - 24	OP-ST-MS-3002	
STEAM GENERATOR RC-2A ; MS ISOLATION VALVE								(F6)				STC	CS		OP-ST-MS-3002	
												PIT	2YR		OP-ST-VX-3013	
HCV-1041B	2	N	C	A	28	CK	C	M-252-1	NO	C	N/A	BDO	RO1		PE-ST-MS-3001	
STEAM GENERATOR RC-2A MS CHECK VALVE								(F6)				CVC-FP	RO1		PE-ST-MS-3001	
												CVC-IP	RO1		PE-ST-MS-3001	
												CVC-PD	RO1		PE-ST-MS-3001	
												CVC-Time	RO1		PE-ST-MS-3001	
												INSP	RO1	J - 33	PE-ST-MS-3001	
HCV-1041C	2	N	B	A	2	GL	M	M-252-1	NC	C	FAI	STC	CS	J - 25	OP-ST-MS-3002	
MAIN STEAM BYPASS VALVE								(F6)				PIT	2YR		OP-ST-VX-3013	
HCV-1042A	2	N	B	A	28	CK	A	M-252-1	NO	C	FC	FSTC	CS		OP-ST-MS-3002	
STEAM GENERATOR RC-2B ; MS ISOLATION VALVE								(E6)				STC	CS	J - 24	OP-ST-MS-3002	
												PIT	2YR		OP-ST-VX-3013	
HCV-1042B	2	N	C	A	28	CK	C	M-252-1	NO	C	N/A	BDO	RO1		PE-ST-MS-3001	
STEAM GENERATOR RC-2B MS CHECK VALVE								(E6)				CVC-FP	RO1		PE-ST-MS-3001	
												CVC-IP	RO1		PE-ST-MS-3001	
												CVC-PD	RO1		PE-ST-MS-3001	
												CVC-Time	RO1		PE-ST-MS-3001	
												INSP	RO1	J - 33	PE-ST-MS-3001	
HCV-1042C	2	N	B	A	2	GL	M	M-252-1	NC	C	FAI	STC	CS	J - 25	OP-ST-MS-3002	
MAIN STEAM BYPASS VALVE								(E6)				PIT	2YR		OP-ST-VX-3013	
MS-275	2	N	C	A	6	RL	R	M-252-1	NC	O/C	N/A	RV	RO		OP-ST-MS-3003	
MAIN STEAM LINE "A" ; RELIEF VALVE								(F8)				AF-SPT	30 mo		IC-ST-MS-3002	
												AL-SPT	30 mo		IC-ST-MS-3002	
MS-276	2	N	C	A	6	RL	R	M-252-1	NC	O/C	N/A	RV	RO		OP-ST-MS-3003	
MAIN STEAM LINE "A" ; RELIEF VALVE								(F8)				AF-SPT	30 mo		IC-ST-MS-3002	
												AL-SPT	30 mo		IC-ST-MS-3002	
MS-277	2	N	C	A	6	RL	R	M-252-1	NC	O/C	N/A	RV	RO		OP-ST-MS-3003	
MAIN STEAM LINE "A" ; RELIEF VALVE								(F7)				AF-SPT	30 mo		IC-ST-MS-3002	
												AL-SPT	30 mo		IC-ST-MS-3002	

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Valve Table

MS - Main Steam System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
MS-278 MAIN STEAM LINE "A" ; RELIEF VALVE	2	N	C	A	6	RL	R	M-252-1 (F7)	NC	O/C	N/A	RV AF-SPT AL-SPT	RO 30 mo 30 mo		OP-ST-MS-3003 IC-ST-MS-3002 IC-ST-MS-3002	
MS-279 MAIN STEAM LINE "B" ; RELIEF VALVE	2	N	C	A	6	RL	R	M-252-1 (E8)	NC	O/C	N/A	RV AF-SPT AL-SPT	RO 30 mo 30 mo		OP-ST-MS-3003 IC-ST-MS-3002 IC-ST-MS-3002	
MS-280 MAIN STEAM LINE "B" ; RELIEF VALVE	2	N	C	A	6	RL	R	M-252-1 (E7)	NC	O/C	N/A	RV AF-SPT AL-SPT	RO 30 mo 30 mo		OP-ST-MS-3003 IC-ST-MS-3002 IC-ST-MS-3002	
MS-281 MAIN STEAM LINE "B" ; RELIEF VALVE	2	N	C	A	6	RL	R	M-252-1 (E7)	NC	O/C	N/A	RV AF-SPT AL-SPT	RO 30 mo 30 mo		OP-ST-MS-3003 IC-ST-MS-3002 IC-ST-MS-3002	
MS-282 MAIN STEAM LINE "B" ; RELIEF VALVE	2	N	C	A	6	RL	R	M-252-1 (E6)	NC	O/C	N/A	RV AF-SPT AL-SPT	RO 30 mo 30 mo		OP-ST-MS-3003 IC-ST-MS-3002 IC-ST-MS-3002	
MS-291 MAIN STEAM LINE "A" ; RELIEF VALVE	2	N	C	A	2.5	RL	R	M-252-1 (F7)	NC	O/C	FC	RV AF-SPT AL-SPT	RO 30 mo 30 mo		OP-ST-MS-3003 IC-ST-MS-3002 IC-ST-MS-3002	
MS-292 MAIN STEAM LINE "B" ; RELIEF VALVE	2	N	C	A	2.5	RL	R	M-252-1 (E7)	NC	O/C	FC	RV AF-SPT AL-SPT	RO 30 mo 30 mo		OP-ST-MS-3003 IC-ST-MS-3002 IC-ST-MS-3002	
MS-351 MS LINE "B" TO AUX FEED PUMP FW-10 ; CHECK VALVE	3	N	C	A	2	CK	C	M-252-1 (E5)	N/A	O	N/A	CVO BDC	Q CS		OP-ST-AFW-3011 OP-ST-AFW-3012	
MS-352 MS LINE "A" TO AUX FEED PUMP FW-10 ; CHECK VALVE	3	N	C	A	2	CK	C	M-252-1 (E5)	N/A	O	N/A	CVO BDC	Q CS		OP-ST-AFW-3011 OP-ST-AFW-3012	
YCV-1045 AUX FEEDWATER PUMP FW-10 ; INLET VALVE	3	N	B	A	2	GL	A	M-252-1 (C5)	NC	O/C	FO	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-AFW-3011 IC-ST-IA-3009 OP-ST-AFW-3011 OP-ST-VX-3001	

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Valve Table

MS - Main Steam System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
YCV-1045A	2	N	B	A	2	GL	A	M-252-1	NC	O/C	FO	FSTO	Q		OP-ST-MS-3001	
MAIN STEAM LINE "A" TO ; AUX FEEDWATER PUMP FW-10 ; SUPPLY VALVE(E5)												STC	Q		OP-ST-MS-3001	
												STO	Q		OP-ST-MS-3001	
												PIT	2YR		OP-ST-VX-3012	
YCV-1045B	2	N	B	A	2	GL	A	M-252-1	NC	O/C	FO	FSTO	Q		OP-ST-MS-3001	
MAIN STEAM LOOP "B" ; AUX FEEDWATER PUMP FW-10 ; SUPPLY VALVE(E5)												STC	Q		OP-ST-MS-3001	
												STO	Q		OP-ST-MS-3001	
												PIT	2YR		OP-ST-VX-3012	

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Valve Table

NG - Nitrogen Gas System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2603A	2	N	A	A	1	GL	A	M-42-1	NC	C	FC	FSTC	Q		OP-ST-NG-3001	
SI TANKS SI-6A-6D ; SUPPLY OUTBOARD ISOLATION VALVE								(D8)				STC	Q		OP-ST-NG-3001	
												LJ-C	60 mo		IC-ST-AE-3142	
												PIT	2YR		OP-ST-VX-3014	
HCV-2603B	2	N	A	A	1	GL	A	M-42-1	NC	C	FC	FSTC	Q		OP-ST-NG-3001	
SI TANKS SI-6A-6D ; SUPPLY INBOARD ISOLATION VALVE								(D8)				STC	Q		OP-ST-NG-3001	
												LJ-C	60 mo		IC-ST-AE-3142	
												PIT	2YR		OP-ST-VX-3014	
HCV-2604A	2	N	A	A	1	GL	A	M-42-1	NC	C	FC	FSTC	Q		OP-ST-NG-3001	
REACTOR COOLANT DRAIN TANK WD-1 ; PRESSURIZER QUENCH TANK RC-5 ;								(D5)				STC	Q		OP-ST-NG-3001	
												LJ-C	60 mo		IC-ST-AE-3143	
												PIT	2YR		OP-ST-VX-3014	
HCV-2604B	2	N	A	A	1	GL	A	M-42-1	NC	C	FC	FSTC	Q		OP-ST-NG-3001	
REACTOR COOLANT DRAIN TANK WD-1 ; PRESSURIZER QUENCH TANK RC-5 ;								(D5)				STC	Q		OP-ST-NG-3001	
												LJ-C	60 mo		IC-ST-AE-3143	
												PIT	2YR		OP-ST-VX-3014	
NG-142	2	N	A/C	A	1	CK	C	M-42-1	NC	C	N/A	BDO	CS		OP-ST-NG-3002	
SAFETY INJECTION TANK SI-6A ; SUPPLY CHECK VALVE								(F5)				CVC-FP	CS		OP-ST-NG-3002	
												CVC-IP	CS		OP-ST-NG-3002	
												CVC-PD	CS		OP-ST-NG-3002	
												CVC-Time	CS	J - 35	OP-ST-NG-3002	
												LT1	2YR		OP-ST-NG-3002	
NG-144	2	N	A/C	A	1	CK	C	M-42-1	NC	C	N/A	BDO	CS		OP-ST-NG-3002	
SAFETY INJECTION TANK SI-6B ; SUPPLY CHECK VALVE								(F6)				CVC-FP	CS		OP-ST-NG-3002	
												CVC-IP	CS		OP-ST-NG-3002	
												CVC-PD	CS		OP-ST-NG-3002	
												CVC-Time	CS	J - 35	OP-ST-NG-3002	
												LT1	2YR		OP-ST-NG-3002	
NG-146	2	N	A/C	A	1	CK	C	M-42-1	NC	C	N/A	BDO	CS		OP-ST-NG-3002	
SAFETY INJECTION TANK SI-6C ; SUPPLY CHECK VALVE								(F7)				CVC-FP	CS		OP-ST-NG-3002	
												CVC-IP	CS		OP-ST-NG-3002	
												CVC-PD	CS		OP-ST-NG-3002	
												CVC-Time	CS	J - 35	OP-ST-NG-3002	
												LT1	2YR		OP-ST-NG-3002	

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Valve Table

NG - Nitrogen Gas System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
NG-148	2	N	A/C	A	1	CK	C	M-42-1 (F7)	NC	C	N/A	BDO	CS		OP-ST-NG-3002	
SAFETY INJECTION TANK SI-6D ; SUPPLY CHECK VALVE												CVC-FP	CS		OP-ST-NG-3002	
												CVC-IP	CS		OP-ST-NG-3002	
												CVC-PD	CS		OP-ST-NG-3002	
												CVC-Time	CS	J - 35	OP-ST-NG-3002	
												LT1	2YR		OP-ST-NG-3002	
NG-HCV-344-S2	2	N	C	A	0.75	RL	R	C-4175-5 (E2)	NC	O/C	N/A	RV	R06		PE-ST-VX-3006	
HCV-344 NITROGEN SUPPLY ; RELIEF VALVE																
NG-HCV-345-S2	2	N	C	A	0.75	RL	R	C-4175-5 (E2)	NC	O/C	N/A	RV	R06		PE-ST-VX-3006	
HCV-345 NITROGEN SUPPLY RELIEF VALVE																
NG-HCV-400A-S2	3	N	C	A	0.25	RL	R	C-4175-6 (F2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NITROGEN ACCUMULATOR IA-93A LOW PRESSURE RELIEF VALVE																
NG-HCV-400B-S2	3	N	C	A	0.25	RL	R	C-4175-6 (F2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NITROGEN ACCUMULATOR IA-93B LOW PRESURE RELIEF VALVE																
NG-HCV-401A-S2	3	N	C	A	0.25	RL	R	C-4175-6 (F2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NITROGEN ACCUMULATOR IA-93C LOW PRESSURE RELIEF VALVE																
NG-HCV-401B-S2	3	N	C	A	0.25	RL	R	C-4175-6 (F2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NITROGEN ACCUMULATOR IA-93D LOW PRESSURE RELIEF VALVE																
NG-HCV-402A-S2	3	N	C	A	0.25	RL	R	C-4175-6 (E2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NITROGEN ACCUMULATOR IA-93E LOW PRESSURE RELIEF VALVE																
NG-HCV-402B-S2	3	N	C	A	0.25	RL	R	C-4175-6 (E2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NITROGEN ACCUMULATOR IA-93F LOW PRESSURE RELIEF VALVE																
NG-HCV-403A-S2	3	N	C	A	0.25	RL	R	C-4175-6 (E2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NITROGEN ACCUMULATOR IA-93G LOW PRESSURE RELIEF VALVE																

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Valve Table

NG - Nitrogen Gas System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
NG-HCV-403B-S2 NITROGEN ACCUMULATOR IA-93H LOW PRESSURE RELIEF VALVE	3	N	C	A	0.25	RL	R	C-4175-6 (E2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NG-HCV-438B-S2 CCW INLET VALVE HCV-438B NITROGEN ACCUMULATOR SUPPLY LOW	3	N	C	A	0.25	RL	R	C-4175-6 (D2)	NC	O/C	N/A	RV	R06		PE-ST-VX-3006	
NG-HCV-438D-S2 CCW OUTLET VALVE HCV-438D NITROGEN ACCUMULATOR SUPPLY LOW	3	N	C	A	0.25	RL	R	C-4175-6 (D2)	NC	O/C	N/A	RV	R06		PE-ST-VX-3006	
NG-HCV-480-S2 NITROGEN ACCUMULATOR IA-91 LOW PRESSURE RELIEF VALVE	3	N	C	A	0.25	RL	R	C-4175-6 (B2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NG-HCV-481-S2 NITROGEN ACCUMULATOR IA-92 LOE PRESSURE RELIEF VALVE	3	N	C	A	0.25	RL	R	C-4175-6 (B2)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3006	
NG-LCV-383-1-S2 LCV-383-1 NITROGEN SUPPLY ; RELIEF VALVE	3	N	C	A	0.75	RL	R	C-4175-5 (E2)	NC	O/C	N/A	RV	R06		PE-ST-VX-3006	
NG-LCV-383-2-S2 LCV-383-2 NITROGEN SUPPLY ; RELIEF VALVE	3	N	C	A	0.75	RL	R	C-4175-5 (E2)	NC	O/C	N/A	RV	R06		PE-ST-VX-3006	

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Valve Table

RC - Reactor Coolant System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-150	1	N	B	A	2.5	GA	M	210-110-1A	NO	O/C	FAI	STC	Q		OP-ST-RC-3002	
PRESSURIZER RC-4 ; RELIEF ISOLATION VALVE								(D8)				STC	Q		OP-ST-RC-3002 / 3003	
												PIT	2YR		OP-ST-RC-3003	
HCV-151	1	N	B	A	2.5	GA	M	210-110-1A	NO	O/C	FAI	STC	Q		OP-ST-RC-3002	
PRESSURIZER RC-4 ; RELIEF ISOLATION VALVE								(D7)				STC	Q		OP-ST-RC-3002 / 3003	
												PIT	2YR		OP-ST-RC-3003	
HCV-176	2	N	B	A	1	GL	S	D-4078	LC	O/C	FC	FSTC	CS		OP-ST-RC-3005	
REACTOR VESSEL RC-1 RCGVS HEAD VENT VALVE								(E5)				STC	CS	J - 08	OP-ST-RC-3005	
												STO	CS	J - 08	OP-ST-RC-3005	
												PIT	2YR		OP-ST-RC-3006	
HCV-177	2	N	B	A	1	GL	S	D-4078	LC	O/C	FC	FSTC	CS		OP-ST-RC-3005	
REACTOR VESSEL RC-1 RCGVS HEAD VENT VALVE HCV-176 BYPASS VALVE								(D5)				STC	CS	J - 08	OP-ST-RC-3005	
												STO	CS	J - 08	OP-ST-RC-3005	
												PIT	2YR		OP-ST-RC-3006	
HCV-178	2	N	B	A	1	GL	S	D-4078	LC	O/C	FC	FSTC	CS		OP-ST-RC-3005	
PRESSURIZER RC-4 VENT STOP VALVE								(C5)				STC	CS	J - 08	OP-ST-RC-3005	
												STO	CS	J - 08	OP-ST-RC-3005	
												PIT	2YR		OP-ST-RC-3006	
HCV-179	2	N	B	A	1	GL	S	D-4078	LC	O/C	FC	FSTC	CS		OP-ST-RC-3005	
PRESSURIZER RC-4 VENT VALVE HCV-178 TO RCGVS BYPASS VALVE								(B5)				STC	CS	J - 08	OP-ST-RC-3005	
												STO	CS	J - 08	OP-ST-RC-3005	
												PIT	2YR		OP-ST-RC-3006	
HCV-180	2	N	B	A	1	GL	S	D-4078	LC	O/C	FC	FSTC	CS		OP-ST-RC-3005	
RCGVS VENT VALVE TO PRESSURIZER QUENCH TANK RC-5								(E3)				STC	CS	J - 08	OP-ST-RC-3005	
												STO	CS	J - 08	OP-ST-RC-3005	
												PIT	2YR		OP-ST-RC-3006	
HCV-181	2	N	B	A	1	GL	S	D-4078	LC	O/C	FC	FSTC	CS		OP-ST-RC-3005	
RCGVS VENT VALVE TO ; CONTAINMENT ATMOSPHERE								(C3)				STC	CS	J - 08	OP-ST-RC-3005	
												STO	CS	J - 08	OP-ST-RC-3005	
												PIT	2YR		OP-ST-RC-3006	
PCV-102-1	1	N	B	A	2.5	GL	S	210-110-1A	NC	O/C	FC	FSTC	RO		OP-ST-RC-3004	
PZR POWER OPERATED RELIEF VALVE								(E7)				STC	RO		OP-ST-RC-3004	
												STO	RO		OP-ST-RC-3004	
												PIT	2YR		OP-ST-RC-3004	

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Valve Table

RC - Reactor Coolant System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PCV-102-2	1	N	B	A	2.5	GL	S	210-110-1A (E8)	NC	O/C	FC	FSTC	RO		OP-ST-RC-3004	
PRESSURIZER ; POWER OPERATED RELIEF VALVE												STC	RO		OP-ST-RC-3004	
												STO	RO		OP-ST-RC-3004	
												PIT	2YR		OP-ST-RC-3004	
RC-141	1	N	C	A	3	RL	R	210-110-1A (F6)	NC	O/C	N/A	RV	RO		SE-ST-RC-3002	
PRESSURIZER RC-4 RELIEF VALVE																
RC-142	1	N	C	A	3	RL	R	210-110-1A (F6)	NC	O/C	N/A	RV	RO		SE-ST-RC-3002	
PRESSURIZER RC-4 RELIEF VALVE																
RC-374	1	N	A/C	A	4	CK	C	210-110-1A (E4)	NO	C	N/A	BDO	RO		OI-RC-7	
PRESSURIZER RC-4 ; SPRAY LINE CHECK VALVE												CVC-FP	RO		OP-ST-SI-3007	
												CVC-IP	RO		OP-ST-SI-3007	
												CVC-PD	RO		OP-ST-SI-3007	
												CVC-Time	RO	J - 36	OP-ST-SI-3007	
												LT	2YR		OP-ST-SI-3007	

