Florida Power
CORPORATION

**Safe, Reliable, Economic and Environmentally Sound**

# Crystal River Unit 3

# ASME Section XI

# Pump and Valve Program

# Inservice Testing Program

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# PUMP AND VALVE PROGRAM
# INSERVICE TESTING (IST)
# CRYSTAL RIVER UNIT-3

## 1.0 Introduction

This Inservice Testing Pump and Valve Program Manual, referenced elsewhere as the "Manual" establishes and defines the Inservice Pump and Valve Testing Program for the Crystal River Unit 3 third ten-year interval. The third ten-year interval for Crystal River Unit 3 was originally scheduled to begin on March 16, 1997. However, due to an extended outage (***September 1996 to February 1998***), the second interval Inservice Testing Program Plan has been extended to ***August 13, 1998***, as allowed by the 1989 Edition of the American Society of Mechanical Engineers (ASME) Section XI, Subsection IWA 2430(e). This program has been updated to the latest edition and addenda of ASME Section XI (referred in this Manual as simply the "Code") approved by the Nuclear Regulatory Commission by incorporation into the Code of Federal Regulation (10CFR50.55a) 12 months prior to the start of the third 120 month inspection interval. The 1988 Addenda and 1989 Edition of ASME Section XI were incorporated by reference in Paragraph.50.55a(b) by rulemaking effective September 8, 1992. This edition of the Code was still referenced in Paragraph 50.55a(b) on ***August 13, 1997***, 12 months prior to the start of the Crystal River Unit 3 third ten-year interval. The third ten-year interval starts on August 14, 1998 and runs through August 13, 2008.

The 1989 Edition of the Code specifies that the rules for the Inservice Testing of pumps and valves are stated in American Society of Mechanical Engineers/ American National Standards Institute (ASME/ANSI) Operations and Maintenance (OM) Standards, 1987 Edition, with the 1988a addenda, Part 6, "Inservice Testing of Pumps in Light -Water Reactor Power Plants" and Part 10, "Inservice Testing of Valves in Light-Water Reactor Power Plants" respectively. Section 4.3.1 of Part 10 requires that safety and relief valves meet the requirements of Part 1, "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices", of the ASME/ANSI OM Standards. The effective edition and addenda of the OM Standards at the time of incorporation into the 1989 Edition of the Code are OM-1987 and 1988a addenda. These are the Operations and Maintenance Standards used in the development of the Crystal River Unit 3 Inservice Testing Program.

The scope of the Operations and Maintenance Standards has been expanded to require that certain pumps and valves, whether ASME Code Class 1, 2, or 3, or not, be included in the Inservice Testing Program. However, until the scope of 10CFR50.55a (the upper tier document controlling the inservice testing program requirements) is revised, the scope of the Crystal River Unit 3 Inservice Testing Program will continue to address only those components classified by the licensee as ASME Code Class 1, 2, or 3 (as per NUREG-1482, Paragraph 2.2).

## 1.1 Purpose

The purpose of this Inservice Testing Pump and Valve Program is to verify operational readiness of those pumps and valves which are required to accomplish specified safety functions or tasks, as identified within various plant safety analyses.

This Manual describes the Inservice Testing Pump and Valve Program which is implemented by referenced procedures. This Manual is not an implementing document for performing inservice testing of components. It is intended to provide guidance and reference to those implementing procedures and is intended for use in maintaining the program status, providing reference to Maintenance Planning and Inservice Testing personnel, and to provide a description of the content of the program and established technical positions to regulatory authorities.

The controlling reference for this Manual is Nuclear Engineering Procedure, NEP-301, Control of ASME Section XI Examination Program Plans, Manuals, and Reports.

## 1.2 Program Description

This Program Manual specifies the components included in the Inservice Testing Program, the applicable surveillance/testing procedures, and associated testing frequencies. Relief Requests are provided for those components where; 1) the proposed alternative inspection/test provides an acceptable level of quality and safety, 2) compliance with the Code requirements would result in a hardship without a corresponding increase in safety, 3) complying with the Code requirements is impractical. Cold Shutdown and Refueling Outage Justifications are also included to justify the extended testing frequency for those components that can only be tested at either Cold Shutdown or Refueling Outage plant conditions.