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Valve Table

RW - Raw Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2808C LPSI PUMP SI-1A BRG CLR ; RAW WATER INLET VALVE	3	Y	B	P	1.5	GL	A	M-10-4 (D5)	LC	C	N/A	SC SO	RO RO	OP-ST-RW-3003 OP-ST-RW-3003	
HCV-2808D LPSI PUMP SI-1A BRG CLR ; RAW WATER OUTLET VALVE	3	Y	B	P	1.5	GL	A	M-10-4 (A5)	LC	C	N/A	SC SO	RO RO	OP-ST-RW-3003 OP-ST-RW-3003	
HCV-2809C LPSI PUMP SI-1B BRG CLR ; RAW WATER INLET VALVE	3	Y	B	P	1.5	GL	A	M-10-4 (D4)	LC	C	N/A	SC SO	RO RO	OP-ST-RW-3003 OP-ST-RW-3003	
HCV-2809D LPSI PUMP SI-1B BRG CLR ; RAW WATER OUTLET VALVE	3	Y	B	P	1.5	GL	A	M-10-4 (B4)	LC	C	N/A	SC SO	RO RO	OP-ST-RW-3003 OP-ST-RW-3003	
HCV-2850 RAW WATER PUMP AC-10A ; DISCHARGE VALVE	3	N	B	A	20	BU	A	M-100-1 (B7)	O/C	O	FO	FSTO STO PIT	Q Q 2YR	OP-ST-RW-3002A OP-ST-RW-3002A OP-ST-VX-3017A	
HCV-2851 RAW WATER PUMP AC-10B ; DISCHARGE VALVE	3	N	B	A	20	BU	A	M-100-1 (B6)	O/C	O	FO	FSTO STO PIT	Q Q 2YR	OP-ST-RW-3002A OP-ST-RW-3002A OP-ST-VX-3017A	
HCV-2852 RAW WATER PUMP AC-10C ; DISCHARGE VALVE	3	N	B	A	20	BU	A	M-100-1 (B5)	O/C	O	FO	FSTO STO PIT	Q Q 2YR	OP-ST-RW-3002A OP-ST-RW-3002A OP-ST-VX-3017A	
HCV-2853 RAW WATER PUMP AC-10D ; DISCHARGE VALVE	3	N	B	A	20	BU	A	M-100-1 (B4)	O/C	O	FO	FSTO STO PIT	Q Q 2YR	OP-ST-RW-3002A OP-ST-RW-3002A OP-ST-VX-3017A	
HCV-2874A RAW WATER PUMPS ; DISCH HEADER ISOLATION VALVE	3	N	B	A	20	BU	A	M-100-1 (B6)	NO	O	FO	FSTO STC STO PIT	Q Q Q 2YR	OP-ST-RW-3002A OP-ST-RW-3002A OP-ST-RW-3002A OP-ST-VX-3017A	
HCV-2874B RAW WATER PUMPS ; DISCH HEADER ISOLATION VALVE	3	N	B	A	20	BU	A	M-100-1 (B6)	NO	O	FO	FSTO STC STO PIT	Q Q Q 2YR	OP-ST-RW-3002B OP-ST-RW-3002B OP-ST-RW-3002B OP-ST-VX-3017B	

Fort Calhoun

Valve Table

RW - Raw Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2875A	3	N	B	A	20	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002A	
RAW WATER PUMPS ; DISCH HEADER ISOLATION VALVE								(B6)				STC	Q	OP-ST-RW-3002A	
												STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	
HCV-2875B	3	N	B	A	20	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002B	
RAW WATER PUMPS ; DISCH HEADER ISOLATION VALVE								(B5)				STC	Q	OP-ST-RW-3002B	
												STO	Q	OP-ST-RW-3002B	
												PIT	2YR	OP-ST-VX-3017B	
HCV-2876A	3	N	B	A	20	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002A	
RAW WATER PUMPS ; DISCH HEADER ISOLATION VALVE								(B5)				STC	Q	OP-ST-RW-3002A	
												STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	
HCV-2876B	3	N	B	A	20	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002B	
RAW WATER PUMPS ; DISCH HEADER ISOLATION VALVE								(B5)				STC	Q	OP-ST-RW-3002B	
												STO	Q	OP-ST-RW-3002B	
												PIT	2YR	OP-ST-VX-3017B	
HCV-2877A	3	N	B	A	14	BU	A	M-100-1	NO	O/C	FO	FSTO	Q	OP-ST-RW-3002A	
COMP CLG HT EXCHS AC-1A-D ; RAW WATER INLET HEADER ; ISOLATION								(E4)				STC	Q	OP-ST-RW-3002A	
												STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	
HCV-2877B	3	N	B	A	14	BU	A	M-100-1	NO	O/C	FO	FSTO	Q	OP-ST-RW-3002B	
COMP CLG HT EXCHS AC-1A-D ; RAW WATER INLET HEADER ; ISOLATION								(E4)				STC	Q	OP-ST-RW-3002B	
												STO	Q	OP-ST-RW-3002B	
												PIT	2YR	OP-ST-VX-3017B	
HCV-2879A	3	N	B	A	14	BU	A	M-100-1	NO	O/C	FO	FSTO	Q	OP-ST-RW-3002A	
COMP CLG HT EXCHS AC-1A-D ; RAW WATER INLET HEADER ; ISOLATION								(C4)				STC	Q	OP-ST-RW-3002A	
												STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	
HCV-2879B	3	N	B	A	14	BU	A	M-100-1	NO	O/C	FO	FSTO	Q	OP-ST-RW-3002B	
COMP CLG HT EXCHS AC-1A-D ; RAW WATER INLET HEADER ; ISOLATION								(C4)				STC	Q	OP-ST-RW-3002B	
												STO	Q	OP-ST-RW-3002B	
												PIT	2YR	OP-ST-VX-3017B	
HCV-2880A	3	N	B	A	12	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002A	
COMP COOLING HT EXCH AC-1A ; RAW WATER INLET VALVE								(E3)				STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	

Fort Calhoun

Valve Table

RW - Raw Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2880B	3	N	B	A	12	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002B	
COMP COOLING HT EXCH AC-1A ; RAW WATER OUTLET VALVE								(E1)				STO	Q	OP-ST-RW-3002B	
												PIT	2YR	OP-ST-VX-3017B	
HCV-2881A	3	N	B	A	12	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002A	
COMP COOLING HT EXCH AC-1B ; RAW WATER INLET VALVE								(C3)				STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	
HCV-2881B	3	N	B	A	12	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002B	
COMP COOLING HT EXCH AC-1B ; RAW WATER OUTLET VALVE								(C1)				STO	Q	OP-ST-RW-3002B	
												PIT	2YR	OP-ST-VX-3017B	
HCV-2882A	3	N	B	A	12	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002A	
COMP COOLING HT EXCH AC-1C ; RAW WATER INLET VALVE								(F3)				STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	
HCV-2882B	3	N	B	A	12	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002B	
COMP COOLING HT EXCH AC-1C ; RAW WATER OUTLET VALVE								(F1)				STO	Q	OP-ST-RW-3002B	
												PIT	2YR	OP-ST-VX-3017B	
HCV-2883A	3	N	B	A	12	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002A	
COMP COOLING HT EXCH AC-1D ; RAW WATER INLET VALVE								(B3)				STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	
HCV-2883B	3	N	B	A	12	BU	A	M-100-1	NO	O	FO	FSTO	Q	OP-ST-RW-3002B	
COMP COOLING HT EXCH AC-1D ; RAW WATER OUTLET VALVE								(B1)				STO	Q	OP-ST-RW-3002B	
												PIT	2YR	OP-ST-VX-3017B	
HCV-2893	3	N	B	A	16	BU	A	M-100-1	NO	O/C	FO	FSTO	Q	OP-ST-RW-3002A	
RAW WATER TO CCW ; ISOLATION VALVE								(E4)				STC	Q	OP-ST-RW-3002A	
												STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	
HCV-2894	3	N	B	A	16	BU	A	M-100-1	NO	O/C	FO	FSTO	Q	OP-ST-RW-3002A	
RAW WATER TO CCW ; ISOLATION VALVE								(E4)				STC	Q	OP-ST-RW-3002A	
												STO	Q	OP-ST-RW-3002A	
												PIT	2YR	OP-ST-VX-3017A	
HCV-2898C	3	Y	B	P	2	GL	A	M-10-1	LC	C	N/A	SC	RO	OP-ST-RW-3003	
CONTROL ROOM VA UNIT VA-46A ; RAW WATER INLET VALVE								(D6)				SO	RO	OP-ST-RW-3003	

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Valve Table

RW - Raw Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2898D CONTROL ROOM VA UNIT VA-46A ; RAW WATER OUTLET VALVE	3	Y	B	P	2	GL	A	M-10-1 (D4)	LC	C	N/A	SC SO	RO RO		OP-ST-RW-3003 OP-ST-RW-3003	
HCV-2899C RAW WATER INLET TO CONTROL ROOM AIR COND VA-46B	3	Y	B	P	2	GL	A	M-10-1 (C6)	LC	C	N/A	SC SO	RO RO		OP-ST-RW-3003 OP-ST-RW-3003	
HCV-2899D CONTROL ROOM VA UNIT VA-46B ; RAW WATER OUTLET VALVE	3	Y	B	P	2	GL	A	M-10-1 (C4)	LC	C	N/A	SC SO	RO RO		OP-ST-RW-3003 OP-ST-RW-3003	
HCV-482A SHUTDOWN COOLING HT EXCH AC-4A ; BACK-UP RAW WATER INLET VALVE	3	Y	B	P	14	BU	A	M-10-3 (C5)	LC	C	N/A	SC SO	RO RO		OP-ST-RW-3003 OP-ST-RW-3003	
HCV-482B SHUTDOWN COOLING HT EXCH AC-4A ; BACK-UP RAW WATER OUTLET VALVE	3	Y	B	P	14	BU	A	M-10-3 (A4)	LC	C	N/A	SC SO	RO RO		OP-ST-RW-3003 OP-ST-RW-3003	
HCV-483A SHUTDOWN COOLING HT EXCH AC-4B ; BACK-UP RAW WATER INLET VALVE	3	Y	B	P	14	BU	A	M-10-3 (B/E)	LC	C	N/A	SC SO	RO RO		OP-ST-RW-3003 OP-ST-RW-3003	
HCV-483B SHUTDOWN COOLING HT EXCH AC-4B ; BACK-UP RAW WATER OUTLET VALVE	3	Y	B	P	14	BU	A	M-10-3 (A5)	LC	C	N/A	SC SO	RO RO		OP-ST-RW-3003 OP-ST-RW-3003	
RW-115 RAW WATER PUMP AC-10D ; DISCHARGE CHECK VALVE	3	N	C	A	20	CK	C	M-100-1 (B4)	O/C	O/C	N/A	CVC-PT CVC-PT-Flow CVO	Q Q Q		OP-ST-RW-3004 OP-ST-RW-3004 OP-ST-RW-3031	
RW-117 RAW WATER PUMP AC-10C ; DISCHARGE CHECK VALVE	3	N	C	A	20	CK	C	M-100-1 (B5)	O/C	O/C	N/A	CVC-PT CVC-PT-Flow CVO	Q Q Q		OP-ST-RW-3004 OP-ST-RW-3004 OP-ST-RW-3021	
RW-121 RAW WATER PUMP AC-10B ; DISCHARGE CHECK VALVE	3	N	C	A	20	CK	C	M-100-1 (B6)	O/C	O/C	N/A	CVC-PT CVC-PT-Flow CVO	Q Q Q		OP-ST-RW-3004 OP-ST-RW-3004 OP-ST-RW-3011	

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Valve Table

RW - Raw Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency RR/CSJ/ROJ	Procedure	Comments / Notes
RW-125	3	N	C	A	20	CK	C	M-100-1	O/C	O/C	N/A	CVC-PT	Q	OP-ST-RW-3004	
RAW WATER PUMP AC-10A ; DISCHARGE CHECK VALVE								(B7)				CVC-PT-Flow	Q	OP-ST-RW-3004	
												CVO	Q	OP-ST-RW-3001	
RW-220	3	N	C	A	0.75	RL	R	M-100-1	NC	O/C	N/A	RV	Y08	PE-ST-VX-3008	
CCW HEAT EXCHANGER AC-1C ; PRESSURE RELIEF VALVE								(F3)							
RW-221	3	N	C	A	0.75	RL	R	M-100-1	NC	O/C	N/A	RV	Y08	PE-ST-VX-3008	
CCW HEAT EXCHANGER AC-1A ; PRESSURE RELIEF VALVE								(E3)							
RW-222	3	N	C	A	0.75	RL	R	M-100-1	NC	O/C	N/A	RV	Y08	PE-ST-VX-3008	
CCW HEAT EXCHANGER AC-1B ; PRESSURE RELIEF VALVE								(D3)							
RW-223	3	N	C	A	0.75	RL	R	M-100-1	NC	O/C	N/A	RV	Y08	PE-ST-VX-3008	
CCW HEAT EXCHANGER AC-1D ; PRESSURE RELIEF VALVE								(C3)							
RW-254	3	N	C	A	0.75	CK	C	M-100-1	O/C	O	N/A	BDC	Q	IC-ST-RW-3001	
RAW WATER PUMP AC-10A BACKUP SEAL WATER CHECK VALVE								(A7)				CVO	Q	IC-ST-RW-3001	
RW-255	3	N	C	A	0.75	CK	C	M-100-1	O/C	O	N/A	BDC	Q	IC-ST-RW-3001	
RAW WATER PUMP AC-10B BACKUP SEAL WATER CHECK VALVE								(A6)				CVO	Q	IC-ST-RW-3001	
RW-256	3	N	C	A	0.75	CK	C	M-100-1	O/C	O	N/A	BDC	Q	IC-ST-RW-3001	
RAW WATER PUMP AC-10C BACKUP SEAL WATER CHECK VALVE								(A5)				CVO	Q	IC-ST-RW-3001	
RW-257	3	N	C	A	0.75	CK	C	M-100-1	O/C	O	N/A	BDC	Q	IC-ST-RW-3001	
RAW WATER PUMP AC-10D BACKUP SEAL WATER CHECK VALVE								(A4)				CVO	Q	IC-ST-RW-3001	
SW-240	3	N	A/C	A	0.5	CK	C	M-259-2	O/C	C	N/A	BDO	Q	IC-ST-RW-3001	
RAW WATER PUMP AC-10A PRIMARY SEAL WATER CHECK VALVE								(A2)				CVC-FP	Q	IC-ST-RW-3001	
												CVC-IP	Q	IC-ST-RW-3001	
												CVC-PD	Q	IC-ST-RW-3001	
												CVC-Time	Q	IC-ST-RW-3001	
												LT	2YR	IC-ST-RW-3001	

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Valve Table

RW - Raw Water System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SW-241	3	N	A/C	A	0.5	CK	C	M-259-2	O/C	C	N/A	BDO	Q		IC-ST-RW-3001	
RAW WATER PUMP AC-10B PRIMARY SEAL WATER CHECK VALVE								(A4)				CVC-FP	Q		IC-ST-RW-3001	
												CVC-IP	Q		IC-ST-RW-3001	
												CVC-PD	Q		IC-ST-RW-3001	
												CVC-Time	Q		IC-ST-RW-3001	
												LT	2YR		IC-ST-RW-3001	
SW-242	3	N	A/C	A	0.5	CK	C	M-259-2	O/C	C	N/A	BDO	Q		IC-ST-RW-3001	
RAW WATER PUMP AC-10C PRIMARY SEAL WATER CHECK VALVE								(A5)				CVC-FP	Q		IC-ST-RW-3001	
												CVC-IP	Q		IC-ST-RW-3001	
												CVC-PD	Q		IC-ST-RW-3001	
												CVC-Time	Q		IC-ST-RW-3001	
												LT	2YR		IC-ST-RW-3001	
SW-243	3	N	A/C	A	0.5	CK	C	M-259-2	O/C	C	N/A	BDO	Q		IC-ST-RW-3001	
RAW WATER PUMP AC-10D PRIMARY SEAL WATER CHECK VALVE								(A6)				CVC-FP	Q		IC-ST-RW-3001	
												CVC-IP	Q		IC-ST-RW-3001	
												CVC-PD	Q		IC-ST-RW-3001	
												CVC-Time	Q		IC-ST-RW-3001	
												LT	2YR		IC-ST-RW-3001	

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Valve Table

SA - (Diesel Generator) Starting Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SA-127 STARTING AIR RECEIVER SA-3A-1 ; RELIEF VALVE	3	N	C	A	0.75	RL	R	B120F07001-1 (E7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3004	
SA-128 STARTING AIR RECEIVER SA-3B-1 ; RELIEF VALVE	3	N	C	A	0.75	RL	R	B120F07001-1 (E7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3004	
SA-129 STARTING AIR RECEIVER SA-4B-1 ; RELIEF VALVE	3	N	C	A	0.75	RL	R	B120F07001-1 (C7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3004	
SA-130 STARTING AIR RECEIVER SA-4A-1 ; RELIEF VALVE	3	N	C	A	0.75	RL	R	B120F07001-1 (B7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3004	
SA-141 DIESEL GENEATOR DG-1 SECONDARY STARTING AIR SOLENOID VALVE	3	N	B	A		SO	A	B120F07001-1 (E3)	O/C	O/C	N/A	Skid	Q	TP - 03	OP-ST-DG-0001	
SA-142 DIESEL GENERATOR DG-1 PRIMARY AIR SYSTEM SOLENOID VALVE	3	N	B	A		SO	A	B120F07001-1 (C3)	O/C	O/C	N/A	Skid	Q	TP - 03	OP-ST-DG-0001	
SA-147 SECONDARY STARTING AIR VALVE	3	N	B	A	1.5	DI	A	B120F07001-1 (D3)	NC	O/C	FC	Skid	Q	TP - 03	OP-ST-DG-0001	
SA-148 PRIMARY STARTING AIR VALVE	3	N	B	A	1.5	DI	A	B120F07001-1 (C3)	NC	O/C	FC	Skid	Q	TP - 03	OP-ST-DG-0002	
SA-177 SECONDARY RECEIVER SA-3A-2 RELIEF VALVE	3	N	C	A	0.75	RL	R	B120F07001-2 (E7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3004	
SA-178 STARTING AIR RECEIVER SA-3B-2 ; RELIEF VALVE	3	N	C	A	0.75	RL	R	B120F07001-2 (E7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3004	

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Valve Table

SA - (Diesel Generator) Starting Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SA-179 STARTING AIR RECEIVER SA-4B-2 ; RELIEF VALVE	3	N	C	A	0.75	RL	R	B120F07001-2 (C7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3004	
SA-180 STARTING AIR RECEIVER SA-4A-2 ; RELIEF VALVE	3	N	C	A	0.75	RL	R	B120F07001-2 (B7)	NC	O/C	N/A	RV	Y08		PE-ST-VX-3004	
SA-191 DIESEL GENERATOR DG-2 SECCONDARY STARTING AIR SOLENOID VALVE	3	N	B	A		SO	A	B120F07001-2 (C3)	O/C	O/C	N/A	Skid	Q	TP - 03	OP-ST-DG-0002	
SA-192 DIESEL GENERATOR DG-2 PRIMARY STARTING AIR SOLENOID VALVE	3	N	B	A		SO	A	B120F07001-2 (C3)	O/C	O/C	N/A	Skid	Q	TP - 03	OP-ST-DG-0002	
SA-197 SECONDARY AIR STARTING VALVE	3	N	B	A	1.5	DI	A	B120F07001-2 (D3)	NC	O/C	FC	Skid	Q	TP - 03	OP-ST-DG-0002	
SA-198 PRIMARY AIR STARTING VALVE	3	N	B	A	1.5	DI	A	B120F07001-2 (C3)	NC	O/C	FC	Skid	Q	TP - 03	OP-ST-DG-0002	
SA-202 STARTING AIR STARTING VALVE SA-147 CHECK VALVE	3	N	C	A	0.25	CK	C	B120F07001-1 (E3)	O/C	O/C	N/A	Skid	Q	TP - 03	OP-ST-DG-0001	
SA-203 STARTING AIR STARTING VALVE SA-148 CHECK VALVE	3	N	C	A	0.25	CK	C	B120F07001-1 (C3)	O/C	O/C	N/A	Skid	Q	TP - 03	OP-ST-DG-0001	
SA-252 STARTING AIR STARTING VALVE SA-197 CHECK VALVE	3	N	C	A	0.25	CK	C	B120F07001-2 (E3)	O/C	O/C	N/A	Skid	Q	TP - 03	OP-ST-DG-0002	
SA-253 STARTING AIR STARTING VALVE SA-198 CHECK VALVE	3	N	C	A	0.25	CK	C	B120F07001-2 (C3)	O/C	O/C	N/A	Skid	Q	TP - 03	OP-ST-DG-0002	

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Valve Table

SA - (Diesel Generator) Starting Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position Normal	Position Safety	Position Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SA-282	3	N	A/C	A	0.5	CK	C	B120F07001-1	NC	C	N/A	BDO	Q		IC-ST-SA-3001A	
PRIMARY STARTING AIR SYSTEM ; AIR RECEIVER SA-4B-1 ; INLET CHECK (B7)												CVC-SA	Q		IC-ST-SA-3001A	
												LT1	2YR		IC-ST-SA-3001A	
SA-285	3	N	A/C	A	0.5	CK	C	B120F07001-1	NC	C	N/A	BDO	Q		IC-ST-SA-3001A	
SECONDARY STARTING AIR SYSTEM ; AIR RECEIVER SA-3B-1 ; INLET CHECK (C7)												CVC-SA	Q		IC-ST-SA-3001A	
												LT1	2YR		IC-ST-SA-3001A	
SA-288	3	N	A/C	A	0.5	CK	C	B120F07001-2	NC	C	N/A	BDO	Q		IC-ST-SA-3001B	
PRIMARY STARTING AIR SYSTEM ; AIR RECEIVER SA-4B-2 ; INLET CHECK (B7)												CVC-SA	Q		IC-ST-SA-3001B	
												LT1	2YR		IC-ST-SA-3001B	
SA-291	3	N	A/C	A	0.5	CK	C	B120F07001-2	NC	C	N/A	BDO	Q		IC-ST-SA-3001B	
SECONDARY STARTING AIR SYSTEM ; AIR RECEIVER SA-3B-2 ; INLET CHECK (C7)												CVC-SA	Q		IC-ST-SA-3001B	
												LT1	2YR		IC-ST-SA-3001B	

Fort Calhoun

Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
FCV-326 SHUTDOWN CLG HT EXCHS AC-4A & 4B LPSI BYPASS FLOW CONTROL VALVE	2	N	B	P	12"	GL	A	210-130-1 (A7)	LO	O	FO	PIT	2YR		OP-ST-VX-3019	
HCV-2907 HPSI PUMP SI-2B ; SUCTION VALVE	2	N	B	P	6"	GA	A	210-130-3 (C2)	LO	O	FO	PIT	2YR		OP-ST-VX-3019	
HCV-2908 HPSI PUMP SI-2B ; DISCHARGE VALVE	2	N	B	P	4"	GA	A	210-130-3 (C4)	LO	O	FO	PIT	2YR		OP-ST-SI-3022	
HCV-2914 SAFETY INJECTION TANK SI-6A ; OUTLET VALVE	2	N	B	P	12"	GA	M	210-130-2 (B3)	LO	O	FAI	PIT	2YR		OP-ST-SI-3026	
HCV-2916 SAFETY INJECTION TANK SI-6A ; FILL/DRAIN VALVE	2	N	B	A	1	GL	A	210-130-2 (C5)	NC	C	FC	FSTC STC PIT	Q Q 2YR		OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-2917 HPSI PUMP 2C SUCTION ISOLATION VALVE	2	N	B	P	6"	GA	A	210-130-3 (D2)	LO	O	FO	PIT	2YR		OP-ST-VX-3019	
HCV-2918 HPSI PUMP 2C DISCHARGE ISOLATION VALVE	2	N	B	P	4"	GA	A	210-130-3 (D4)	LO	O	FO	PIT	2YR		OP-ST-SI-3021	
HCV-2927 HPSI PUMP 2A SUCTION ISOLATION VALVE	2	N	B	P	6"	GA	A	210-130-3 (F2)	LO	O	FO	PIT	2YR		OP-ST-VX-3019	
HCV-2928 HPSI PUMP SI-2A DISCHARGE VALVE	2	N	B	P	4"	GA	A	210-130-3 (F4)	LO	O	FO	PIT	2YR		OP-ST-SI-3021	
HCV-2934 SAFETY INJECTION TANK SI-6B ; OUTLET VALVE	2	N	B	P	12"	GA	M	210-130-2 (B6)	LO	O	FAI	PIT	2YR		OP-ST-SI-3026	

Fort Calhoun

Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2936 SAFETY INJECTION TANK SI-6B ; FILL/DRAIN VALVE	2	N	B	A	1	GL	A	210-130-2 (C7)	NC	C	FC	FSTC STC PIT	Q Q 2YR	OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-2937 LPSI PUMP SI-1B ; SUCTION VALVE	2	N	B	P	14"	GA	A	210-130-1 (A3)	LO	O	FO	PIT	2YR	OP-ST-VX-3019	
HCV-2938 LPSI PUMP SI-1B ; DISCHARGE VALVE	2	N	B	P	8"	GA	A	210-130-1 (A5)	LO	O	FO	PIT	2YR	OP-ST-SI-3022	
HCV-2947 LPSI PUMP SI-1A ; SUCTION VALVE	2	N	B	P	14"	GA	A	210-130-1 (B2)	LO	O	FO	PIT	2YR	OP-ST-VX-3019	
HCV-2948 LPSI PUMP SI-1A ; DISCHARGE VALVE	2	N	B	P	8"	GA	A	210-130-1 (B5)	LO	O	FO	PIT	2YR	OP-ST-SI-3021	
HCV-2954 SAFETY INJECTION TANK SI-6C ; OUTLET VALVE	2	N	B	P	12"	GA	M	210-130-2B (B6)	LO	O	FAI	PIT	2YR	OP-ST-SI-3026	
HCV-2956 SAFETY INJECTION TANK SI-6C ; FILL/DRAIN VALVE	2	N	B	A	1	GL	A	210-130-2B (C7)	NC	C	FC	FSTC STC PIT	Q Q 2YR	OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-2957 CONTAINMENT SPRAY PUMP 3A SUCTION ISOLATION VALVE	2	N	B	P	12"	GA	A	210-130-1 (C3)	LO	O	FO	PIT	2YR	OP-ST-VX-3019	
HCV-2958 CONTAINMENT SPRAY PUMP SI-3A DISCHARGE VALVE	2	N	B	P	8"	GA	A	210-130-1 (C5)	LO	O	FO	PIT	2YR	OP-ST-SI-3021	
HCV-2967 CONTAINMENT SPRAY PUMP SI-3B ; SUCTION VALVE	2	N	B	P	12"	GA	A	210-130-1 (D3)	LO	O	FO	PIT	2YR	OP-ST-VX-3019	

Fort Calhoun

Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2968 CONTAINMENT SPRAY PUMP SI-3B ; DISCHARGE VALVE	2	N	B	P	8"	GA	A	210-130-1 (D5)	LO	O	FO	PIT	2YR		OP-ST-SI-3021	
HCV-2974 SI-TANK SI-6D ; OUTLET ISOLATION VALVE	2	N	B	P	12"	GA	M	210-130-2B (B2)	LO	O	FAI	PIT	2YR		OP-ST-SI-3026	
HCV-2976 SAFETY INJECTION TANK SI-6D ; FILL/DRAIN VALVE	2	N	B	A	1	GL	A	210-130-2B (C4)	NC	C	FC	FSTC STC PIT	Q Q 2YR		OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-2977 CONTAINMENT SPRAY PUMP SI-3C ; SUCTION VALVE	2	N	B	P	12"	GA	A	210-130-1 (E3)	LO	O	FO	PIT	2YR		OP-ST-VX-3019	
HCV-2978 CONTAINMENT SPRAY PUMP SI-3C ; DISCHARGE VALVE	2	N	B	P	8"	GA	A	210-130-1 (E5)	LO	O	FO	PIT	2YR		OP-ST-SI-3022	
HCV-2983 SAFETY INJECTION LEAKAGE TO ; CVCS ISOLATION VALVE	2	N	A	A	2	GL	A	210-130-1 (E8)	NC	C	FC	FSTC STC LJ-C PIT	Q Q 60 mo 2YR		OP-ST-SI-3001 OP-ST-SI-3001 IC-ST-AE-3122 OP-ST-VX-3018	
HCV-2987 HPSI ALTERNATE HEADER ISOLATION VALVE	2	N	B	A	4	GA	A	210-130-3 (E8)	NO	O/C	O/C	FSTO STC STO PIT	Q Q Q 2YR		OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-2988 CHARGING PMPS CH-1A,B&C DISCH TO; HPSI HEADER ISOL VLV HCV-308	2	N	B	A	2	GA	S	210-130-3 (D6)	NC	O/C	FC	FSTC STC STO PIT	Q Q Q 2YR		OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-304 HPSI PUMP SI-2B&C DISCHARGE CROSSCONNECT VALVE	2	N	B	P	4"	GA	A	210-130-3 (D5)	LO	O	FO	PIT	2YR		OP-ST-VX-3019	
HCV-305 HPSI PUMP SI-2A&C DISCHARGE CROSSCONNECT VALVE	2	N	B	P	4"	GA	A	210-130-3 (E5)	LO	O	FO	PIT	2YR		OP-ST-VX-3019	

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Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-306 HPSI HEADER ISOLATION VALVE	2	N	B	P	4"	GA	A	210-130-3 (C6)	LO	O	FO	PIT	2YR	OP-ST-VX-3019	
HCV-307 HPSI HEADER ISOLATION VALVE	2	N	B	P	4'	GA	A	210-130-3 (F6)	LO	O	FO	PIT	2YR	OP-ST-VX-3019	
HCV-308 HPSI HEADER, CHARGING HEADER CROSSTIE VALVE	2	N	B	A	2	GA	M	210-130-3 (D6)	NC	O/C	FAI	STC STO PIT	Q Q 2YR	OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-311 HPSI TO RC LOOP 1B ; ISOLATION VALVE	2	N	B	A	2	GL	M	210-130-2A (C3)	NC	O	FAI	STO PIT	Q 2YR	OP-ST-SI-3001 OP-ST-VX-3018	
HCV-312 HPSI TO RC LOOP 1B ; ISOLATION VALVE	2	N	B	A	2	GL	M	210-130-2A (C4)	NC	O/C	FAI	STC STO PIT	Q Q 2YR	OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-314 HPSI TO RC LOOP 1A ; ISOLATION VALVE	2	N	B	A	2	GL	M	210-130-2A (C5)	NC	O	FAI	STO PIT	Q 2YR	OP-ST-SI-3001 OP-ST-VX-3018	
HCV-315 HPSI TO RC LOOP 1A ; ISOLATION VALVE	2	N	B	A	2	GL	M	210-130-2A (C5)	NC	O/C	FAI	STC STO PIT	Q Q 2YR	OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-317 HPSI TO RC LOOP 2A ; ISOLATION VALVE	2	N	B	A	2	GL	M	210-130-2A (C8)	NC	O	FAI	STO PIT	Q 2YR	OP-ST-SI-3001 OP-ST-VX-3018	
HCV-318 HPSI TO RC LOOP 2A ; ISOLATION VALVE	2	N	B	A	2	GL	M	210-130-2A (C8)	NC	O/C	FAI	STC STO PIT	Q Q 2YR	OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-320 HPSI TO RC LOOP 2B ; ISOLATION VALVE	2	N	B	A	2	GL	M	210-130-2A (C6)	NC	O	FAI	STO PIT	Q 2YR	OP-ST-SI-3001 OP-ST-VX-3018	

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Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-321 HPSI TO RC LOOP 2B ; ISOLATION VALVE	2	N	B	A	2	GL	M	210-130-2A (C7)	NC	O/C	FAI	STC STO PIT	Q Q 2YR		OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-327 LPSI TO RC LOOP 1B ; ISOLATION VALVE	2	N	B	A	4	GL	M	210-130-2A (C3)	NC	O/C	FAI	STC STO PIT	Q Q 2YR		OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-329 LPSI TO RC LOOP 1A ; ISOLATION VALVE	2	N	B	A	4	GL	M	210-130-2A (C4)	NC	O/C	FAI	STC STO PIT	Q Q 2YR		OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-331 LPSI TO RC LOOP 2A ; ISOLATION VALVE	2	N	B	A	4	GL	M	210-130-2A (C7)	NC	O/C	FAI	STC STO PIT	Q Q 2YR		OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-333 LPSI TO RC LOOP 2B ; ISOLATION VALVE	2	N	B	A	4	GL	M	210-130-2A (C6)	NC	O/C	FAI	STC STO PIT	Q Q 2YR		OP-ST-SI-3001 OP-ST-SI-3001 OP-ST-VX-3018	
HCV-335 SHUTDOWN CLG HT EXCHS AC-4A&B ; INLET HEADER ISOLATION VALVE	2	N	B	P	12"	BU	A	210-130-1 (B6)	LC	C	FC	PIT	2YR		OP-ST-VX-3019	
HCV-341 SHUTDOWN CLG HT EXCHS AC-4A&B ; OUTLET TEMPERATURE CONTROL VALVE	2	N	B	P	8"	GL	A	210-130-1 (C7)	LC	C	FC	PIT	2YR		TDB	
HCV-344 CONTAINMENT SPRAY HEADER ISOLATION VALVE	2	N	A	A	8	GL	A	210-130-1 (D8)	NC	O/C	FO	FSTO STC STO LJ-C PIT	CS CS CS 60 mo 2YR	 J - 20 J - 20 	OP-ST-SI-3002 OP-ST-SI-3002 OP-ST-SI-3002 IC-ST-AE-3186 OP-ST-VX-3019	
HCV-345 CONTAINMENT SPRAY HEADER ISOLATION VALVE	2	N	A	A	8	GL	A	210-130-1 (B8)	NC	O/C	FO	FSTO STC STO LJ-C PIT	CS CS CS 60 mo 2YR	 J - 20 	OP-ST-SI-3002 OP-ST-SI-3002 OP-ST-SI-3002 IC-ST-AE-3189 OP-ST-VX-3019	
HCV-347 LPSI LOOP 2 ; SHUTDOWN COOLING ISOLATION VALVE	1	N	A	A	10	GL	M	210-130-3 (F7)	LC	O/C	FAI	STC STO LT PIT	CS CS 2YR 2YR	J - 21 J - 21 	OP-ST-SI-3002 OP-ST-SI-3002 OI-SC-2 OP-ST-VX-3019	

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Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-348	1	N	A	A	12	GA	M	210-130-2A (C2)	LC	O/C	FAI	STC	CS	J - 21	OP-ST-SI-3002	
LOOP 2 TO SHUTDOWN COOLING ; ISOLATION VALVE												STO	CS	J - 21	OP-ST-SI-3002	
												LT	2YR		Normal Ops	
												PIT	2YR		OP-ST-VX-3019	
HCV-349	2	N	B	P	4"	GL	A	210-130-1 (B8)	NC	C	FC	PIT	2YR		OP-ST-VX-3019	
HPSI PUMP SI-2B ; ALTERNATE SUCTION VALVE																
HCV-350	2	N	B	P	4"	GL	A	210-130-1 (B7)	NC	C	FC	PIT	2YR		OP-ST-VX-3019	
HPSI PUMPS SI-2A&C ; ALTERNATE SUCTION VALVE																
HCV-383-3	2	N	A	A	24	BU	M	210-130-3 (B7)	NC	O/C	FAI	STC	CS		OP-ST-SI-3015	
CONTAINMENT SUMP ; RECIRC ISOLATION VALVE												STO	CS	J - 34	OP-ST-SI-3015	
												LJ-C	60 mo		IC-ST-AE-3833	
												PIT	2YR		OP-ST-SI-3015	
HCV-383-4	2	N	A	A	24	BU	M	210-130-3 (B7)	NC	O/C	FAI	STC	CS		OP-ST-SI-3015	
CONTAINMENT SUMP ; RECIRC ISOLATION VALVE												STO	CS	J - 34	OP-ST-SI-3015	
												LJ-C	60 mo		IC-ST-AE-3834	
												PIT	2YR		OP-ST-SI-3015	
HCV-385	2	N	A	A	4	GL	A	210-130-1 (F4)	NO	O/C	FO	FSTO	CS		OP-ST-SI-3002	
SIRW TANK SI-5 RECIRCULATION VALVE												STC	CS	J - 29	OP-ST-SI-3002	
												STO	CS	J - 29	OP-ST-SI-3002	
												LT	2YR		SE-ST-SI-3005	
												PIT	2YR		OP-ST-VX-3019	
HCV-386	2	N	A	A	4	GL	A	210-130-1 (F4)	NO	O/C	FO	FSTO	CS		OP-ST-SI-3002	
SIRW TANK SI-5 RECIRCULATION VALVE												STC	CS	J - 29	OP-ST-SI-3002	
												STO	CS	J - 29	OP-ST-SI-3002	
												LT	2YR		SE-ST-SI-3005	
												PIT	2YR		OP-ST-VX-3019	
LCV-383-1	2	N	A	A	20	BU	A	210-130-1 (D1)	NO	O/C	FO	FSTO	CS		OP-ST-SI-3002	
SIRWT SI-5 OUTLET HEADER LEVEL CONTROL VALVE												STC	CS	J - 34	OP-ST-SI-3002	
												STO	CS	J - 34	OP-ST-SI-3002	
												LT	2YR		SE-ST-SI-3005	
												PIT	2YR		OP-ST-VX-3019	
LCV-383-2	2	N	A	A	20	BU	A	210-130-1 (D2)	NO	O/C	FO	FSTO	CS		OP-ST-SI-3002	
SIRWT SI-5 OUTLET HEADER LEVEL CONTROL VALVE												STC	CS	J - 34	OP-ST-SI-3002	
												STO	CS	J - 34	OP-ST-SI-3002	
												LT	2YR		SE-ST-SI-3005	
												PIT	2YR		OP-ST-VX-3019	