Inservice pump and valve testing shall be performed in accordance with ASME Boiler and Pressure Vessel Code - Section XI Division 1, Subsections IWP & IWV , 1989 Edition (which implements OM Parts 6 and 10) to the extent practicable within limits of design, geometry and materials of construction of the components. The guidance of Nuclear Regulatory Commission Generic Letter 89-04, the minutes of the public meetings regarding Generic Letter 89-04, and NUREG-1482 , Guidelines for Inservice Testing at Nuclear Power Plants, have been used in the development of this program.

In addition to those pumps and valves required to be tested by the Code, other components may be included in the program from a good engineering and management practice standpoint. These components need not be tested to specific Code criteria and are identified as "Augmented" requirements.

The interpretation of the Inservice Testing Program is the responsibility of Supervisor, Nuclear Engineering Programs.

This Manual is divided into additional sections, as follows:

**Section 2.0**, Pump Testing - Provides a general discussion of the Crystal River Unit 3 inservice pump testing program and implementation of OM Part 6 requirements. Technical positions for the Crystal River Unit 3 Section XI pump testing program are also provided in this section.

**Section 3.0**, Pump Tables - Provides a listing of the pumps included in the Crystal River Unit 3 Inservice Testing Program. These tables include information on component data, required test methods, parameters monitored, implementing surveillance procedures, surveillance frequency and applicable Relief Requests and/or applicable Cold Shutdown or Refueling Outage Justifications.

**Section 4.0**, Valve Testing - Provides a general discussion of the Crystal River Unit 3 inservice valve testing program and implementation of OM Part 10 requirements. Technical positions for the Crystal River Unit 3 Section XI valve testing program are also provided in this section.

**Section 5.0**, Valve Tables - Provides a listing of the valves included in the Crystal River Unit 3 Inservice Testing Program. These tables include information on component data, required test methods, implementing surveillance procedures, surveillance frequency and applicable Relief Requests and/or applicable Cold Shutdown or Refueling Outage Justifications.

**Section 6.0**, Relief Requests - Provides a listing and includes Relief Requests for those pumps and valves which cannot be tested in accordance with specific Code requirements. It states why the test cannot be performed and provides a description and schedule for alternative testing.

**Section 7.0**, Cold Shutdown Justifications - Provides the listing and includes Cold Shutdown Justifications for the components that cannot be tested during normal operation and can only be tested during cold shutdown periods. It also provides the basis for not testing these valves during operation and describes the alternate testing being performed.

**Section 8.0**, Refueling Outage Justifications - Provides the listing and includes Refueling Outage Justifications for the valves that cannot be tested during normal operation or cold shutdown conditions. It also provides the basis for not testing these valves during operation and describes the alternate testing being performed.

## 1.3 Definitions

*Acceptance Criteria*: measurable values that define the acceptability of specific performance parameters for the associated component.

*Cold Shutdown Justification (CSJ):* document providing adequate technical justification for testing specific valves at cold shutdown frequency instead of at quarterly frequency. This frequency is allowed by OM Part 10 Paragraph 4.2.1.2.

*Inservice Test:* a special test for obtaining, through measurement or observation, information to determine the operational readiness of a pump or valve. (These tests are not designed to establish complete component performance. They are to determine the general condition of a component such as the performance of a pump at one operating point from test to test.)

*IST Basis Document*: document consisting of the specific Inservice Testing Program information necessary to determine the components that require testing and justifications for those that are excluded from the Inservice Testing Program. Reference NUREG-1482, Paragraph 2.4.4.

*Maintenance:* routine servicing or work undertaken to correct or prevent an abnormal or unsatisfactory condition.

*Operational Readiness:* the capability of a pump or valve to fulfill its safety function.

*Reference Value*: initial or "baseline" results of component performance parameters that subsequent test results are compared to. These values are established when the component is known to be operating acceptably. Reference OM Part 10, Paragraph 3.3, 3.4, and 3.5.

*Refueling Outage Justification (ROJ):* document providing adequate technical justification for testing specific valves at a refueling outage frequency instead of at quarterly or cold shutdown frequency. This frequency is allowed by OM Part 10 Paragraph 4.2.1.2.

*Relief Requests*: documents submitted to the Nuclear Regulatory Commission requesting permission to deviate from the testing requirements stipulated in the ASME Code. Relief Requests must provide adequate justification and require approval prior to implementing in the Inservice Testing Program. These requests can also be pre-approved by the Nuclear Regulatory Commission, in which case they can be adopted without express permission being granted.