Fort Calhoun

Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PCV-2909	2	N	B	A	1	GL	A	210-130-2	NC	C	FC	FSTC	Q		OP-ST-SI-3001	
SI LEAKAGE COOLER SI-4A ; OUTLET PRESSURE CONTROL VALVE								(B5)				STC	Q		OP-ST-SI-3001	
												PIT	2YR		OP-ST-VX-3018	
PCV-2929	2	N	B	A	1	GL	A	210-130-2	NC	C	FC	FSTC	Q		OP-ST-SI-3001	
SI LEAKAGE COOLER SI-4B ; OUTLET PRESSURE CONTROL VALVE								(B8)				STC	Q		OP-ST-SI-3001	
												PIT	2YR		OP-ST-VX-3018	
PCV-2949	2	N	B	A	1	GL	A	210-130-2B	NC	C	FC	FSTC	Q		OP-ST-SI-3001	
SI LEAKAGE COOLER SI-4C ; OUTLET PRESSURE CONTROL VALVE								(B8)				STC	Q		OP-ST-SI-3001	
												PIT	2YR		OP-ST-VX-3018	
PCV-2969	2	N	B	A	1	GL	A	210-130-2B	NC	C	FC	FSTC	Q		OP-ST-SI-3001	
SI LEAKAGE COOLER SI-4D OUTLET PRESSURE CONTROL VALVE								(B4)				STC	Q		OP-ST-SI-3001	
												PIT	2YR		OP-ST-VX-3018	
SI-100	2	N	C	A	6	CK	C	210-130-3	NC	O/C	N/A	CVC-FP	RO		OP-ST-SI-3007	
HPSI PUMP SI-2B ; SUCTION CHECK VALVE								(C1)				CVC-IP	RO		OP-ST-SI-3007	
												CVC-PD	RO		OP-ST-SI-3007	
												CVC-Time	RO		OP-ST-SI-3007	
												CVO	RO	J - 01	OP-ST-SI-3007	
												LT	CS		SE-ST-SI-3005	
SI-102	2	N	C	A	4	CK	C	210-130-3	NC	O/C	N/A	CVC-FP	RO		OP-ST-SI-3007	
HPSI PUMP SI-2B ; DISCHARGE CHECK VALVE								(C4)				CVC-IP	RO		OP-ST-SI-3007	
												CVC-PD	RO		OP-ST-SI-3007	
												CVC-Time	RO	J - 03	OP-ST-SI-3007	
												CVO	RO	J - 03	OP-ST-SI-3007	
SI-104	2	N	C	A	1	CK	C	210-130-3	NC	O/C	N/A	CVO	Q		OP-ST-SI-3022	
HPSI PUMP SI-2B ; MINIMUM RECIRC CHECK VALVE								(C4)				CVC-FP	CS		OP-ST-SI-3003	
												CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 42	OP-ST-SI-3003	
SI-108	2	N	C	A	4	CK	C	210-130-3	NC	O/C	N/A	CVC-FP	RO		OP-ST-SI-3007	
HPSI PUMP SI-2C DISCHARGE CHECK								(D4)				CVC-IP	RO		OP-ST-SI-3007	
												CVC-PD	RO		OP-ST-SI-3007	
												CVC-Time	RO	J - 03	OP-ST-SI-3007	
												CVO	RO	J - 03	OP-ST-SI-3007	

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Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SI-110	2	N	C	A	1	CK	C	210-130-3	NC	O/C	N/A	CVO	Q		OP-ST-SI-3021	
HPSI PUMP SI-2C MINIMUM RECIRC CHECK VALVE								(E4)				CVC-FP	CS		OP-ST-SI-3003	
												CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 42	OP-ST-SI-3003	
SI-113	2	N	C	A	8	CK	C	210-130-3	NC	O/C	N/A	CVC-FP	RO		OP-ST-SI-3007	
HPSI PUMPS SI-2A&C SUCTION HEADER CHECK VALVE								(E1)				CVC-IP	RO		OP-ST-SI-3007	
												CVC-PD	RO		OP-ST-SI-3007	
												CVC-Time	RO		OP-ST-SI-3007	
												CVO	RO	J - 01	OP-ST-SI-3007	
												LT	CS		SE-ST-SI-3005	
SI-115	2	N	C	A	4	CK	C	210-130-3	NC	O/C	N/A	CVC-FP	RO		OP-ST-SI-3007	
HPSI PUMP SI-2A DISCHARGE CHECK VALVE								(E4)				CVC-IP	RO		OP-ST-SI-3007	
												CVC-PD	RO		OP-ST-SI-3007	
												CVC-Time	RO	J - 03	OP-ST-SI-3007	
												CVO	RO	J - 03	OP-ST-SI-3007	
SI-117	2	N	C	A	1	CK	C	210-130-3	NC	O/C	N/A	CVO	Q		OP-ST-SI-3021	
HPSI PUMP SI-2A MINIMUM RECIRC CHECK VALVE								(F4)				CVC-FP	CS		OP-ST-SI-3003	
												CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 42	OP-ST-SI-3003	
SI-121	2	N	C	A	8	CK	C	210-130-1	NC	O/C	N/A	CVC-FP	CS		OP-ST-SI-3003	
LPSI PUMP SI-1B ; DISCHARGE CHECK VALVE								(A4)				CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 04	OP-ST-SI-3003	
												CVO	CS	J - 04	OP-ST-SI-3003	
SI-129	2	N	C	A	8	CK	C	210-130-1	NC	O/C	N/A	CVC-FP	CS		OP-ST-SI-3003	
LPSI PUMP SI-1A ; DISCHARGE CHECK VALVE								(B4)				CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 04	OP-ST-SI-3003	
												CVO	CS	J - 04	OP-ST-SI-3003	
SI-135	2	N	C	A	8	CK	C	210-130-1	NC	O/C	N/A	CVC-FP	CS		OP-ST-SI-3003	
CONTAINMENT SPRAY PUMP SI-3A DISCHARGE CHECK VALVE								(C4)				CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 31	OP-ST-SI-3003	
												CVO	CS	J - 31	OP-ST-SI-3003	

Fort Calhoun

Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SI-139	2	N	A/C	A	20	CK	C	210-130-1	NC	O/C	N/A	CVC-FP	RO		SE-ST-SI-3005	
OUTLET CHECK VALVE SIRWT								(D2)				CVC-IP	RO		SE-ST-SI-3005	
												CVC-PD	RO		SE-ST-SI-3005	
												CVC-Time	RO		SE-ST-SI-3005	
												LT	RO		SE-ST-SI-3005	
												CVO	R06		PE-ST-SI-3006	
SI-140	2	N	A/C	A	20	CK	C	210-130-1	NC	O/C	N/A	CVC-FP	RO		SE-ST-SI-3005	
OUTLET CHECK VALVE SIRWT								(C2)				CVC-IP	RO		SE-ST-SI-3005	
												CVC-PD	RO		SE-ST-SI-3005	
												CVC-Time	RO		SE-ST-SI-3005	
												LT	RO		SE-ST-SI-3005	
												CVO	R06		PE-ST-SI-3006	
SI-143	2	N	C	A	8	CK	C	210-130-1	NC	O/C	N/A	CVC-FP	CS		OP-ST-SI-3003	
CONTAINMENT SPRAY PUMP SI-3B ; DISCHARGE CHECK VALVE								(D4)				CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 31	OP-ST-SI-3003	
												CVO	CS	J - 31	OP-ST-SI-3003	
SI-149	2	N	C	A	8	CK	C	210-130-1	NC	O/C	N/A	CVC-FP	CS		OP-ST-SI-3003	
CONTAINMENT SPRAY PUMP SI-3C ; DISCHARGE CHECK VALVE								(E4)				CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 31	OP-ST-SI-3003	
												CVO	CS	J - 31	OP-ST-SI-3003	
SI-153	2	N	C	A	6	CK	C	210-130-1	NC	O/C	N/A	CVC-FP	R04		PE-ST-SI-3007	
LPSI PUMPS SI-1A&B ; CNTMT SPRAY PUMPS SI-3A,B&C ; MINIMUM RECIR								(E5)				CVC-IP	R04		PE-ST-SI-3007	
												CVC-PD	R04		PE-ST-SI-3007	
												CVC-Time	R04		PE-ST-SI-3007	
												CVO	R04		PE-ST-SI-3007	
SI-159	2	N	C	A	24	CK	C	210-130-3	NC	O/C	N/A	CVC-FP	R06		PE-ST-SI-3004	
CONTAINMENT SUMP ; RECIRC CHECK VALVE								(B6)				CVC-IP	R06		PE-ST-SI-3004	
												CVC-PD	R06		PE-ST-SI-3004	
												CVC-Time	R06		PE-ST-SI-3004	
												CVO	R06		PE-ST-SI-3004	
SI-160	2	N	C	A	24	CK	C	210-130-3	NC	O/C	N/A	CVC-FP	R06		PE-ST-SI-3004	
CONTAINMENT SUMP ; RECIRC CHECK VALVE								(B6)				CVC-IP	R06		PE-ST-SI-3004	
												CVC-PD	R06		PE-ST-SI-3004	
												CVC-Time	R06		PE-ST-SI-3004	
												CVO	R06		PE-ST-SI-3004	

Fort Calhoun

Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SI-175	2	N	A/C	A	12	CK	C	210-130-2	NC	O/C	N/A	CVC-FP	R06		PE-ST-SI-3005	
SHUTDOWN COOLING HT EXCH AC-4B ; OUTLET TO CNTMT SPRAY NOZZLES ;								(E5)				CVC-IP	R06		PE-ST-SI-3005	
												CVC-PD	R06		PE-ST-SI-3005	
												CVC-Time	R06		PE-ST-SI-3005	
												CVO	R06		PE-ST-SI-3005	
												LJ-C	60 mo		IC-ST-AE-3189	
SI-176	2	N	A/C	A	12	CK	C	210-130-2	NC	O/C	N/A	CVC-FP	R06		PE-ST-SI-3005	
SHUTDOWN COOLING HT EXCH AC-4A ; OUTLET TO CNTMT SPRAY NOZZLES ;								(D5)				CVC-IP	R06		PE-ST-SI-3005	
												CVC-PD	R06		PE-ST-SI-3005	
												CVC-Time	R06		PE-ST-SI-3005	
												CVO	R06		PE-ST-SI-3005	
												LJ-C	60 mo		IC-ST-AE-3186	
SI-183	2	N	A	P	2	GA	Man	210-130-1	LC	C	N/A	LT	2YR		SE-ST-SI-3005	
SIRWT SI-5 ; CONTAINMENT SPRAY FLOW TEST ; STOP VALVE								(E6)								
SI-184	2	N	A	P	6	GA	Man	210-130-1	LC	C	N/A	LT	2YR		SE-ST-SI-3005	
SIRWT SI-5 ; CONTAINMENT SPRAY RETURN VALVE								(D6)								
SI-185	2	N	A	P	2	GA	Man	210-130-1	LC	C	N/A	LJ-C	60 mo		IC-ST-AE-3122	
SI TANKS SI-6A,B,C&D ; DRAIN VALVE TO SIRWT SI-5								(E8)								
SI-187	2	N	C	A	1.5	RL	R	210-130-2	NC	O/C	N/A	RV	R02		PE-ST-VX-3009	
LPSI HEADER RELIEF VALVE								(H5)								
SI-188	2	N	C	A	1.5	RL	R	210-130-2A	NC	O/C	N/A	RV	R01		PE-ST-VX-3009	
LPSI PUMPS SI-1A&B ; SHUTDOWN COOLING SUCTION ; RELIEF VALVE								(D1)								
SI-189	2	N	C	A	1.5	RL	R	210-130-2A	NC	O/C	N/A	RV	R06		PE-ST-VX-3009	
HPSI RELIEF VALVE								(B2)								
SI-190	2	N	C	A	1.5	RL	R	210-130-2A	NC	O/C	N/A	RV	R02		PE-ST-VX-3009	
HPSI RELIEF VALVE								(B2)								

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Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SI-194 LPSI TO RC LOOP 2A ; CHECK VALVE	1	N	A/C	A	6	CK	C	210-130-2A (D7)	NC	O/C	N/A	CVC-FP	CS		SE-ST-SI-3015	
												CVC-IP	CS		SE-ST-SI-3015	
												CVC-PD	CS		SE-ST-SI-3015	
												CVC-Time	CS		SE-ST-SI-3015	
												CVO	CS	J - 09	OP-ST-SI-3003	
												LT	CS		SE-ST-SI-3015	
SI-195 HPSI TO RC LOOP 2A; CHECK VALVE	1	N	A/C	A	2	CK	C	210-130-2A (D8)	NC	O/C	N/A	CVO	RO		OP-ST-SI-3007	
												CVC-FP	CS		SE-ST-SI-3015	
												CVC-IP	CS		SE-ST-SI-3015	
												CVC-PD	CS		SE-ST-SI-3015	
												CVC-Time	CS		SE-ST-SI-3015	
												LT	CS		SE-ST-SI-3015	
SI-196 HPSI TO RC LOOP 2A; CHECK VALVE	1	N	A/C	A	2	CK	C	210-130-2A (D8)	NC	O/C	N/A	CVO	RO		OP-ST-SI-3007	
												CVC-FP	CS		SE-ST-SI-3015	
												CVC-IP	CS		SE-ST-SI-3015	
												CVC-PD	CS		SE-ST-SI-3015	
												CVC-Time	CS		SE-ST-SI-3015	
												LT	CS		SE-ST-SI-3015	
SI-197 LPSI TO RC LOOP 2B ; CHECK VALVE	1	N	A/C	A	6	CK	C	210-130-2A (D6)	NC	O/C	N/A	CVC-FP	CS		SE-ST-SI-3015	
												CVC-IP	CS		SE-ST-SI-3015	
												CVC-PD	CS		SE-ST-SI-3015	
												CVC-Time	CS		SE-ST-SI-3015	
												CVO	CS	J - 09	OP-ST-SI-3003	
												LT	CS		SE-ST-SI-3015	
SI-198 HPSI TO RC LOOP 2B ; CHECK VALVE	1	N	A/C	A	2	CK	C	210-130-2A (D6)	NC	O/C	N/A	CVO	RO	J - 10	OP-ST-SI-3007	
												CVC-FP	CS		SE-ST-SI-3015	
												CVC-IP	CS		SE-ST-SI-3015	
												CVC-PD	CS		SE-ST-SI-3015	
												CVC-Time	CS		SE-ST-SI-3015	
												LT	CS		SE-ST-SI-3015	
SI-199 HPSI TO RC LOOP 2B ; CHECK VALVE	1	N	A/C	A	2	CK	C	210-130-2A (C7)	NC	O/C	N/A	CVC-FP	RO		SE-ST-SI-3015	
												CVC-IP	RO		SE-ST-SI-3015	
												CVC-PD	RO		SE-ST-SI-3015	
												CVC-Time	RO		SE-ST-SI-3015	
												CVO	RO	J - 11	OP-ST-SI-3007	
												LT	CS		SE-ST-SI-3015	

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Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SI-200	1	N	A/C	A	6	CK	C	210-130-2A	NC	O/C	N/A	CVC-FP	CS		SE-ST-SI-3015	
LPSI TO RC LOOP 1A ; CHECK VALVE								(D5)				CVC-IP	CS		SE-ST-SI-3015	
												CVC-PD	CS		SE-ST-SI-3015	
												CVC-Time	CS		SE-ST-SI-3015	
												CVO	CS	J - 09	OP-ST-SI-3003	
												LT	CS		SE-ST-SI-3015	
SI-201	1	N	A/C	A	2	CK	C	210-130-2A	NC	O/C	N/A	CVO	RO	J - 10	OP-ST-SI-3007	
HPSI TO RC LOOP 1A ; CHECK VALVE								(D5)				CVC-FP	CS		SE-ST-SI-3015	
												CVC-IP	CS		SE-ST-SI-3015	
												CVC-PD	CS		SE-ST-SI-3015	
												CVC-Time	CS		SE-ST-SI-3015	
												LT	CS		SE-ST-SI-3015	
SI-202	1	N	A/C	A	2	CK	C	210-130-2A	NC	O/C	N/A	CVC-FP	RO		SE-ST-SI-3015	
HPSI TO RC LOOP 1A ; CHECK VALVE								(C5)				CVC-IP	RO		SE-ST-SI-3015	
												CVC-PD	RO		SE-ST-SI-3015	
												CVC-Time	RO		SE-ST-SI-3015	
												CVO	RO	J - 11	OP-ST-SI-3007	
												LT	CS		SE-ST-SI-3015	
SI-203	1	N	A/C	A	6	CK	C	210-130-2A	NC	O/C	N/A	CVC-FP	CS		SE-ST-SI-3015	
LPSI TO RC LOOP 1B ; CHECK VALVE								(D3)				CVC-IP	CS		SE-ST-SI-3015	
												CVC-PD	CS		SE-ST-SI-3015	
												CVC-Time	CS		SE-ST-SI-3015	
												CVO	CS	J - 09	OP-ST-SI-3003	
												LT	CS		SE-ST-SI-3015	
SI-204	1	N	A/C	A	2	CK	C	210-130-2A	NC	O/C	N/A	CVO	RO	J - 10	OP-ST-SI-3007	
HPSI TO RC LOOP 1B ; CHECK VALVE								(D3)				CVC-FP	CS		SE-ST-SI-3015	
												CVC-IP	CS		SE-ST-SI-3015	
												CVC-PD	CS		SE-ST-SI-3015	
												CVC-Time	CS		SE-ST-SI-3015	
												LT	CS		SE-ST-SI-3015	
SI-205	1	N	A/C	A	2	CK	C	210-130-2A	NC	O/C	N/A	CVC-FP	RO		SE-ST-SI-3015	
HPSI TO RC LOOP 1B ; CHECK VALVE								(C4)				CVC-IP	RO		SE-ST-SI-3015	
												CVC-PD	RO		SE-ST-SI-3015	
												CVC-Time	RO		SE-ST-SI-3015	
												CVO	RO	J - 11	OP-ST-SI-3007	
												LT	CS		SE-ST-SI-3015	
												PS	CS		OP-ST-CH-3006	

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Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency RR/CSJ/ROJ	Procedure	Comments / Notes
SI-207	1	N	A/C	A	12	CK	C	210-130-2A (F7)	NC	O/C	N/A	CVC-FP	RO	OP-ST-SI-3016	
SAFETY INJECTION TANK SI-6C ; OUTLET CHECK VALVE												CVC-IP	RO	OP-ST-SI-3016	
												CVC-PD	RO	OP-ST-SI-3016	
												CVC-Time	RO	OP-ST-SI-3016	
												CVO	RO	OP-ST-SI-3026	
												LT	RO	OP-ST-SI-3016	
SI-208	1	N	A/C	A	12	CK	C	210-130-2A (C7)	NC	O/C	N/A	CVO	RO	OP-ST-SI-3026	
SAFETY INJECTION TO LOOP 2A ; CHECK VALVE												CVC-FP	CS	OP-ST-SI-3013	
												CVC-IP	CS	OP-ST-SI-3013	
												CVC-PD	CS	OP-ST-SI-3013	
												CVC-Time	CS	OP-ST-SI-3013	
												LT	CS	OP-ST-SI-3013	
SI-209	2	N	C	A	1	RL	R	210-130-2B (E3)	NC	O/C	N/A	RV	R06	PE-ST-VX-3005	
SAFETY INJECTION TANK SI-6D ; RELIEF VALVE															
SI-211	1	N	A/C	A	12	CK	C	210-130-2A (F6)	NC	O/C	N/A	CVC-FP	RO	OP-ST-SI-3016	
SAFETY INJECTION TANK SI-6D ; OUTLET CHECK VALVE												CVC-IP	RO	OP-ST-SI-3016	
												CVC-PD	RO	OP-ST-SI-3016	
												CVC-Time	RO	OP-ST-SI-3016	
												CVO	RO	OP-ST-SI-3026	
												LT	RO	OP-ST-SI-3016	
SI-212	1	N	A/C	A	12	CK	C	210-130-2A (C6)	NC	O/C	N/A	CVO	RO	OP-ST-SI-3026	
SI TO RC LOOP 2B CHECK VALVE												CVC-FP	CS	OP-ST-SI-3013	
												CVC-IP	CS	OP-ST-SI-3013	
												CVC-PD	CS	OP-ST-SI-3013	
												CVC-Time	CS	OP-ST-SI-3013	
												LT	CS	OP-ST-SI-3013	
SI-213	2	N	C	A	1	RL	R	210-130-2B (E6)	NC	O/C	N/A	RV	R06	PE-ST-VX-3005	
SAFETY INJECTION TANK SI-6C ; RELIEF VALVE															
SI-215	1	N	A/C	A	12	CK	C	210-130-2A (F4)	NC	O/C	N/A	CVC-FP	RO	OP-ST-SI-3016	
SAFETY INJECTION TANK SI-6B ; OUTLET CHECK VALVE												CVC-IP	RO	OP-ST-SI-3016	
												CVC-PD	RO	OP-ST-SI-3016	
												CVC-Time	RO	OP-ST-SI-3016	
												CVO	RO	OP-ST-SI-3026	
												LT	RO	OP-ST-SI-3016	