*Required Action Range*: range of test values indicating that the associated component is not in a state of operational readiness. Corrective action shall be initiated immediately for components with test results that fall in this range.

*Safe Shutdown*: Crystal River Unit 3 is licensed with Hot Shutdown as the Safe shutdown condition.

## 1.4 Background - Program Development

Each ASME Class 1, 2 and 3 pump and valve was evaluated to determine the applicability of the requirements of 10CFR50.55a(f) and Plant Technical Specifications.

In accordance with ASME/ANSI OM-1987 with OMa-1988 Addenda, the following are required to be included in the testing program:

- (OM Part 6, Paragraph 1.1) Centrifugal and positive displacement pumps that are provided with an emergency power source and required to perform a specific function in

    1) shutting down the reactor to the cold shutdown condition;
    2) maintaining the cold shutdown condition; or
    3) mitigating the consequences of an accident.

- (OM Part 10, Paragraph 1.1) Active or passive valves (and their actuating and position indicating systems) which are required to perform a specific function in

    1) shutting down the reactor to the cold shutdown condition;
    2) maintaining the cold shutdown condition; or
    3) mitigating the consequences of an accident.

- (OM Part 10, Paragraph 1.1) Pressure relief devices that protect systems or portions of systems which perform a required function in

    1) shutting down the reactor to the cold shutdown condition;
    2) maintaining the cold shutdown condition; or
    3) mitigating the consequences of an accident.

ASME Safety Class 1, 2 and 3 pumps and valves were first evaluated to determine if any of the exclusion criteria of OM Parts 6 and 10 Paragraph 1.2 were applicable. A standardized, step-by-step approach was then used to determine the applicability of the requirements of OM Part 6 and OM Part 10 to each remaining pump and valve which was not clearly exempt. First, a determination was made as to whether the component was located in a system or portion of a system (i.e., a flowpath) which is required to be operable in order to shutdown the Reactor to the Shutdown condition or in mitigating the consequences of an accident. Those which did not perform a specific function were identified as being outside the Scope of OM Part 6 or OM Part 10, as defined in Paragraph 1.1 of both Parts. These components are identified and documented in the Crystal River Unit 3 Inservice Testing Basis Document and are not included in this Program Manual.

If a valve was determined to be in a safety-related flowpath, or in a branch line coming off a safety related flowpath, a determination was made to determine what function or functions the valve was required to perform for safe shutdown, accident mitigation, or overpressure protection. The valve was then categorized according to its type and function (Category A, AC, B, C, D) and as to whether it had to change position in order to accomplish any of the safety functions identified (Active vs. Passive). OM Part 10, Table 1, then prescribes which testing requirements should be applied to each specific valve.

## 1.5 Technical Positions - General

### 1.5.1 Basis for Program Scope

The Crystal River Unit 3 Final Safety Analysis Report, related design basis documents, and other relevant published accident analyses will be the primary references for determining which components are subject to the requirements of ASME Section XI Inservice Testing requirements. Although several other plant source documents (e.g., Emergency Operating Procedures, vendor's information) identify various components that may be important to plant safety or may be operated in conjunction with recovery from an accident, unless specific credit is taken or assumed in the plant safety analyses for a pump or valve, the component need not be included in the Inservice Testing Program (NUREG-1482, Paragraph 2.2, Generic Letter 89-04, Position 11, and Summary of Public Workshops Held in Nuclear Regulatory Commission Regions on Inspection Procedure 73756, "Inservice Testing of Pumps and Valves," and Answers to Panel Questions on Inservice Testing Issues, Question 1.1.2).

### 1.5.2 Redundant Components

When multiple components are capable of performing the same specified function (e.g., multiple check valves closing in series) only one need be included in the Program. This technical position only applies where licensing documents do not specifically take credit for the designed redundancy. (NUREG-1482, Paragraph 4.1.1)

### 1.5.3 Skid-Mounted Components

Crystal River Unit 3 has adopted the position that testing of the major component is an acceptable means of verifying the operational readiness of a skid mounted component (NUREG-1482, Paragraph 3.4).

### 1.5.4 Passive Failure Protection

In cases where protection of critical systems from passive failures is a commitment as discussed in the Final Safety Analysis Report or other licensing documents, components providing redundancy or isolation of failed components shall be included in the testing program. Valve operation in the case of passive failures will be to isolate the break or condition for inventory retention and as well as flooding prevention (where safety related equipment is in jeopardy) or to provide alternate means of performing the safety function of the affected system (if rendered inoperable).