Fort Calhoun

Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SI-216	1	N	A/C	A	12	CK	C	210-130-2A (C4)	NC	O/C	N/A	CVO	RO		OP-ST-SI-3026	
SI TO RC LOOP 1A ; CHECK VALVE												CVC-FP	CS		OP-ST-SI-3013	
												CVC-IP	CS		OP-ST-SI-3013	
												CVC-PD	CS		OP-ST-SI-3013	
												CVC-Time	CS		OP-ST-SI-3013	
												LT	CS		OP-ST-SI-3013	
SI-217	2	N	C	A	1	RL	R	210-130-2 (E6)	NC	O/C	N/A	RV	R06		PE-ST-VX-3005	
SAFETY INJECTION TANK SI-6B ; RELIEF VALVE																
SI-219	1	N	A/C	A	12	CK	C	210-130-2A (F3)	NC	O/C	N/A	CVC-FP	RO		OP-ST-SI-3016	
SAFETY INJECTION TANK SI-6A ; OUTLET CHECK VALVE												CVC-IP	RO		OP-ST-SI-3016	
												CVC-PD	RO		OP-ST-SI-3016	
												CVC-Time	RO		OP-ST-SI-3016	
												CVO	RO		OP-ST-SI-3026	
												LT	RO		OP-ST-SI-3016	
SI-220	1	N	A/C	A	12	CK	C	210-130-2A (C3)	NC	O/C	N/A	CVO	RO		OP-ST-SI-3026	
SAFETY INJECTION TO LOOP 1B ; CHECK VALVE												CVC-FP	CS		OP-ST-SI-3013	
												CVC-IP	CS		OP-ST-SI-3013	
												CVC-PD	CS		OP-ST-SI-3013	
												CVC-Time	CS		OP-ST-SI-3013	
												LT	CS		OP-ST-SI-3013	
SI-221	2	N	C	A	1	RL	R	210-130-2 (E3)	NC	O/C	N/A	RV	R06		PE-ST-VX-3005	
SAFETY INJECTION TANK SI-6A ; RELIEF VALVE																
SI-222	2	N	A/C	NA	1	RL	R	210-130-2 (F2)	NC	N/A	N/A	RV	Y06		PE-PM-VX-0429	
SAFETY INJECTION TANKS SI-6A-D ; FILL/DRAIN LINE RELIEF VALVE																
SI-278	2	N	C	A		RL	R	210-130-2B (B6)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
SAFETY INJECTION TANK SI-6C ; OUTLET RELIEF VALVE																
SI-279	2	N	C	A	0.5	RL	R	210-130-2B (B2)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
SAFETY INJECTION TANK SI-6D ; OUTLET RELIEF VALVE																

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Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SI-280 SAFETY INJECTION TANK SI-6B ; OUTLET RELIEF VALVE	2	N	C	A	0.5	RL	R	210-130-2 (A6)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
SI-281 SAFETY INJECTION TANK SI-6A ; OUTLET RELIEF VALVE	2	N	C	A	0.5	RL	R	210-130-2 (A3)	NC	O/C	N/A	RV	Y06		PE-PM-VX-0429	
SI-298 SHUTDOWN HEAT EXCH AC-4A REACTOR COOLANT INLET PIPING RELIEF VAL	2	N	C	A	1	RL	R	210-130-1 (D7)	NC	O/C	N/A	RV	R06		PE-ST-VX-3009	
SI-299 SHUTDOWN COOLING HT EXCH SI-4B ; OUTLET RELIEF VALVE TO ; REACTOR	2	N	C	A	1	RL	R	210-130-1 (B7)	NC	O/C	N/A	RV	R06		PE-ST-VX-3009	
SI-300 CONTAINMENT SPRAY PUMP SI-3C ; MINIMUM RECIRC CHECK VALVE	2	N	C	A	2	CK	C	210-130-1 (B4)	NC	O/C	N/A	CVO	Q		OP-ST-SI-3022	
												CVC-FP	CS		OP-ST-SI-3003	
												CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 41	OP-ST-SI-3003	
SI-301 CONTAINMENT SPRAY PUMP SI-3B RECIRC LINE CHECK VALVE	2	N	C	A	2	CK	C	210-130-1 (D4)	NC	O/C	N/A	CVO	Q		OP-ST-SI-3022	
												CVC-FP	CS		OP-ST-SI-3003	
												CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 41	OP-ST-SI-3003	
SI-302 CONTAINMENT SPRAY PUMP SI-3A MINIMUM RECIRC CHECK VALVE	2	N	C	A	2	CK	C	210-130-1 (F4)	NC	O/C	N/A	CVO	Q		OP-ST-SI-3021	
												CVC-FP	CS		OP-ST-SI-3003	
												CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 41	OP-ST-SI-3003	
SI-303 LPSI PUMP SI-1A ; MINIMUM RECIRC CHECK VALVE	2	N	C	A	2	CK	C	210-130-1 (E4)	NC	O/C	N/A	CVO	Q		OP-ST-SI-3021	
												CVC-FP	CS		OP-ST-SI-3003	
												CVC-IP	CS		OP-ST-SI-3003	
												CVC-PD	CS		OP-ST-SI-3003	
												CVC-Time	CS	J - 40	OP-ST-SI-3003	

Fort Calhoun

Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SI-304 LOW PRESS SI PUMP SI-1B RECIRC LINE CHECK VALVE	2	N	C	A	2	CK	C	210-130-1 (A4)	NC	O/C	N/A	CVO CVC-FP CVC-IP CVC-PD CVC-Time	Q CS CS CS CS	 J - 40	OP-ST-SI-3022 OP-ST-SI-3003 OP-ST-SI-3003 OP-ST-SI-3003 OP-ST-SI-3003	
SI-306 SIRWT SI-5 ; CONTAINMENT SPRAY RETURN VALVE	2	N	A	P	6	GA	Man	210-130-1 (D7)	LC	C	N/A	LT	2YR		SE-ST-SI-3005	
SI-309 LPSI PUMPS SI-1A&B ; SHUTDOWN CLG SUCT RELIEF VLV TO ; REACTOR(R5)	2	N	C	A	1	RL	R	210-130-3 (F5)	NC	O/C	N/A	RV	R02		PE-ST-VX-3009	
SI-310 SHUTDOWN CLG HT EXCHS AC-4A&B ; OUTLET CROSSCONNECT RELIEF(C7) V ;	2	N	C	A	1	RL	R	210-130-1 (C7)	NC	O/C	N/A	RV	R06		PE-ST-VX-3009	
SI-311 SIRWT SI-5 RETURN LINE RELIEF VALVE	2	N	C	A		RL	R	210-130-1 (E6)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	
SI-323 HPSI HEADER CHECK VALVE	2	N	C	A	4	CK	C	210-130-3 (E6)	NC	O/C	N/A	CVC-FP CVC-IP CVC-PD CVC-Time CVO	RO RO RO RO RO	 J - 19 J - 19	SE-ST-SI-3010 SE-ST-SI-3010 SE-ST-SI-3010 SE-ST-SI-3010 OP-ST-SI-3007	
SI-342 SHUTDOWN COOLING TO ; CVCS PURIFICATION ISOLATION VLV	2	N	A	P	1	GL	Man	210-130-1 (E7)	LC	C	N/A	LT	2YR		SE-ST-SI-3005	
SI-343 CROSS TIE BYPASS VALVE HCV-2988 OUTLET LINE CHECK VALVE	2	N	C	A	2	CK	C	210-130-3 (D6)	NC	O	N/A	BDC CVO	RO RO	 J - 11	OP-ST-SI-3007 OP-ST-CH-3009	
SI-410 SI TANKS DRAIN LINE ISOLATION VALVE	2	N	A	P	2	GA	Man	210-130-2 (F1)	LC	C	N/A	LJ-C	60 mo		IC-ST-AE-3122	
SI-411 Penetration M-22 Relief Valve	2	N	A	A	2	RL	R	210-130-2 (F1)	NC	O/C	N/A	LJ RV	30 mo 106		IC-ST-AE-3122 PE-PM-VX-0429	

Fort Calhoun

Valve Table

SI - Safety Injection System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
SI-426 LPSI HDR JOCKEY PUMP SI-18; DISCH LINE RELIEF VALVE	2	N	C	A		RL	R	210-130-1 (C3)	NC	O/C	N/A	RV	Y10		PE-PM-VX-0429	

Fort Calhoun

Valve Table

SL - Primary Sample System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-2504A	2	N	A	A	0.5	GL	A	M-12-1	NO	C	FC	FSTC	Q		OP-ST-SL-3001	
RC SAMPLE LINE CONTAINMENT ISOL VALVE (INSIDE)								(F7)				STC	Q		OP-ST-SL-3001	
												LJ-C	60 mo		IC-ST-AE-3145	
												PIT	2YR		OP-ST-VX-3021	
HCV-2504B	2	N	A	A	0.5	GL	A	M-12-1	NO	C	FC	FSTC	Q		OP-ST-SL-3001	
REACTOR COOLANT SAMPLE LINE ; CNTMT ISOLATION VALVE								(F7)				STC	Q		OP-ST-SL-3001	
												LJ-C	60 mo		IC-ST-AE-3145	
												PIT	2YR		OP-ST-VX-3021	
HCV-2506A	2	N	B	A	0.5	GL	A	M-12-1	NO	C	FC	FSTC	Q		OP-ST-SL-3002	
SG RC-2A SAMPLE CONTAINMENT ISOL VALVE (INSIDE)								(D7)				STC	Q		OP-ST-SL-3002	
												PIT	2YR		OP-ST-VX-3022	
HCV-2506B	2	N	B	A	0.5	GL	A	M-12-1	NO	C	FC	FSTC	Q		OP-ST-SL-3002	
STEAM GENERATOR RC-2A BLWD ; CNTMT ISOLATION VALVE								(D7)				STC	Q		OP-ST-SL-3002	
												PIT	2YR		OP-ST-VX-3022	
HCV-2507A	2	N	B	A	0.5	GL	A	M-12-1	NO	C	FC	FSTC	Q		OP-ST-SL-3002	
SG RC-2B SAMPLE CONTAINMENT ISOL VALVE (INSIDE)								(C7)				STC	Q		OP-ST-SL-3002	
												PIT	2YR		OP-ST-VX-3022	
HCV-2507B	2	N	B	A	0.5	GL	A	M-12-1	NO	C	FC	FSTC	Q		OP-ST-SL-3002	
STEAM GENERATOR RC-2B BLWD ; CNTMT ISOLATION VALVE								(C7)				STC	Q		OP-ST-SL-3002	
												PIT	2YR		OP-ST-VX-3022	

Fort Calhoun

Valve Table

VA - Ventilating Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency RR/CSJ/ROJ	Procedure	Comments / Notes
A/HCV-742 CPHS ; CHANNEL "A" SENSING LINE; OUTBOARD ISOLATION VALVE	2	N	A	P	1	DI	A	M-1-2 (D8)	NO	O	FO	LJ-C PIT	60 mo 2YR	IC-ST-AE-3138 OP-ST-VX-3024A	
B/HCV-742 CPHS ; CHANNEL "B" SENSING LINE ; OUTBOARD ISOLATION VALVE	2	N	A	P	1	DI	A	M-1-2 (D8)	NO	O	FO	LJ-C PIT	60 mo 2YR	IC-ST-AE-3150 OP-ST-VX-3024A	
C/HCV-742 CPHS ; CHANNEL "C" SENSING LINE ; OUTBOARD ISOLATION VALVE	2	N	A	P	1	DI	A	M-1-2 (D8)	NO	O	FO	LJ-C PIT	60 mo 2YR	IC-ST-AE-3151 OP-ST-VX-3024A	
D/HCV-742 CPHS ; CHANNEL "D" SENSING LINE ; OUTBOARD ISOLATION VALVE	2	N	A	P	1	DI	A	M-1-2 (C8)	NO	O	FO	LJ-C PIT	60 mo 2YR	IC-ST-AE-3152 OP-ST-VX-3024A	
HCV-746A CONTAINMENT PRESSURE RELIEF; INBOARD ISOLATION VALVE	2	N	A	A	2	BL	A	M-1-1 (D2)	NC	C	FC	FSTC STC LJ-C PIT	Q Q 60 mo 2YR	OP-ST-VA-3001A OP-ST-VA-3001A IC-ST-AE-3148 OP-ST-VX-3024A	
HCV-746B CONTAINMENT PRESSURE RELIEF ISOLATION VALVE	2	N	A	A	2	BL	A	M-1-2 (C7)	NC	C	FC	FSTC STC LJ-C PIT	Q Q 60 mo 2YR	OP-ST-VA-3001A OP-ST-VA-3001A IC-ST-AE-3148 OP-ST-VX-3024A	
HCV-820A CNTMT HYDROGEN ANALYZER VA-81A; INLET OUTBOARD ISOLATION VALVE	2	N	A	A	1	GA	S	M-1-2 (B8)	NC	C	FC	FSTC STC LJ-C PIT	Q Q 60 mo 2YR	OP-ST-VA-3001A OP-ST-VA-3001A IC-ST-AE-3140 OP-ST-VX-3024A	
HCV-820B CNTMT HYDROGEN ANALYZER VA-81A ; INLET INBOARD ISOLATION VALVE	2	N	A	A	1	GA	S	M-1-1 (E2)	NC	C	FO	FSTO STC STO LJ-C PIT	Q Q Q 60 mo 2YR	OP-ST-VA-3001A OP-ST-VA-3001A OP-ST-VA-3001A IC-ST-AE-3140 OP-ST-VX-3024A	
HCV-821A CNTMT HYDROGEN ANALYZER VA-81A ; OUTLET OUTBOARDISOLATION VALVE	2	N	A	A	1	GA	S	M-1-2 (A8)	NC	C	FC	FSTC STC LJ-C PIT	Q Q 60 mo 2YR	OP-ST-VA-3001B OP-ST-VA-3001B IC-ST-AE-3131 OP-ST-VX-3024B	

Fort Calhoun

Valve Table

VA - Ventilating Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-821B	2	N	A	A	1	GA	S	M-1-1	NC	C	FO	FSTO	Q		OP-ST-VA-3001B	
CNTMT HYDROGEN ANALYZER VA-81A ; OUTLET INBOARD ISOLATION VALVE								(A2)				STC	Q		OP-ST-VA-3001B	
												STO	Q		OP-ST-VA-3001B	
												LJ-C	60 mo		IC-ST-AE-3131	
												PIT	2YR		OP-ST-VX-3024B	
HCV-881	2	N	A	A	4	BU	A	M-1-1	NC	O/C	FO	FSTO	Q		OP-ST-VA-3001A	
CONTAINMENT HYDROGEN PURGE; INBOARD ISOLATION VALVE								(B2)				STC	Q		OP-ST-VA-3001A	
												STO	Q		OP-ST-VA-3001A	
												LJ-C	60 mo		IC-ST-AE-3169	
												PIT	2YR		OP-ST-VX-3024A	
HCV-882	2	N	A	A	4	BU	A	M-1-1	NC	O/C	FO	FSTO	Q		OP-ST-VA-3001A	
CONTAINMENT HYDROGEN PURGE; INBOARD ISOLATION VALVE								(B2)				STC	Q		OP-ST-VA-3001A	
												STO	Q		OP-ST-VA-3001A	
												LJ-C	60 mo		IC-ST-AE-3130	
												PIT	2YR		OP-ST-VX-3024A	
HCV-883A	2	N	A	A	1	GL	A	M-1-1	NC	C	FO	FSTO	Q		OP-ST-VA-3001A	
CNTMT HYDROGEN ANALYZER VA-81B ; INLET INBOARD ISOLATION VALVE								(C2)				STC	Q		OP-ST-VA-3001A	
												STO	Q		OP-ST-VA-3001A	
												LJ-C	60 mo		IC-ST-AE-3157	
												PIT	2YR		OP-ST-VX-3024A	
HCV-883B	2	N	A	A	1	GA	S	M-1-2	NC	C	FC	FSTC	Q		OP-ST-VA-3001A	
HYDROGEN SAMPLING SYSTEM ISOL VA-81B INLET OUTBOARD ISOLATI								(B8)				STC	Q		OP-ST-VA-3001A	
												LJ-C	60 mo		IC-ST-AE-3157	
												PIT	2YR		OP-ST-VX-3024A	
HCV-884A	2	N	A	A	1	GL	A	M-1-1	NC	C	FO	FSTO	Q		OP-ST-VA-3001B	
CNTMT HYDROGEN ANALYZER VA-81B ; OUTLET INBOARD ISOLATION VALVE								(C2)				STC	Q		OP-ST-VA-3001B	
												STO	Q		OP-ST-VA-3001B	
												LJ-C	60 mo		IC-ST-AE-3158	
												PIT	2YR		OP-ST-VX-3024B	
HCV-884B	2	N	A	A	1	GL	S	M-1-2	NC	C	FC	FSTC	Q		OP-ST-VA-3001B	
CNTMT HYDROGEN ANALYZER VA-81B; OUTLET OUTBD ISOLATION VALVE								(B8)				STC	Q		OP-ST-VA-3001B	
												LJ-C	60 mo		IC-ST-AE-3158	
												PIT	2YR		OP-ST-VX-3024B	
PCV-742A	2	N	A	A	42	BU	A	M-1-1	LC	C	FC	FSTC	CS		OP-ST-VA-3002	
CONTAINMENT PURGE AIR; OUTLET INBOARD ISOLATION VALVE								(D2)				STC	CS	J - 38	OP-ST-VA-3002	
												LJ-C	30 mo		IC-ST-AE-3187	
												PIT	2YR		OP-ST-VA-3002	

Fort Calhoun

Valve Table

VA - Ventilating Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
PCV-742B	2	N	A	A	42	BU	A	M-1-2	LC	C	FC	FSTC	CS		OP-ST-VA-3002	
CONTAINMENT PURGE EXHAUST ISOL VALVE								(C7)				STC	CS	J - 38	OP-ST-VA-3002	
												LJ-C	30 mo		IC-ST-AE-3187	
												PIT	2YR		OP-ST-VA-3002	
PCV-742C	2	N	A	A	42	BU	A	M-1-1	LC	C	FC	FSTC	CS		OP-ST-VA-3002	
CONTAINMENT PURGE AIR ; INLET INBOARD ISOLATION VALVE								(C2)				STC	CS	J - 38	OP-ST-VA-3002	
												LJ-C	30 mo		IC-ST-AE-3188	
												PIT	2YR		OP-ST-VA-3002	
PCV-742D	2	N	A	A	42	BU	A	M-1-2	LC	C	FC	FSTC	CS		OP-ST-VA-3002	
CONTAINMENT PURGE AIR; INLET OUTBOARD ISOLATION VALVE								(B8)				STC	CS	J - 38	OP-ST-VA-3002	
												LJ-C	30 mo		IC-ST-AE-3188	
												PIT	2YR		OP-ST-VA-3002	
PCV-742E	2	N	A	A	1	DI	A	M-1-1	NO	C	FC	FSTC	Q		OP-ST-VA-3001A	
RADIATION MONITORING CABINET; OUTLET INBOARD ISOLATION VALVE								(F2)				STC	Q		OP-ST-VA-3001A	
												LJ-C	60 mo		IC-ST-AE-3146	
												PIT	2YR		OP-ST-VX-3024A	
PCV-742F	2	N	A	A	1	DI	A	M-1-2	NO	C	FC	FSTC	Q		OP-ST-VA-3001A	
RADIATION MONITORING CABINET ; OUTLET OUTBOARD ISOLATION VALVE								(E8)				STC	Q		OP-ST-VA-3001A	
												LJ-C	60 mo		IC-ST-AE-3146	
												PIT	2YR		OP-ST-VX-3024A	
PCV-742G	2	N	A	A	1	DI	A	M-1-1	NO	C	FC	FSTC	Q		OP-ST-VA-3001B	
RADIATION MONITORING CABINET ; INLET INBOARD ISOLATION VALVE								(E2)				STC	Q		OP-ST-VA-3001B	
												LJ-C	60 mo		IC-ST-AE-3147	
												PIT	2YR		OP-ST-VX-3024B	
PCV-742H	2	N	A	A	1	DI	A	M-1-2	NO	C	FC	FSTC	Q		OP-ST-VA-3001B	
RADIATION MONITORING CABINET; INLET OUTBOARD ISOLATION VALVE								(E8)				STC	Q		OP-ST-VA-3001B	
												LJ-C	60 mo		IC-ST-AE-3147	
												PIT	2YR		OP-ST-VX-3024B	
VA-280	2	N	A	A	4	BU	Man	M-1-2	LC	O/C	N/A	LJ-C	60 mo		IC-ST-AE-3169	
CONTAINMENT HYDROGEN PURGE; OUTBOARD ISOLATION VALVE TO ; CNTMT								(A8)				SC	2YR		OP-ST-VA-0002	
												SO	2YR		OP-ST-VA-0002	
VA-287	3	N	C	A	2	RL	R	M-1-2	NC	O/C	N/A	RV	Y06		PE-ST-VX-3010	
CNTMT HYDROGEN PURGE FAN VA-80A ; RECIRC RELIEF VALVE								(B6)								
VA-288	3	N	C	A	2	RL	R	M-1-2	NC	O/C	N/A	RV	Y06		PE-ST-VX-3010	
CNTMT HYDROGEN PURGE FAN VA-80B; RECIRC RELIEF VALVE								(B5)								