### 1.5.5 Accident

For the purpose of this program, an accident is defined as a series of events that could occur in the reactor plant with the ultimate possibility of causing undue risk to the general public as established by 10CFR100. These accidents are typically discussed and analyzed in Chapter 14 of the Crystal River Unit 3 Final Safety Analysis Report. Other accident analyses described elsewhere in the Final Safety Analysis Report are also considered. Specifically, system and component response to fires (10CFR50 Appendix R), and Station Blackout events were not included for inservice testing requirements. 10CFR50 Appendix R was excluded due to the defense in depth philosophy used in establishing required component response and Station Blackout was excluded based on exceeding single failure scenarios to enter this condition. Both scenarios were considered as outside the scope of ASME Section XI inservice testing requirements.

## 1.6 Basis of Inservice Testing System Requirements

This Section identifies the primary function or functions of each system at Crystal River Unit 3 which bring some or all of its components within the Scope of the Inservice Testing Program. Specific functions for each component can be found in the Inservice Testing Program Basis Document.

AH: AIR HANDLING SYSTEM

Components of the Air Handling System are illustrated on Flow Diagram FD-302-751. Functional requirements are identified in Enhanced Design Basis Document 8/11. Four valves provide the function of Containment Isolation during normal operation and, if required, during shutdown and refueling operations.

AS: AUXILIARY STEAM SYSTEM

Components of the Auxiliary Steam System are shown on Flow Diagram FD-302-051. Functional requirements are identified in Section 1.2 of Enhanced Design Basis Document 6/16.

The Auxiliary Steam System provides a flow path for steam to the turbine of the turbine-driven Emergency Feedwater Pump.

BS: REACTOR BUILDING SPRAY SYSTEM

Components of the Reactor Building Spray System are shown on Flow Diagram FD-302-711. Functional requirements of the Reactor Building Spray System are identified in the Enhanced Design Basis Document 6/4. The following functions comprise the basis for its inclusion in the Inservice Testing Program:

The Reactor Building Spray System provides a means of reducing the pressure and temperature inside Containment following a large break Loss of Coolant Accident or a Main Steam or Feedwater line break in order to prevent pressure from exceeding Reactor Building Design pressure.

The Reactor Building Spray System provides a means of reducing the concentration of airborne radioactive iodine in the Containment atmosphere following a Loss of Coolant Accident in order to prevent exceeding legal thyroid dose limits.

Valves within the Reactor Building Spray System provide a Containment Isolation function.

CA: CHEMICAL ADDITION, LIQUID SAMPLING, AND POST ACCIDENT SAMPLING SYSTEMS

Safety-related valves in these systems are shown on Flow Diagrams FD-302-671, FD-302-672, and FD-302-700. Their only safety-related function is Containment Isolation.

CD: CONDENSATE SYSTEM

Condensate System components are illustrated on Flow Diagram FD-302-101. Functional requirements are stated in Enhanced Design Basis Document 6/23.

The Condensate System is included in the Inservice Testing Program due to the existence of a small number of ASME Safety Class valves in the vicinity of the Condensate Storage Tank, CDT-1. The Condensate Storage Tank was formerly the safety-related source of supply to the Emergency Feedwater pumps until the addition of the dedicated Emergency Feedwater Tank, EFT-2

CF: CORE FLOOD SYSTEM

Components of the Core Flood System are shown on Flow Diagram FD-302-702. Functional requirements of the Core Flood System are identified in the Enhanced Design Basis Document 6/5. The following primary functions comprise the basis for its inclusion in the Inservice Testing Program:

The Core Flood System provides a rapid injection of a large volume of borated water into the Reactor Vessel for core cooling and Reactor shutdown during loss of coolant accidents.

The Core Flood System provides Reactor Building isolation associated with Core flood pipes penetrating containment. This function is accomplished by several check valves and automatically operated valves in the vent, drain, and nitrogen and makeup water supply lines to the Core Flood Tanks. The automatically actuated valves are provided with an Engineered Safeguards Signal for containment isolation.

Maintains the Reactor Coolant pressure boundary associated with Core Flood piping connected to the Reactor Coolant System. Valves CFV-1 and CFV-3 are specifically credited with the accomplishment of this function.