Fort Calhoun

Valve Table

VA - Ventilating Air System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
VA-289	2	N	A	A	4	BU	Man	M-1-2	LC	C	N/A	LJ-C	60 mo		IC-ST-AE-3130	
CNTMT HYDROGEN PURGE; OUTBOARD ISOLATION VALVE TO ; CNTMT I(A8) RO												SC	2YR		OP-ST-VA-0002	
												SO	2YR		OP-ST-VA-0002	

Fort Calhoun

Valve Table

WD - Waste Disposal System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-500A	2	N	A	A	4	DI	A	M-6-2	NO	C	FC	FSTC	Q		OP-ST-WDL-3001	
RCDT PUMPS WD-2A&B ; DISCHARGE HEADER ; ISOLATION VALVE								(A6)				STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3120	
												PIT	2YR		OP-ST-VX-3025	
HCV-500B	2	N	A	A	4	DI	A	M-6-2	NO	C	FC	FSTC	Q		OP-ST-WDL-3001	
RCDT PUMPS WD-2A&B; DISCHARGE HEADER ; OUTBOARD ISOLATION VALVE								(A6)				STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3120	
												PIT	2YR		OP-ST-VX-3025	
HCV-506A	2	N	A	A	2	DI	A	M-7-1	NO	C	FC	FSTC	Q		OP-ST-WDL-3001	
CONTAINMENT SUMP PUMPS WD-3A&B; DISCHARGE HEADER ; OUTBOARD ISO								(A6)				STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3108	
												PIT	2YR		OP-ST-VX-3025	
HCV-506B	2	N	A	A	2	DI	A	M-7-1	NO	C	FC	FSTC	Q		OP-ST-WDL-3001	
CONTAINMENT SUMP PUMPS WD-3A&B ; DISCHARGE HEADER ; ISOLATION VA								(A6)				STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3108	
												PIT	2YR		OP-ST-VX-3025	
HCV-507A	2	N	A	A	3	DI	A	M-98-3	NO	C	FC	FSTC	Q		OP-ST-WDL-3001	
GAS VENT HEADER; OUTBOARD ISOLATION VALVE								(F7)				STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3114	
												PIT	2YR		OP-ST-VX-3025	
HCV-507B	2	N	A	A	3	DI	A	M-98-3	NO	C	FC	FSTC	Q		OP-ST-WDL-3001	
GAS VENT HEADER ; ISOLATION VALVE								(F7)				STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3114	
												PIT	2YR		OP-ST-VX-3025	
HCV-508A	2	N	A	A	0.5	DI	A	M-98-3	NC	C	FC	FSTC	Q		OP-ST-WDL-3001	
REACTOR COOLANT DRAIN TANK WD-1 ; OUTBOARD SAMPLE ISOLATION VALV								(C7)				STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3125	
												PIT	2YR		OP-ST-VX-3025	
HCV-508B	2	N	A	A	0.5	DI	A	M-98-3	NC	C	FC	FSTC	Q		OP-ST-WDL-3001	
REACTOR COOLANT DRAIN TANK WD-1 ; SAMPLE ISOLATION VALVE								(C6)				STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3125	
												PIT	2YR		OP-ST-VX-3025	
HCV-509A	2	N	A	A	0.5	DI	A	M-98-3	NC	C	FC	FSTC	Q		OP-ST-WDL-3001	
PRESSURIZER QUENCH TANK RC-5 ; OUTBOARD SAMPLE ISOLATION VALVE								(B7)				STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3124	
												PIT	2YR		OP-ST-VX-3025	

Fort Calhoun

Valve Table

WD - Waste Disposal System

Valve ID / Description	Class	Aug.	Cat.	A/P	Size	Valve Type	Actuator Type	Drawing & Coord	Position: Normal	Position: Safety	Position: Fail-Safe	Required Test	Frequency	RR/CSJ/ROJ	Procedure	Comments / Notes
HCV-509B	2	N	A	A	0.5	DI	A	M-98-3 (B6)	NC	C	FC	FSTC	Q		OP-ST-WDL-3001	
PRESSURIZER QUENCH TANK RC-5 ; SAMPLE ISOLATION VALVE												STC	Q		OP-ST-WDL-3001	
												LJ-C	60 mo		IC-ST-AE-3124	
												PIT	2YR		OP-ST-VX-3025	

ATTACHMENT 16

CHECK VALVE CONDITION MONITORING PLAN SUMMARY

The ASME Code for Operation and Maintenance of Nuclear Power Plants, 2004 Edition through 2006 Addenda (the ASME OM Code) includes provisions for Owners of nuclear power plants to establish a Check Valve Condition Monitoring Program as an alternative to certain testing or examination requirements of subsection ISTC of the ASME OM Code. The requirements of 10 CFR 50.55a(b)(3)(iv) must be met. The Owner may implement this program on individual valves or on groups of similar valves. Such a program has been established at the Fort Calhoun Station, and is defined in Production Engineering Division Procedure PED-SEI-44, "Check Valve Condition Monitoring Program."

The Condition Monitoring Program requires that a Condition Monitoring Program Summary List be maintained that includes the following information:

- A list of valves that are in the program.
- A list of the valves in each valve group.
- Identification of the date that each valve was added to the program and the reason for its inclusion.
- A list of any valves that have been, but are no longer, in the program, including the date originally added, the date removed and the reason for inclusion and deletion.

The following three tables are intended to include all the information specified above:

Valves in the Check Valve Condition Monitoring Program			
Valve Number	**Valve Group**	**Date Added to Program**	**Reason for Inclusion**
SI-139	CV-SI-02	01/06/05	Optimize Condition Monitoring activities
SI-140	CV-SI-02	01/06/05	Optimize Condition Monitoring activities
SI-153	CV-SI-01	01/06/05	Optimize Condition Monitoring activities

SI-159	CV-SI-03	01/06/05	Optimize Condition Monitoring activities
SI-160	CV-SI-03	01/06/05	Optimize Condition Monitoring activities
SI-175	CV-SI-04	01/06/05	Optimize Condition Monitoring activities
SI-176	CV-SI-04	01/06/05	Optimize Condition Monitoring activities
SI-207	CV-SI-05	03/07/08	Optimize Condition Monitoring activities
SI-208	CV-SI-06	03/07/08	Optimize Condition Monitoring activities
SI-211	CV-SI-05	03/07/08	Optimize Condition Monitoring activities
SI-212	CV-SI-06	03/07/08	Optimize Condition Monitoring activities
SI-215	CV-SI-05	03/07/08	Optimize Condition Monitoring activities
SI-216	CV-SI-06	03/07/08	Optimize Condition Monitoring activities
SI-219	CV-SI-05	03/07/08	Optimize Condition Monitoring activities
SI-220	CV-SI-06	03/07/08	Optimize Condition Monitoring activities

Check Valve Condition Monitoring Program Valve Groups	
Valve Group	**Valves in the Group**
CV-SI-01	SI-153
CV-SI-02	SI-139, SI-140
CV-SI-03	SI-159, SI-160
CV-SI-04	SI-175, SI-176

CV-SI-05	SI-207, SI-211, SI-215, SI-219
CV-SI-06	SI-208, SI-212, SI-216, SI-220

Valves Removed from the Check Valve Condition Monitoring Program				
Valve Number	**Valve Group**	**Date Removed from Program**	**Reason for Removal**	
CH-203	CV-CH-01	02/29/16	CR 2016-01736	
CH-204	CV-CH-01	02/29/16	CR 2016-01736	
CH-205	CV-CH-02	02/29/16	CR 2016-01736	

ATTACHMENT 17 DYNAMIC RESTRAINT TABLES

Refer to Section 4.0 of this Program Plan for testing, examination and service life monitoring requirements for the snubber population listed in this attachment.

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
ACS-18	4	996'8"	DOWNSTREAM OF HCV-478 (8" LINE)
ACS-112	CONT	1040'0"	BETWEEN PENETRATION M-75 AND VA-1A (10" LINE)
ACS-113	CONT	1040'0"	BETWEEN PENETRATION M-75 AND VA-1A (10" LINE)
ACS-113A	CONT	1040'0"	BETWEEN PENETRATION M-75 AND VA-1A (10" LINE)
ACS-116	CONT	1031'3"	BETWEEN PENETRATION M-82 AND VA-1B (10" LINE)
ACS-117	CONT	1031'3"	JUST UPSTREAM OF PENETRATION M-82 (10" LINE)
ACS-118	CONT	1031'3"	JUST UPSTREAM OF PENETRATION M-82 (10" LINE)
ACS-121	CONT	1031'5"	BETWEEN PENETRATION M-76 AND VA-8A (8" LINE)
ACS-123	CONT	1031'5"	BETWEEN PENETRATION M-76 AND VA-8A (8" LINE)
ACS-127A	CONT	1040'0"	BETWEEN PENETRATION M-83 AND VA-8B (8" LINE)
ACS-128	CONT	1040'0"	BETWEEN PENETRATION M-83 AND VA-8B (8" LINE)
ACS-299	CONT	1056'5"	BETWEEN PENETRATION M-82 AND VA-1B (10" LINE)
ACS-299A	CONT	1056'5"	BETWEEN PENETRATION M-82 AND VA-1B (10" LINE)
ACS-302	CONT	1056'5"	BETWEEN PENETRATION M-77 AND VA-8A (8" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
ACS-304	CONT	1056'7"	BETWEEN PENETRATION M-76 AND VA-8A (8" LINE)
ACS-305	CONT	1056'7"	BETWEEN PENETRATION M-76 AND VA-8A (8" LINE)
ACS-306	CONT	1056'7"	BETWEEN PENETRATION M-76 AND VA-8A (8" LINE)
ACS-307	CONT	1056'7"	BETWEEN PENETRATION M-76 AND VA-8A (8" LINE)
ACS-313	CONT	1054'11"	BETWEEN PENETRATION M-83 AND VA-8B (8" LINE)
ACS-384	15	1000'6"	DOWNSTREAM OF HCV-482B (14" LINE)
ACS-385	12	995'5"	JUST DOWNSTREAM OF TCV-2897-A (8" LINE)
ACS-386-LEFT	69	1028'8"	OUTLET HEADER FROM HCV-400D, HCV-401D, HCV-402D, HCV-403D (16" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
ACS-386-RIGHT	69	1028'8"	OUTLET HEADER FROM HCV-400D, HCV-401D, HCV-402D, HCV-403D (16" LINE)
ACSP-406	CONT	1018'3"	RC-3C LUBE OIL COOLER (1½" LINE)
ACS-407	CONT	1019'0"	RC-3C LUBE OIL COOLER (1½" LINE)
ACS-2011-1	CONT	1018'3"	CCW LINE FROM RC-3D (1½" LINE)
ACS-2012-1	CONT	1019'0"	CCW LINE TO RC-3D (1½" LINE)
AFW-60 (MSSP-60)	19	1007'6"	EXTRACTION STEAM TO FW-10 (JUST UPSTREAM OF MS-35A, 2" LINE)
AFW-65 (MSSP-65)	19	1002'10"	EXTRACTION STEAM TO FW-10 (JUST UPSTREAM OF MS-351, 2" LINE)
AXS-120A	81	1036'	10W=D-12N=2B
CHS-2049-1 (CHVS-2049-1)	CONT	1000'1"	DOWNSTREAM OF TCV-202, RC-375 (2" LINE)
CHS-2049-2 (CHVS-2049-2)	CONT	1000'1"	DOWNSTREAM OF TCV-202, RC-375 (2" LINE)
FWS-1-TOP	CONT	1038'6"	DOWNSTREAM OF FW-162 (16" LINE)
FWS-1-BOTTOM	CONT	1038'6"	DOWNSTREAM OF FW-162 (16" LINE)
FWS-1A	CONT	1038'6"	DOWNSTREAM OF FW-162 (16" LINE)
FWS-1B	CONT	1038'6"	DOWNSTREAM OF FW-162 (16" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
FWS-2-TOP	CONT	1038'6"	DOWNSTREAM OF FW-161 (16" LINE)
FWS-2-BOTTOM	CONT	1038'6"	DOWNSTREAM OF FW-161 (16" LINE)
FWS-2A	CONT	1038'6"	DOWNSTREAM OF FW-161 (16" LINE)
FWS-2B	CONT	1038'6"	BETWEEN FW-161/PENETRATION M-93 (16" LINE)
FWS-3-TOP	81	1040'	BETWEEN HCV-1385/HCV-1104
FWS-3-BOTTOM	81	1037'	BETWEEN HCV-1385/HCV-1104