Provides redundant flow paths to the Reactor Vessel for the Decay Heat System.

Provides isolation of the Decay Heat System from the Reactor Coolant System to prevent Decay Heat over-pressurization. Valves CFV-1 and CFV-3 operate in conjunction with DHV-1 and DHV-2 to accomplish this function.

CH: CHILLED WATER SYSTEM

Components of the Chilled Water System are illustrated on Flow Diagrams FD-302-756, FD-302-765, and FD-302-769. Functional requirements are identified in the Enhanced Design Basis Document 8/15. The primary functions of the Chilled Water System which comprise the basis for its inclusion in the Inservice Testing Program are:

The Chilled Water System provides convectional cooling for essential Control Room ventilation equipment in order to maintain operability of Control Room equipment and habitability of the Control Room when required to safely shutdown the Plant or for mitigation of an accident.

The Chilled Water System provides convectional cooling for the Emergency Feedwater Initiation and Control Rooms Heating Ventilating and Air Conditioning System during all plant modes of operation excluding certain fires.

CI: INDUSTRIAL COOLING WATER SYSTEM

The Industrial Cooling Water System is illustrated on Flow Diagram FD-302-762. Containment Isolation is the only safety-related function of the System. Functional requirements are identified in Enhanced Design Basis Document 6/29.

DC: DECAY HEAT CLOSED CYCLE COOLING SYSTEM

Components of the Decay Heat Closed Cycle Cooling System are illustrated on Flow Diagram FD-302-631. Functional requirements are identified in the Enhanced Design Basis Document 6/6.

The primary function of the Decay Heat Closed Cycle Cooling System which comprises the basis for its inclusion in the Inservice Testing Program is that it removes decay heat from the reactor core via the Decay Heat System as well as cooling various pumps and motors while placing the plant in the Cold Shutdown condition or following a Loss of Coolant Accident.

DF: FUEL OIL TRANSFER SYSTEM

The Emergency Diesel Generator Fuel Oil Transfer System is illustrated on Flow Diagram FD-302-281. The System provides the safety function of ensuring operability of the Emergency Diesel Generators in the event that offsite power is unavailable for the safe shutdown of the Reactor or the mitigation of accident conditions. Functional requirements are identified in Enhanced Design Basis Document 6/15.

## DH: DECAY HEAT REMOVAL SYSTEM

The Decay Heat Removal System is illustrated on Flow Diagram FD-302-641. Functional requirements of the Decay Heat Removal System are identified in Enhanced Design Basis Document 6/3. The following post-accident functions comprise the primary basis for its inclusion in the Inservice Testing Program:

> The Decay Heat Removal System automatically provides borated water to the core for short term cooling and reactivity control. This refers to the post-Loss of Coolant Accident injection phase and involves taking a suction on the Borated Water Storage Tank with the Decay Heat Removal Pumps and discharging through the Low Pressure injection lines into the Reactor Vessel via the Core Flood nozzles.
>
> The Decay Heat System provides long term core cooling and reactivity control following a Loss of Coolant Accident by recirculation of borated water from the Reactor Building Sump. This involves shifting the suction from the Borated Water Storage Tank to the Reactor Building Sump; the remainder of the lineup remains the same as for the injection phase described above.
>
> For a small break Loss of Coolant Accident, the Decay Heat System may be required to provide suction for the Make-up Pumps for high pressure injection/recirculation (i.e., piggyback mode).
>
> The Decay Heat System functions to prevent boron stratification/precipitation in the core. The Decay Heat System ensures cross flow through the core by establishing gravity flow in the drop line.
>
> The Decay Heat System provides containment heat removal during the performance of the above functions via the Decay Heat System Heat Exchangers.

## DJ: JACKET COOLANT/AIR COOLER COOLANT SYSTEM

The Emergency Diesel Generator Jacket Cooling and Air Coolant Cooling Systems are illustrated on Flow Diagram FD-302-283 and FD-302-284. The System provides the safety function of ensuring operability of the Emergency Diesel Generators in the event that offsite power is unavailable for the safe shutdown of the Reactor or the mitigation of accident conditions. Functional requirements are identified in Enhanced Design Basis Document 6/15.

Florida Power Corporation has determined that for skid-mounted components that testing of the major component is an acceptable means of verifying the operational readiness of the skid-mounted components and sub-assemblies.

## DL: LUBE OIL PIPING SYSTEM

The Emergency Diesel Generator Lube Oil System is illustrated on Flow Diagram FD-302-285. This System also provides the safety function of ensuring operability of the Emergency Diesel Generators in the event that offsite power is unavailable for the safe shutdown of the Reactor or the mitigation of accident conditions. Functional requirements are identified in Enhanced Design Basis Document 6/15. Florida Power Corporation has determined that for skid-mounted components, testing of the major component is an acceptable means of verifying the operational readiness of the skid-mounted components and sub-assemblies.

DO: DOMESTIC WATER SYSTEM

Domestic Water System components are shown on FD-302-211. Functional requirements are identified in Enhanced Design Basis Documents 6/31. A small portion of Domestic Water System piping is used as a flowpath for emergency bearing flushing and cooling water for the Nuclear Services and Decay Heat Sea Water System Pumps in the event that the non-safety related Domestic Water System is not available post-accident.

DW: CONDENSATE AND DEMINERALIZED WATER SUPPLY SYSTEM

DW System components are shown on FD-302-182. Functional requirements are identified in Enhanced Design Basis Document 6/30. The only safety function of this system is for Containment Isolation.

EF: EMERGENCY FEEDWATER SYSTEM

Components of the Emergency Feedwater System are illustrated on Flow Diagram FD-302-082. Functional requirements are identified in Enhanced Design Basis Document 6/13.

The following primary functions of the Emergency Feedwater System comprise the basis for its inclusion in the Inservice Testing Program:

The Emergency Feedwater System automatically or manually provides water to the Once Through Steam Generator's at a rate sufficient to remove decay heat for a Loss of Main Feedwater (with or without a loss of all alternating current Power), or for a Main Feedwater Line Break upstream of the last check valve.

The Emergency Feedwater System automatically or manually provides water to the appropriate Once Through Steam Generator for pipe breaks which de-pressurize the steam generator such as a Main Steam Line Break or a Main Feedwater Line Break downstream of the last check valve.

The Emergency Feedwater System provides water to the Once Through Steam Generator's to satisfy small break Loss of Coolant Accident requirements.

The Emergency Feedwater System provides water to the Once Through Steam Generator's sufficient to maintain Reactor Coolant System flow in the transition from forced to natural circulation when the Reactor Coolant Pumps are tripped.

EG: COMPRESSED STARTING AIR AND ENGINE EXHAUST SYSTEM

Compressed Starting Air and Engine Exhaust System components are illustrated on Flow Diagram FD-302-282. The system is required to support starting of the Emergency Diesel Generators in the event that offsite power is unavailable when required to shutdown the reactor or to mitigate the consequences of an accident. Functional requirements are identified in Enhanced Design Basis Document 6/15.

FS: FIRE SERVICE WATER SYSTEM

The only safety function of the Fire Service Water System, as shown on Flow Diagram FD-302-231, is Containment Isolation. Functional requirements are identified in Enhanced Design Basis Document 6/28.

FW: MAIN FEEDWATER SYSTEM

Components of the Main Feedwater System are illustrated on Flow Diagram FD-302-081. Functional requirements of the Main Feedwater System are identified in Enhanced Design Basis Document 6/18. The following functions of the Main Feedwater System comprise the primary basis for its inclusion in the Inservice Testing Program:

The Feedwater System provides isolation capability for the feedwater side of the Once Through Steam Generator's for a Main Steam Line Break Accident.

The Feedwater System provides a flowpath for Emergency Feedwater to the Once Through Steam Generator's when required for safe shutdown of the Reactor or mitigation of an accident.

IA: INSTRUMENT AIR

The primary function of the Instrument Air System which serves as the basis for inclusion is for providing Containment Isolation. Components are shown on Flow Diagram FD-302-271. Functional requirements are identified in Enhanced Design Basis Document 6/27.

LR: POST ACCIDENT VENTING SYSTEM

Components of the Post Accident Venting System are shown on FD-302-722. The primary safety-related function of the Post Accident Venting System is Containment Isolation and Hydrogen control.

MS: MAIN STEAM SYSTEM

Components of the Main Steam System are illustrated on Flow Diagram FD-302-011. Functional requirements are identified in Enhanced Design Basis Document 6/10. The following functions comprise the primary basis for its inclusion in the Inservice Testing Program:

The Main Steam System provides automatic isolation of the Once Through Steam Generator's for a Main Steam Line Failure.