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
FWS-3B-NORTH	81	1038'6"	BETWEEN HCV-1385 AND PENETRATION M-93 (16" LINE)
FWS-3B-SOUTH	81	1038'6"	BETWEEN HCV-1385 AND PENETRATION M-93 (16" LINE)
FWS-3C	81	1041'0"	BETWEEN FW-152 AND 16" FW LINE
FWS-4-EAST	81	1038'0"	UPSTREAM OF FW-150 (16" LINE)
FWS-4-WEST	81	1038'0"	UPSTREAM OF FW-150
FWS-4A	81	1038'0"	UPSTREAM OF FW-150
FWS-4B	81	1041'0"	BETWEEN FW-614 AND 16" FW LINE
FWS-5	81	1038'0"	BETWEEN FW-150 AND TURBINE BUILDING WALL (16" LINE)
FWS-5A	81	1038'0"	BETWEEN FW-150 AND TURBINE BUILDING WALL (16" LINE)
FWS-6-TOP	81	1040'0"	BETWEEN FW-150 AND TURBINE BUILDING WALL (16" LINE)
FWS-6-BOTTOM	81	1038'0"	BETWEEN FW-150 AND TURBINE BUILDING WALL (16" LINE)
FWS-7C	81	1038'6"	UPSTREAM OF HCV-1386 (16" LINE)
FWS-7D-NORTH	81	1038'6"	BETWEEN HCV-1386 AND PENETRATION M-96 (16" LINE)
FWS-7D-SOUTH	81	1038'6"	BETWEEN HCV-1386 AND PENETRATION M-96 (16" LINE)
FWS-8-TOP	81	1040'0"	BETWEEN HCV-1103/HCV-1386 (16" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
FWS-8-BOTTOM	81	1037'0"	BETWEEN HCV-1103/HCV-1386 (16" LINE)
FWS-8B-TOP	81	1040'0"	BETWEEN FCV-1101/FW-149 (16" LINE)
FWS-8B-BOTTOM	81	1037'0"	BETWEEN FCV-1101/FW-149 (16" LINE)
FWS-8D	81	1041'0"	BETWEEN FW-151 AND 16" LINE
FWS-8F	81	1041'0"	BETWEEN FW-615 AND 16" LINE
FWS-9-EAST	81	1038'0"	UPSTREAM OF FW-149
FWS-9-WEST	81	1038'0"	UPSTREAM OF FW-149
FWS-10	81	1038'0"	BETWEEN FW-149 AND TURBINE BUILDING WALL (16" LINE)
FWS-10A	81	1038'0"	BETWEEN FW-149 AND TURBINE BUILDING WALL (16" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
FWS-11-TOP	81	1040'0"	BETWEEN FW-149 AND TURBINE BUILDING WALL (16" LINE)
FWS-11-BOTTOM	81	1037'0"	BETWEEN FW-149 AND TURBINE BUILDING WALL (16" LINE)
FWS-28	19	1002'6"	DOWNSTREAM OF FW-171/FW-172 (4" LINE)
FWS-29A	19	1002'6"	JUST DOWNSTREAM OF FW-171/FW-172 (4" LINE)
FWS-30	19	1002'6"	JUST DOWNSTREAM OF FW-172 (4" LINE)
FWS-32	CONT	1005'1"	BETWEEN RC-2B/HCV-1387A (3" LINE)
FWS-32A	CONT	1005'1"	BETWEEN RC-2B/HCV-1387A
FWS-33	CONT	1001'6"	BETWEEN RC-2A/HCV-1388A (3" LINE)
FWS-34	CONT	1001'6"	BETWEEN RC-2A/HCV-1388A (3" LINE)
FWS-35	CONT	1005'5"	BETWEEN RC-2A/HCV-1388A INSIDE BIOSHIELD (3" LINE)
FWS-36	CONT	1005'5"	BETWEEN RC-2A/HCV-1388A INSIDE BIOSHIELD (3" LINE)
FWS-37	CONT	1005'5"	BETWEEN RC-2A/HCV-1388A INSIDE BIOSHIELD (3" LINE)
FWS-38	CONT	1008'8"	BETWEEN RC-2A/HCV-1388A INSIDE BIOSHIELD (3" LINE)
FWS-39	CONT	1012'2"	BETWEEN RC-2A/HCV-1388A INSIDE BIOSHIELD (3" LINE)
FWS-64	81	1043'0"	DOWNSTREAM OF FW-171/FW-172 (4" LINE)
FWS-64A	81	1040'0"	DOWNSTREAM OF FW-171/FW-172 (4" LINE)
FWS-64B	81	1040'0"	DOWNSTREAM OF FW-171/FW-172 (4" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
FWS-65	81	1049'6"	BETWEEN FW-171/FW-172 AND FW-169 (4" LINE)
FWS-66	81	1049'6"	BETWEEN FW-171/FW-172 AND FW-169 (4" LINE)
FWS-67	81	1049'6"	BETWEEN FW-171/FW-172 AND FW-169 (4" LINE)
FWS-68	81	1049'6"	UPSTREAM OF FW-169 (4" LINE)
FWS-68A	81	1049'6"	UPSTREAM OF FW-169 (4" LINE)
FWS-69	81	1049'6"	UPSTREAM OF FW-169 (4" LINE)
FWS-71	81	1037'6"	JUST UPSTREAM OF FW-109 (4" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
FWS-74	81	1053'0"	AUXILIARY FEEDWATER HEATER (4" LINE)
FWS-75A	81	1053'0"	AUXILIARY FEEDWATER HEATER (4" LINE)
FWS-78	81	1038'4"	JUST UPSTREAM OF HCV-1108B/ PENETRATION M-91 (3" LINE)
FWS-79	81	1049'6"	UPSTREAM OF HCV-1107B/FW-1456 (3" LINE)
FWS-80	81	1049'6"	UPSTREAM OF HCV-1107B/FW-1456 (3" LINE)
FWS-81	81	1049'6"	UPSTREAM OF HCV-1107B (3" LINE)
FWS-83	81	1038'4"	UPSTREAM OF HCV-1107B/PENETRATION M-97
FWS-86A	19	999'0"	JUST DOWNSTREAM OF FW-744 (4" LINE)
FWS-87	19	999'0"	JUST DOWNSTREAM OF FW-744 (4" LINE)
FWS-88	19	999'0"	JUST DOWNSTREAM OF FW-745 (4" LINE)
FWS-88A	19	999'0"	JUST DOWNSTREAM OF FW-745 (4" LINE)
FWS-89	19	1002'3"	DOWNSTREAM OF FW-744/FW-745 (4" LINE)
FWS-90	19	1001'6"	DOWNSTREAM OF FW-744/FW-745 (4" LINE)
FWS-90A	19	1000'0"	DOWNSTREAM OF FW-744/FW-745 (4" LINE)
FWS-91	56	1020'5"	BETWEEN FW-744/FW-745/FW-746 (4" LINE)
FWS-92	56	1020'5"	BETWEEN FW-744/FW-745/FW-746 (4" LINE)
FWS-92A	56	1026'0"	BETWEEN FW-744/FW-745/FW-746 (4" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
FWS-93	56	1032'0"	BETWEEN FW-744/FW-745/FW-746 (4" LINE)
FWS-94	56	1032'0"	BETWEEN FW-744/FW-745/FW-746 (4" LINE)
FWS-95	56	1032'0"	BETWEEN FW-744/FW-745/FW-746 (4" LINE)
FWS-96	56	1032'0"	BETWEEN FW-744/FW-745/FW-746 (4" LINE)
FWS-97	56	1032'0"	BETWEEN FW-744/FW-745/FW-746 (4" LINE)
FWS-98	56	1032'0"	BETWEEN FW-744/FW-745/FW-746 (4" LINE)
FWS-100	81	1039'0"	JUST UPSTREAM OF FW-746 (4" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
FWS-101	81	1039'0"	JUST UPSTREAM OF FW-746 (4" LINE)
FWS-217	81	1041'0"	BETWEEN FW-152/HCV-1106
FWS-242	81	1041'0"	BETWEEN RW-151/HCV-1105
HCV-327-S (SIS-220)	CONT	1017'0"	CONNECTED TO HCV-327 LIMITORQUE
HCV-329-S (SIS-193)	CONT	1017'0"	CONNECTED TO HCV-329 LIMITORQUE
HCV-331-S (SIH-236)	CONT	1017'0"	CONNECTED TO HCV-331 LIMITORQUE
HCV-333-S (CSIS-192)	CONT	1017'0"	CONNECTED TO HCV-333 LIMITORQUE
MSS-1	CONT	1054'7"	BETWEEN RC-2B AND PENETRATION M-94 INSIDE OF BIOSHIELD (28" LINE)
MSS-2	CONT	1054'7"	BETWEEN RC-2B AND PENETRATION M-94 INSIDE BIOSHIELD (28" LINE)
MSS-3	CONT	1038'6"	BETWEEN RC-2B AND PENETRATION M-94 (28" LINE)
MSS-4-TOP	CONT	1038'6"	BETWEEN RC-2B AND PENETRATION M-94 (28" LINE)
MSS-4-BOTTOM	CONT	1038'6"	BETWEEN RC-2B AND PENETRATION M-94 (28" LINE)
MSS-5	CONT	1054'3"	BETWEEN RC-2A AND PENETRATION M-95 INSIDE BIOSHIELD (28" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
MSS-6	CONT	1054'3"	BETWEEN RC-2A AND PENETRATION M-95 INSIDE BIOSHIELD (28" LINE)
MSS-7	CONT	1038'6"	BETWEEN RC-2A AND PENETRATION M-95 (28" LINE)
MSS-8-TOP	CONT	1038'6"	BETWEEN RC-2A AND PENETRATION M-95 (28" LINE)
MSS-8-BOTTOM	CONT	1038'6"	BETWEEN RC-2A AND PENETRATION M-95 (28" LINE)
MSS-8A	CONT	1038'6"	BETWEEN RC-2B AND PENETRATION M-84 (28" LINE)
MSS-8B	CONT	1038'6"	BETWEEN RC-2A AND PENETRATION M-95 (28" LINE)
MSS-8C	CONT	1038'6"	BETWEEN RC-2A AND PENETRATION M-95 (28" LINE)
MSS-8D	CONT	1038'6"	BETWEEN RC-2B AND PENETRATION M-94 (28" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
MSS-9B-NORTH	81	1038'6"	BETWEEN PENETRATION M-95/MS-275 (28" LINE)
MSS-9B-SOUTH	81	1038'6"	BETWEEN PENETRATION M-95/MS-275 (28" LINE)
MSS-9C-TOP	81	1041'6"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-9C-BOTTOM	81	1038'6"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-10-EAST	81	1040'0"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-10-WEST	81	1040'0"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-11-TOP	81	1042'0"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-11-BOTTOM	81	1038'0"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-12-TOP	81	1042'0"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-12-BOTTOM	81	1037'0"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-12A-NORTH	81	1040'0"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-12A-SOUTH	81	1040'0"	BETWEEN HCV-1042B/TURBINE BUILDING WALL (28" LINE)
MSS-13B-NORTH	81	1038'6"	BETWEEN PENETRATION M-94/MS-279 (28" LINE)
MSS-13B-SOUTH	81	1038'6"	BETWEEN PENETRATION M-94/MS-279 (28" LINE)
MSS-14-EAST	81	1040'0"	BETWEEN MS-293/TURBINE BUILDING WALL (28" LINE)
MSS-14-WEST	81	1040'0"	BETWEEN MS-293/TURBINE BUILDING WALL (28" LINE)
MSS-14C-TOP	81	1041'6"	JUST DOWNSTREAM MS-293 (28" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
MSS-14C-BOTTOM	81	1038'6"	JUST DOWNSTREAM MS-293 (28" LINE)
MSS-15-TOP	81	1042'0"	BETWEEN MS-293/TURBINE BUILDING WALL (28" LINE)
MSS-15-BOTTOM	81	1038'0"	BETWEEN MS-293/TURBINE BUILDING WALL (28" LINE)
MSS-16-TOP	81	1042'0"	BETWEEN MS-293/TURBINE BUILDING WALL (28" LINE)
MSS-16-BOTTOM	81	1037'0"	BETWEEN MS-293/TURBINE BUILDING WALL (28" LINE)
MSS-16A-NORTH	81	1040'0"	BETWEEN MS-293/TURBINE BUILDING WALL (28" LINE)
MSS-16A-SOUTH	81	1040'0"	BETWEEN MS-293/TURBINE BUILDING WALL (28" LINE) ACCESSIBLE