The Main Steam System provides adequate relief capacity to protect the Once Through Steam Generator's from over-pressurization for a Loss of Electric Power event.

The Main Steam System controls Once Through Steam Generator pressure and thereby provides a mechanism for controlled decay heat removal as required to place the Plant in a safe shutdown condition or to mitigate the consequences of an accident.

The Main Steam System provides steam to the Emergency Feedwater System turbine-driven pump when Emergency Feedwater initiation is required. The Main Steam System provides the capability for Reactor Coolant System cool-down and effluent release control for a Steam Generator Tube Failure event.

MU: MAKE-UP & PURIFICATION SYSTEM

Components of the Make-up & Purification System are illustrated on Flow Diagram FD-302-661. Functional requirements of the Make-up & Purification System are identified in Enhanced Design Basis Document 6/2. The following primary functions comprise the basis for its inclusion in the Inservice Testing Program:

The Make-up System automatically provides high pressure injection of borated water to the Reactor Coolant System for emergency core cooling during the following conditions:

a. Small Break Loss of Coolant Accident
b. Piggyback Mode
c. Steam Line Break
d. Steam Generator Tube Rupture

The Make-up System provides an additional method of core cooling via the High

Pressure Injection flow path and the Power Operated Relief Valve in the event that steam generator heat transfer is inadequate.

The Make-up System provides a means of reactor shutdown, supplemental to the Control Rods, and of maintaining the shutdown margin by the addition of boric acid to the Reactor Coolant System.

NG: NITROGEN SYSTEM

Nitrogen System components are illustrated on Flow Diagram FD-302-673. The Containment Isolation requirement is the primary basis for inclusion Nitrogen System components. Functional requirements are identified in Enhanced Design Basis Document 6/20.

RC: REACTOR COOLANT SYSTEM

Components of the Reactor Coolant System are illustrated on Flow Diagram FD-302-651. Functional requirements of the Reactor Coolant System are identified in Enhanced Design Basis Document 6/1. The following functions comprise the basis for its inclusion in the Inservice Testing Program:

> The Reactor Coolant System circulates reactor coolant and transfers sufficient heat from the reactor core to the secondary fluid in the steam generator during anticipated operational occurrences (e.g., plant transients), assuming proper functioning of plant safety systems occurs, so that fuel thermal limits are not exceeded. This function is accomplished either by forced circulation of reactor coolant with the Reactor Coolant pumps or by natural circulation cooling. The Reactor Coolant System transfers post accident decay heat from the core to redundant interfacing components and systems.
>
> The Reactor Coolant System forms a barrier against the release of reactor coolant and radioactive material to the reactor building or the main steam system.
>
> The Reactor Coolant System allows for High Pressure Injection core cooling via the Power Operated Relief Valve should the heat transfer capability in both steam generators be lost.

RW: NUCLEAR SERVICES AND DECAY HEAT SEA WATER SYSTEM

Components of the Nuclear Services and Decay Heat Sea Water System are illustrated on Flow Diagram FD-302-611. Functional requirements are identified in of Enhanced Design Basis Documents 6/12. The following functions of the Nuclear Services and Decay Heat Sea Water System comprise the basis for its inclusion in the Inservice Testing Program:

The Nuclear Services and Decay Heat Sea Water System provides cooling water to the Nuclear Services Closed Cycle Cooling system for heat removal in order to safely shutdown the Reactor or to mitigate the consequences of a design basis accident.

The Nuclear Services and Decay Heat Sea Water System provides cooling water to the Decay Heat Closed Cycle Cooling system for removal of decay heat when placing the Plant in the Cold Shutdown condition.

The Nuclear Services and Decay Heat Sea Water System provides cooling water to the Decay Heat Closed Cycle Cooling system for heat removal from various components required to mitigate the consequences of a design basis accident.

The Nuclear Services and Decay Heat Sea Water System supplies safety grade bearing flush water to the Nuclear Services and Decay Heat Sea Water pumps for cooling and lubrication in the event the Domestic Water System is unavailable.

SA: SERVICE AIR SYSTEM

The safety-related components of the Service Air System serve the function of maintaining Containment Isolation. Components are shown on Flow Diagram FD-302-271. Functional requirements are identified in Enhanced Design Basis Document 6/27.