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
MSS-41-EAST	TURB BLDG	1030'1"	
MSS-41-WEST	TURB BLDG	1030'1"	
MSS-44A	81	1045'	BY HCV-1040
MSS-45A	88	1046'	BY HCV-1040
MSS-45B	81	1046'	BY HCV-1040
RCP-A1	CONT	1015'3"	A' RC PUMP
RCP-A2	CONT	1015'3"	'A' RC PUMP
RCP-B1	CONT	1015'3"	'B' RC PUMP
RCP-B2	CONT	1015'3"	'B' RC PUMP
RCP-C1	CONT	1015'3"	'C' RC PUMP
RCP-C2	CONT	1015'3"	'C' RC PUMP
RCP-D1	CONT	1015'3"	'D' RC PUMP
RCP-D2	CONT	1015'3"	'D' RC PUMP
RCS-1	CONT	1008'3"	BETWEEN RV LOOP 1B PIPING/ PCV-103-2 (3" LINE)
RCS-2	CONT	1006'7"	BETWEEN RV LOOP 2A/PCV-103-1 INSIDE BIOSHIELD (3" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
RCS-3	CONT	1006'7"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 INSIDE BIOSHIELD (3" LINE)
RCS-3A	CONT	996'8"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 INSIDE BIOSHIELD (3" LINE
RCS-3B	CONT	996'8"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 INSIDE BIOSHIELD (3" LINE)
RCS-4	CONT	1010'9"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 INSIDE BIOSHIELD (3" LINE)
RCS-5	CONT	1010'9"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 INSIDE BIOSHIELD (3" LINE)
RCS-5A	CONT	1010'9"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 INSIDE BIOSHIELD (3" LINE)
RCS-5B	CONT	1010'9"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 INSIDE BIOSHIELD (3" LINE)
RCS-7	CONT	1016'8"	BETWEEN RV LOOP 1B PIPING/ PCV-103-2 (3" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
RCS-7A	CONT	1016'8"	BETWEEN RV LOOP 1B PIPING/ PCV-103-2 (3" LINE)
RCS-8	CONT	1036'4"	BETWEEN RV LOOP 1B PIPING/ PCV-103-2 (3" LINE)
RCS-8A	CONT	1038'8"	BETWEEN RV LOOP 1B PIPING/ PCV-103-2 (3" LINE)
RCS-9	CONT	1016'8"	BETWEEN RV LOOP 1B PIPING/ PCV-103-2 (3" LINE)
RCS-11	CONT	1041'0"	UPSTREAM OF PCV-103-1 (3" LINE)
RCS-12	CONT	1041'0"	UPSTREAM OF PCV-103-1 (3" LINE)
RCS-13	CONT	1039'1"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 (3" LINE)
RCS-14	CONT	1031'10"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 (3" LINE)
RCS-14B	CONT	1031'10"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 (3" LINE)
RCS-14C	CONT	1031'10"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 (3" LINE)
RCS-15	CONT	1031'10"	BETWEEN RV LOOP 2A PIPING/ PCV-103-1 (3" LINE)
RCS-16	CONT	1015'0"	PRESSURIZER SURGE LINE (10" LINE)
RCS-18	CONT	1015'0"	PRESSURIZER SURGE LINE INSIDE BIOSHIELD (10" LINE)
RCS-19	CONT	1015'0"	PRESSURIZER SURGE LINE INSIDE BIOSHIELD (10" LINE)
RCS-19A-LEFT	CONT	1015'0"	PRESSURIZER SURGE LINE INSIDE BIOSHIELD (10" LINE)
RCS-19A-RIGHT	CONT	1015'0"	PRESSURIZER SURGE LINE INSIDE BIOSHIELD (10" LINE)
RCS-20	CONT	1015'0"	PRESSURIZER SURGE LINE INSIDE BIOSHIELD (10" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
RCS-21	CONT	1032'0"	RC-141 DISCHARGE LINE (6" LINE) INSIDE BIOSHIELD
RCS-22	CONT	1038'3"	RC-142 DISCHARGE LINE (6" LINE) INSIDE BIOSHIELD
RCS-23-BOTTOM	CONT	1032'0"	PRESSURIZER SAFETY DISCHARGE HEADER TO PRESSURIZER QUENCH TANK (8" LINE)
RCS-25	CONT	1038'0"	PORV DISCHARGE HEADER (6" LINE)
RCS-27	CONT	1052'9"	PRESSURIZER SPRAY HEADER INSIDE BIOSHIELD (4" LINE)
RCS-28	CONT	1052'9"	PRESSURIZER SPRAY HEADER INSIDE BIOSHIELD (4" LINE)
RCS-31	CONT	1052'0"	HCV-150/HCV-151 INLET HEADER INSIDE BIOSHIELD (3" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
RCS-32	CONT	1052'0"	HCV-150/HCV-151 INLET HEADER INSIDE BIOSHIELD (3" LINE)
RCS-33	CONT	1052'0"	UPSTREAM OF HCV-150 (22" LINE)
RCS-34	CONT	1047'0"	UPSTREAM OF HCV-150 (22" LINE)
RCS-39	CONT	1049'11"	RC-141 DISCHARGE LINE (6" LINE)
RCS-41	CONT	1050'0"	RC-142 DISCHARGE LINE (6" LINE)
RCS-42	CONT	1007'9"	CH-223 DISCHARGE HEADER (3" LINE)
RCS-44	CONT	1007'9"	CH-223 DISCHARGE HEADER (3" LINE)
RCS-45-TOP	CONT	1009'6"	CH-223 DISCHARGE HEADER (3" LINE)
RCS-45-BOTTOM	CONT	1009'6"	CH-223 DISCHARGE HEADER (3" LINE)
RCS-47-TOP	CONT	1009'6"	CH-223 DISCHARGE HEADER (3" LINE)
RCS-47-BOTTOM	CONT	1009'6"	CH-223 DISCHARGE HEADER (3" LINE)
RCS-49	CONT	1009'6"	CH-223 DISCHARGE HEADER (3" LINE)
RCS-51	CONT	1007'9"	CH-223 DISCHARGE HEADER (3" LINE)
RCS-52	CONT	1007'9"	CH-223 DISCHARGE HEADER (3" LINE)
RCS-61	CONT	1050'11"	RC-141 DISCHARGE FLANGE
RCS-64-UPPER	CONT	1032'0"	PRESSURIZER SAFETY DISCHARGE HEADER TO PRESSURIZER QUENCH TANK (8" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
RCS-64-LOWER	CONT	1032'0"	PRESSURIZER SAFETY DISCHARGE HEADER TO PRESSURIZER QUENCH TANK (8" LINE)
RCS-65	CONT	1015'0"	RC-142 DISCHARGE FLANGE
RCS-67	CONT	1032'0"	PRESSURIZER SAFETY DISCHARGE HEADER TO PRESSURIZER QUENCH TANK (8" LINE)
RCS-68	CONT	1030'9"	PRESSURIZER SAFETY DISCHARGE HEADER TO PRESSURIZER QUENCH TANK (8" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
RCS-69	CONT	1032'0"	PRESSURIZER SAFETY DISCHARGE HEADER TO PRESSURIZER QUENCH TANK (8" LINE)
RCS-70	CONT	1032'0"	PRESSURIZER SAFETY DISCHARGE HEADER TO PRESSURIZER QUENCH TANK (8" LINE)
RCS-71	CONT	1032'0"	RC-141 DISCHARGE LINE (6" LINE)
RCS-2036-1	CONT	1008'0"	ABOVE ENTRYWAY TO PRESSURIZER QUENCH TANK ROOM (1" LINE)
RWS-79	81	1046'0"	16" RAW WATER SUPPLY HEADER
RWS-128-EAST	19	998'8"	20" RAW WATER SUPPLY HEADER
RWS-128-WEST	19	998'8"	20" RAW WATER SUPPLY HEADER
RWS-130	19	998'8"	20" RAW WATER SUPPLY HEADER
RWS-131	19	998'8"	20" RAW WATER SUPPLY HEADER
SG-A1	CONT	1049'0"	'A' STEAM GENERATOR
SG-A3	CONT	1049'1"	'A' STEAM GENERATOR
SG-B2	CONT	1049'0"	'B' STEAM GENERATOR
SG-B4	CONT	1049'0"	'B' STEAM GENERATOR
SIS-1	22	979' 6"	BETWEEN SI-149/HCV-2978 (8" LINE)
SIS-1A	22	979' 6"	BETWEEN SI-149/HCV-2978 (8" LINE)
SIS-3	22	979' 6"	DOWNSTREAM OF HCV-2968 (8" LINE)
SIS-4	22	979' 6"	BETWEEN SI-143/HCV-2968 (SI-3B DISCHARGE HEADER) (8" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-4A	22	979' 6"	BETWEEN SI-143/HCV-2968 (SI-3B DISCHARGE HEADER) (8" LINE)
SIS-5	22	979' 6"	LPSI PUMP SI-1A DISCHARGE HEADER (12" LINE)
SIS-5A	21	979' 6"	LPSI PUMP SI-1A DISCHARGE HEADER (8" LINE)
SIS-6	21	979' 6"	LPSI PUMP SI-1A DISCHARGE HEADER (8" LINE)
SIS-6A	21	979' 6"	JUST DOWNSTREAM OF HCV-2948 (8" LINE)
SIS-7	21	979' 6"	JUST DOWNSTREAM OF HCV-2948 (8" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-8	21	979' 6"	DOWNSTREAM OF HCV-2958 (8" LINE)
SIS-8B	22	979' 6"	DOWNSTREAM OF HCV-2958 (SI-3A DISCHARGE HEADER) (8" LINE)
SIS-8C	22	979' 6"	DOWNSTREAM OF HCV-2958 (SI-3A DISCHARGE HEADER) (8" LINE)
SIS-9	21	979' 6"	DOWNSTREAM OF HCV-2958 (8" LINE)
SIS-9B	21	979' 6"	BETWEEN SI-135/HCV-2958 (8" LINE)
SIS-10	23	983' 6"	LPSI PUMP DISCHARGE HEADER (12" LINE)
SIS-11	22	983' 6"	DOWNSTREAM OF HCV-2938 (8" LINE)
SIS-16	22	981' 6"	JUST UPSTREAM OF HCV-2907 (SI-2B SUCTION) (6" LINE)
SIS-16A	22	981' 6"	JUST UPSTREAM OF HCV-2907 (SI-2B SUCTION (6" LINE)
SIS-17	23	979' 6"	DOWNSTREAM OF HCV-350 (4" LINE)
SIS-17A	23	979' 6"	DOWNSTREAM OF HCV-350 (4" LINE)
SIS-18	23	979' 6"	DOWNSTREAM OF HCV-350 (4" LINE)
SIS-19	22	979' 6"	DOWNSTREAM OF HCV-350 (4" LINE)
SIS-20	22	979' 6"	DOWNSTREAM OF HCV-350 (4" LINE)
SIS-21	21	981' 6"	SI-2A AND SI-2C SUCTION HEADER (8" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-21A	21	981' 6"	JUST UPSTREAM OF SI-153 (6" LINE)
SIS-21B	21	981' 6"	SI-2A AND SI-2C SUCTION HEADER (8" LINE)
SIS-21C	21	981' 6"	SI-2A AND SI-2C SUCTION HEADER (8" LINE)
SIS-22	21	981' 6"	JUST UPSTREAM OF SI-153 (6" LINE)
SIS-23	21	981' 6"	JUST UPSTREAM OF SI-153 (6" LINE)
SIS-24	23	983' 6"	DOWNSTREAM OF HCV-347/AC-1025 (12" LINE)
SIS-24A	23	983' 6"	DOWNSTREAM OF HCV-347/AC-1025
SIS-26	22	979' 6"	JUST DOWNSTREAM OF SI-125 (10" LINE)
SIS-27	22	981' 6"	BETWEEN SI-1B/HCV-2937 (14" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-27A	22	981' 6"	BETWEEN SI-1B/HCV-2937 (14" LINE)
SIS-27B	22	981' 6"	BETWEEN SI-1B/HCV-2937 (14" LINE)
SIS-28	21	980' 0"	JUST UPSTREAM OF HCV-2947 (14" LINE)
SIS-28A	21	980' 0"	JUST UPSTREAM OF HCV-2947 (14" LINE)
SIS-29	21	972' 11"	JUST UPSTREAM OF SI-126 (10" LINE)
SIS-30	21	979' 6"	JUST UPSTREAM OF SI-126 (10" LINE)
SIS-30A	21	979' 6"	JUST UPSTREAM OF SI-126 (10" LINE)
SIS-31	22	981' 6"	JUST UPSTREAM OF HCV-2977 (12" LINE)
SIS-31A	22	981' 6"	JUST UPSTREAM OF HCV-2977 (12" LINE)
SIS-32	21	980' 0"	JUST UPSTREAM OF HCV-2957 (12" LINE)
SIS-32A	21	980' 0"	JUST UPSTREAM OF HCV-2957 (12" LINE)
SIS-32B	21	980' 0"	JUST UPSTREAM OF HCV-2957 (12" LINE)
SIS-33-TOP	21	981' 6"	SI-1A/SI-3A SUCTION HEADER (24" LINE)
SIS-33-BOTTOM	21	981' 6"	SI-1A/SI-3A SUCTION HEADER (24" LINE)
SIS-34	21	980' 0"	SI-1A/SI-3A SUCTION HEADER (24: LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-35-TOP	21	980' 0"	SI-1A/SI-3A SUCTION HEADER (24" LINE)
SIS-35-BOTTOM	21	980' 0"	SI-1A/SI-3A SUCTION HEADER (24" LINE)
SIS-36-TOP	21	974' 6"	JUST UPSTREAM OF SI-139 (20" LINE)
SIS-36-BOTTOM	21	974' 6"	JUST UPSTREAM OF SI-139 (20" LINE)
SIS-37-TOP	23	981' 6"	JUST DOWNSTREAM OF SI-159 (24" LINE)
SIS-37-BOTTOM	23	981' 6"	JUST DOWNSTREAM OF SI-159 (24" LINE)
SIS-38	22	981' 6"	DOWNSTREAM OF SI-159 (24" LINE)
SIS-38B	21	981' 6"	JUST UPSTREAM OF SI-140 (20" LINE)
SIS-38C	21	981' 6"	BETWEEN LCV-383-1/SI-140 (20" LINE)
SIS-39-TOP	21	974' 6"	JUST DOWNSTREAM OF LCV-383-1 (20" LINE)
SIS-39-BOTTOM	21	974' 6"	JUST DOWNSTREAM OF LCV-383-1 (20" LINE)
SIS-39A	21	974' 6"	JUST DOWNSTREAM OF LCV-383-1 (20" LINE)
SIS-40-TOP	22	981' 6"	DOWNSTREAM OF SI-159 (24" LINE)
SIS-40-BOTTOM	22	981' 6"	DOWNSTREAM OF SI-159 (24" LINE)
SIS-41A	21	979' 6"	JUST DOWNSTREAM OF HCV-304 (4" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-42	21	979' 6"	HPSI PUMP SI-2A DISCHARGE HEADER (4" LINE)
SIS-42A	21	979' 6"	HPSI PUMP SI-2A DISCHARGE HEADER (4" LINE)
SIS-43	23	979' 6"	HPSI PUMP DISCHARGE HEADER (4" LINE)
SIS-43A	22	979' 6"	HPSI PUMP DISCHARGE HEADER (4" LINE)
SIS-44	23	979' 6"	HPSI PUMP DISCHARGE HEADER (4" LINE)
SIS-44A	23	979' 6"	HPSI PUMP DISCHARGE HEADER (4" LINE)
SIS-44B	23	979' 6"	HPSI PUMP DISCHARGE HEADER (4" LINE)
SIS-44C	23	979' 6"	HPSI PUMP DISCHARGE HEADER (4" LINE)
SIS-45	23	979' 6"	BETWEEN HCV-304/HCV-307 (4" LINE)
SIS-45A	23	979' 6"	BETWEEN HCV-304/HCV-307 (4" LINE)
SIS-46	23	979' 6"	BETWEEN HCV-304/HCV-307 (4" LINE)
SIS-47	22	979' 6"	BETWEEN HCV-304/HCV-307 (4" LINE)
SIS-48	22	979' 6"	BETWEEN HCV-305/HCV-307 (4" LINE)
SIS-49	23	979' 6"	BETWEEN HCV-304/HCV-307 (4" LINE)
SIS-50	23	979' 6"	DOWNSTREAM OF HCV-350 (4" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-53	4	997' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-53A	4	997' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-54	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-55	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-56	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-56A	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-57	4	996' 0"	JUST DOWNSTREAM OF HCV-386 (6" LINE)
SIS-58	4	996' 0"	JUST DOWNSTREAM OF HCV-386 (6" LINE)
SIS-59	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-60	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-63	15A	990' 6"	JUST UPSTREAM OF SI-173 (12" LINE)
SIS-64	15A	990' 6"	JUST UPSTREAM OF SI-174 (12" LINE)
SIS-65	15A	990' 6"	JUST UPSTREAM OF SI-173 (12" LINE)
SIS-66	15A	1000' 0"	UPSTREAM OF SI-173 (12" LINE)
SIS-67	14	1000' 0"	DOWNSTREAM OF FI-343 ORIFICE (12" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-68	14	1001' 10"	BETWEEN SI-172/SI-174 AND HCV-344 (12" LINE)
SIS-55	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-56	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-56A	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-57	4	996' 0"	JUST DOWNSTREAM OF HCV-386 (6" LINE)
SIS-58	4	996' 0"	JUST DOWNSTREAM OF HCV-386 (6" LINE)
SIS-59	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-60	4	996' 6"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-63	15A	990' 6"	JUST UPSTREAM OF SI-173 (12" LINE)
SIS-64	15A	990' 6"	JUST UPSTREAM OF SI-174 (12" LINE)
SIS-65	15A	990' 6"	JUST UPSTREAM OF SI-173 (12" LINE)
SIS-66	15A	1000' 0"	UPSTREAM OF SI-173 (12" LINE)
SIS-67	14	1000' 0"	DOWNSTREAM OF FI-343 ORIFICE (12" LINE)
SIS-68	14	1001' 10"	BETWEEN SI-172/SI-174 AND HCV-344 (12" LINE)
SIS-69	14	1003' 6"	BETWEEN FI-342/HCV-344 (12" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-70	14	1000' 0"	DOWNSTREAM OF FI-343 ORIFICE (12" LINE)
SIS-71A	13	1002' 8"	LPSI PUMP DISCHARGE HEADER (12" LINE)
SIS-72	12	1002' 8"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-73	13	1002' 8"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-74	13	1002' 8"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-74A	13	1002' 8"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-75	13	1002' 8"	BETWEEN SI-184/SIRWT (6" LINE)
SIS-76	14	997' 6"	UPSTREAM OF HCV-349/SI-306 (6" LINE)
SIS-76A	14	997' 6"	UPSTREAM OF HCV-349/SI-306 (6" LINE)
SIS-77	13	991' 0"	BETWEEN SI-184/SI-306 (6" LINE)
SIS-77A	13	991' 0"	BETWEEN SI-184/SI-306 (6" LINE)
SIS-78	13	991' 0"	JUST DOWNSTREAM OF HCV-349 (4" LINE)
SIS-79	13	1001' 4"	DOWNSTREAM OF HCV-349 (4" LINE)
SIS-79A	13	1001' 4"	DOWNSTREAM OF HCV-349 (4" LINE)
SIS-80	13	1001' 4"	DOWNSTREAM OF HCV-349 (4" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-81A	13	990' 3"	BETWEEN HCV-307/SI-323 (4" LINE)
SIS-81B	13	990' 3"	BETWEEN HCV-307/SI-323 (4" LINE)
SIS-82	13	991' 6"	BETWEEN HCV-306/PENETRATION M-6 (4" LINE)
SIS-82A	13	991' 6"	BETWEEN HCV-306/PENETRATION M-6 (4" LINE)
SIS-83	15	1001' 9"	BETWEEN SI-173/SI-174 AND HCV-341 (12" LINE)
SIS-84	14	1001' 9"	BETWEEN SI-173/SI-174 AND HCV-341 (12" LINE)
SIS-85	13	1002' 10"	UPSTREAM OF HCV-341 (12" LINE)
SIS-85A	13	1002' 10"	UPSTREAM OF HCV-341 (12" LINE)
SIS-86	13	991' 6"	JUST DOWNSTREAM OF HCV-341 (12" LINE)
SIS-87	15A	990' 9"	BETWEEN SI-167/HCV-335 (12" LINE)
SIS-88	15A	990' 9"	JUST UPSTREAM OF SI-167 (12" LINE)
SIS-89	15	1000' 0"	LPSI PUMP DISCHARGE HEADER (12" LINE)
SIS-89A	15	1000' 0"	LPSI PUMP DISCHARGE HEADER (12" LINE)
SIS-90	14	1000' 0"	LPSI PUMP DISCHARGE HEADER (12" LINE)
SIS-91	13	1002' 8"	LPSI PUMP DISCHARGE HEADER (12" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-91A	13	1002' 8"	LPSI PUMP DISCHARGE HEADER (12" LINE)
SIS-92	15A	992' 3"	JUST UPSTREAM OF SI-170 (12" LINE)
SIS-93	15A	990' 9"	JUST UPSTREAM OF SI-171 (12" LINE)
SIS-93A	15A	990' 9"	JUST UPSTREAM OF SI-171 (12" LINE)
SIS-94	14	1001' 10"	CONTAINMENT SPRAY PUMP DISCHARGE HEADER (12" LINE)
SIS-95	14	1001' 10"	CONTAINMENT SPRAY PUMP DISCHARGE HEADER (12" LINE)
SIS-96	13	1002' 9"	CONTAINMENT SPRAY PUMP DISCHARGE HEADER (12" LINE)
SIS-96A	13	1002' 9"	CONTAINMENT SPRAY PUMP DISCHARGE HEADER (12" LINE)
SIS-97	12	1002' 9"	CONTAINMENT SPRAY PUMP DISCHARGE HEADER (12" LINE)
SIS-98	14	999' 6"	UPSTREAM OF HCV-350 (4" LINE)
SIS-99	14	998' 6"	UPSTREAM OF HCV-350 (4" LINE)
SIS-100	14	997' 6"	UPSTREAM OF HCV-350 (4" LINE)
SIS-101	13	991' 0"	JUST DOWNSTREAM OF HCV-350 (4" LINE)
SIS-101A	13	991' 0"	JUST UPSTREAM OF HCV-350 (4" LINE)
SIS-102	13	991' 0"	JUST USPTREAM OF HCV-350 (4" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-103	13	1001' 4"	DOWNSTREAM OF HCV-350 (4" LINE)
SIS-104	13	1001' 4"	DOWNSTREAM OF HCV-350 (4" LINE)
SIS-104A	13	1001' 4"	DOWNSTREAM OF HCV-350 (4" LINE)
SIS-104B	13	1001' 4"	DOWNSTREAM OF HCV-350 (4" LINE)
SIS-112C	CONT	1111' 6"	CONTAINMENT SPRAY HEADER (12" LINE)
SIS-112D	CONT	1111' 6"	CONTAINMENT SPRAY HEADER (12" LINE)
SIS-112E	CONT	1111' 6"	CONTAINMENT SPRAY HEADER (12" LINE)
SIS-112F	CONT	1111' 6"	CONTAINMENT SPRAY HEADER (12" LINE)
SIS-114A	CONT	1074' 0"	DOWNSTREAM OF SI-177, CONTAINMENT SHELL (12" LINE)
SIS-114B	CONT	1074' 0"	DOWNSTREAM OF SI-177, CONTAINMENT SHELL (12" LINE)
SIS-114E	CONT	1074' 0"	DOWNSTREAM OF SI-177, CONTAINMENT SHELL (12" LINE)
SIS-114F	CONT	1074' 0"	DOWNSTREAM OF SI-177, CONTAINMENT SHELL (12" LINE0
SIS-115	CONT	1009' 6"	JUST DOWNSTREAM OF SI-212 INSIDE BIOSHIELD (12" LINE)
SIS-116	CONT	1009' 6"	DOWNSTREAM OF SI-216 INSIDE BIOSHIELD (12" LINE)
SIS-117	CONT	1009' 6"	UPSTREAM OF SI-211 INSIDE BIOSHIELD (12" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-117A	CONT	1009' 6"	UPSTREAM OF SI-211 INSIDE BIOSHIELD (12" LINE)
SIS-118	CONT	1009' 6"	BETWEEN HCV-2934/SI-215 INSIDE BIOSHIELD (12" LINE)
SIS-118A	CONT	1009' 6"	BETWEEN HCV-2934/SI-215 INSIDE BIOSHIELD (12" LINE)
SIS-119-TOP	CONT	1006' 4"	BETWEEN SI-207/SI-208 INSIDE BIOSHIELD (12" LINE)
SIS-119-BOTTOM	CONT	1006' 4"	BETWEEN SI-207/SI-208 INSIDE BIOSHIELD (12" LINE)
SIS-120	CONT	1006' 4"	JUST DOWNSTREAM OF SI-207 INSIDE BIOSHIELD (12" LINE)
SIS-121	CONT	1007' 0"	BETWEEN HCV-2954/SI-207 (12" LINE)
SIS-122	CONT	1003' 0"	JUST DOWNSTREAM OF HCV-348 INSIDE BIOSHIELD (12" LINE)
SIS-122A	CONT	1003' 0"	JUST DOWNSTREAM OF HCV-348 INSIDE BIOSHIELD (12" LINE)
SIS-123	CONT	1005' 6"	BETWEEN PENETRATION M-16/BIOSHIELD WALL (12" LINE)
SIS-124	CONT	1010' 4"	DOWNSTREAM OF SI-194 INSIDE BIOSHIELD (6" LINE)
SIS-127	CONT	1010' 4"	DOWNSTREAM OF SI-194 (6" LINE)
SIS-127A	CONT	1010' 10"	DOWNSTREAM OF SI-194 (6" LINE)
SIS-129	CONT	1006' 4"	JUST UPSTREAM OF SI-219 INSIDE BIOSHIELD (12" LINE)
SIS-130	CONT	1008' 2"	DOWNSTREAM OF SI-203 INSIDE BIOSHIELD (12" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SI-132-TOP	CONT	1008' 2"	DOWNSTREAM OF SI-203 INSIDE BIOSHIELD (6" LINE)
SIS-132-BOTTOM	CONT	1007' 8"	DOWNSTREAM OF SI-203 (6" LINE)
SIS-134	CONT	1003' 0"	UPSTREAM OF HCV-327 (6" LINE)
SIS-135	CONT	1003' 0"	UPSTREAM OF HCV-327 (6" LINE)
SIS-140	CONT	1008' 8"	DOWNSTREAM OF SI-200 INSIDE BIOSHIELD (6" LINE)
SIS-149	CONT	1004' 0"	DOWNSTREAM OF SI-200 INSIDE BIOSHIELD (6" LINE)
SIS-150	CONT	1008' 8"	DOWNSTREAM OF SI-197 INSIDE BIOSHIELD (6" LINE)
SIS-159A	CONT	1004' 3"	DOWNSTREAM OF PENETRATION M-17 (6" LINE
SIS-161	CONT	1014' 2"	BETWEEN HCV-331 AND SI-194 (6" LINE)
SIS-162	CONT	1014' 4"	JUST DOWNSTREAM OF HCV-2914 (12" LINE)
SIS-164	CONT	1014' 4"	JUST DOWNSTREAM OF HCV-327 (6" LINE)
SIS-165	CONT	1014' 4"	BETWEEN HCV-329/SI-200 (6" LINE)
SIS-165A-TOP	CONT	1014' 4"	BETWEEN HCV-329/SI-200 (6" LINE)
SIS-165A-BOTTOM	CONT	1014' 4"	BETWEEN HCV-329/SI-200 (6" LINE)
SIS-166	CONT	1014' 6"	JUST DOWNSTREAM OF HCV-2974 (12" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-167	CONT	1014' 6"	JUST DOWNSTREAM OF HCV-2974 (12" LINE)
SIS-168	CONT	1014' 6"	BETWEEN HCV-333/SI-197 (6" LINE)
SIS-168A-TOP	CONT	1014' 6"	BETWEEN HCV-333/SI-197 (6" LINE)
SIS-169	59	1009' 5"	JUST UPSTREAM OF HCV-345 (12" LINE)
SIS-169A	59	1010' 11"	JUST DOWNSTREAM OF HCV-345 (12" LINE)
SIS-170	59	1009' 0"	JUST UPSTREAM OF HCV-344 (12" LINE)
SIS-170A	59	1009' 0"	JUST UPSTREAM OF HCV-344 (12" LINE)
SIS-172	69	1032' 0"	UPSTREAM OF PENETRATION M-86 (12" LINE)
SIS-173	69	1036' 7"	BETWEEN PENETRATION M-89/HCV-345 (12" LINE)
SIS-174	CONT	1050' 2"	DOWNSTREAM OF HCV-865 (4" LINE)
SIS-174A	CONT	1050' 2"	DOWNSTREAM OF HCV-865 (4" LINE)
SIS-174B	CONT	1052' 0"	DOWNSTREAM OF SI-177 CONTAINMENT SHELL (12" LINE)
SIS-174C	CONT	1052' 0"	DOWNSTREAM OF SI-177 CONTAINMENT SHELL (12" LINE)
SIS-174D	CONT	1064' 0"	DOWNSTREAM OF SI-177 CONTAINMENT SHELL (12" LINE)
SIS-174E	CONT	1064' 0"	DOWNSTREAM OF SI-177 CONTAINMENT SHELL (12" LINE)

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-175	CONT	1057' 0"	DOWNSTREAM OF HCV-865 CONTAINMENT SHELL (4" LINE)
SIS-175A	CONT	1057' 0"	DOWNSTREAM OF HCV-865 CONTAINMENT SHELL (4" LINE)
SIS-176B	CONT	1052' 10"	DOWNSTREAM OF SI-178 CONTAINMENT SHELL (12" LINE)
SIS-176C	CONT	1050' 4"	DOWNSTREAM OF SI-178, CONTAINMENT SHELL (12" LINE)
SIS-176D	CONT	1064' 0"	DOWNSTREAM OF SI-178 CONTAINMENT SHELL (12" LINE)
SIS-176E	CONT	1063' 0"	DOWNSTREAM OF SI-178 CONTAINMENT SHELL (12" LINE)
SIS-176G	CONT	1074' 0"	DOWNSTREAM OF SI-178 CONTAINMENT SHELL (12" LINE)
SIS-176H	CONT	1074' 0"	DOWNSTREAM OF SI-178 CONTAINMENT SHELL (12" LINE)
SIS-183	CONT	1055' 9"	DOWNSTREAM OF HCV-864 (4" LINE)
SIS-184	22	979' 6"	LPSI PUMP SI-1A DISCHARGE HEADER (8"LINE)
SIS-185	21	979' 6"	LPSI PUMP SI-1A DISCHARGE HEADER (8" LINE)
SIS-187	22	983' 6"	DOWNSTREAM OF HCV-2938 (8" LINE)
SIS-188	22	983' 6"	DOWNSTREAM OF HCV-2938 (8" LINE)
SIS-202	59	1011' 3"	JUST DOWNSTREAM OF HCV-344 (12" LINE)
SIS-204	13	996' 0"	CONNECTED TO HCV-347

ISTD List			
Snubber Identification Number	**Room**	**Elevation**	**Location**
SIS-205	21	979' 6"	ATTACHED TO HCV-304
SIS-206	21	979' 6"	ATTACHED TO HCV-305
SIS-208	13	994' 0"	ATTACHED TO HCV-349
SIS-2033-1	CONT	1010' 7"	SI LINE TO SI-4C FROM 6" SI LINE (1" LINE)
SIS-2033-2	CONT	1010' 7"	SI LINE TO SI-4C FROM 6" SI LINE (1" LINE)
SIS-2034-1	CONT	1008' 2"	SI LINE TO SI-4A FROM 6" SI LINE (1" LINE)
SIS-2041-1	CONT	1004' 0"	BETWEEN HCV-312 AND 4" SI LINE (2"LINE)
SIS-2041-2	CONT	1004' 0"	BETWEEN HCV-312 AND 4" SI LINE (2" LINE)
WDS-107	13	1004' 0"	DOWNSTREAM OF HCV-507B (3" LINE)
WDS-122-RIGHT	13	991' 6"	BETWEEN HCV-500A/HCV-500B (4" LINE)
WDS-122-LEFT	13	991' 6"	BETWEEN HCV-500A/HCV-500B (4" LINE)
WDS-289	CONT	1004' 0"	BETWEEN WD-2A/PENETRATION M-20 (4" LINE)