SF: SPENT FUEL COOLING SYSTEM

The components of the Spent Fuel Cooling System are illustrated on Flow Diagram FD-302-621. Functional requirements are identified Enhanced Design Basis Document 6/7. The functions of the Spent Fuel Cooling System which comprise the basis for its inclusion in the Inservice Testing Program are:

The Spent Fuel Cooling System provides decay heat removal of irradiated fuel located in the Spent Fuel pools. This is accomplished by the Spent Fuel Cooling Pumps and Heat Exchangers via associated valves and piping.

The Spent Fuel Cooling System limits radioactive fission products from entering the outside environment following a fuel assembly rupture in the Spent

Fuel storage pools. As a safety function, this is accomplished by maintaining the temperature of the pools within the required limits to prevent excessive evaporation which would result in increased airborne activity.

The Spent Fuel Cooling System also has a safety related function for Containment Isolation.

SW: NUCLEAR SERVICES CLOSED CYCLE COOLING SYSTEM

Functional requirements for the Nuclear Services Closed Cycle Cooling System are identified in Enhanced Design Basis Document 6/11. The components are illustrated on Flow Diagram FD-302-601. Those functions of the Nuclear Services Closed Cycle Cooling System which comprise the basis for its inclusion in the Inservice Testing Program are:

The Nuclear Services Closed Cycle Cooling System removes heat from safety-related equipment which is required to safely shutdown the Reactor or to mitigate the consequences of an accident.

The Nuclear Services Closed Cycle Cooling System prevents pressure and temperature conditions inside the Reactor Building from exceeding design limits following a Loss of Coolant Accident by providing cooling of the Containment atmosphere.

WD: LIQUID WASTE DISPOSAL, GAS WASTE DISPOSAL & WASTE GAS SAMPLING SYSTEMS

Radwaste Systems are illustrated on Flow Diagrams FD-302-681, FD-302-691, and FD-302-692. Containment Isolation is the primary safety-related function of these systems.

WS: CONTAINMENT MONITORING SYSTEM

Containment Monitoring System components are shown on FD-302-693. Containment Isolation is the primary safety-related function of the System.

## 1.7 Manual Revision

The guidance provided in NUREG 1482, Guidelines for Inservice Testing at Nuclear Power Plants, Paragraph 3.3.3 will be followed for determination of Program changes.

The Manual and/or implementing procedures shall be revised as necessary following applicable changes to Technical Specifications, or plant modifications. Revisions shall be in accordance with Nuclear Engineering Procedure NEP-301, Control of ASME Section XI Examination Program Plans, Manuals, and Reports. It is not necessary that the Manual be revised prior to the implementing procedures.

If the revised program conflicts with Technical Specifications, an amendment of Technical Specifications shall be submitted to eliminate the conflict. If a proposed change to the Manual involves a Technical Specification change, then the Manual shall not be revised to include the proposed change until the Technical Specification amendment has been approved.

The Inservice Testing Pump and Valve Manual will be maintained and controlled per AI-1100, Retention of Plant Operating Records as a "Controlled Document".

Preparation and revision to Relief Requests shall be performed in accordance with Crystal River Unit 3 Nuclear Engineering Procedure, NEP-305, Control of Relief Requests.

## 1.8 References

Those Codes, Standards, regulatory documents and correspondence that were instrumental in the development of the current program definition and requirements are as follows:

- Code of Federal Regulations, Title 10, Part 50 Paragraph 55a, Codes and Standards
- American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, 1988 Addenda and 1989 Edition ," Rules for Inservice Inspection of Nuclear Power Plant Components"
- ANSI/ASME OM Part 1, 1987, "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices".
- ANSI/ASME OMa-1988, Part 6, "Inservice Testing of Pumps in Light Water Reactor Power Plants."
- ANSI/ASME OMa-1988, Part 10, "Inservice Testing of Valves in Light Water Reactor Power Plants."
- Nuclear Regulatory Commission Generic Letter 89-04, Guidance on Developing Acceptable Inservice Test Programs, April 3, 1989.
- Minutes of the Public Meetings on Generic Letter 89-04, October 25, 1989.
- NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants, dated April 1995.
- Summary of Public Workshops Held in Nuclear Regulatory Commission Regions on Inspection Procedure 73756, "Inservice Testing of Pumps and Valves," and Answers to Panel Questions on Inservice Testing Issues, dated July 18,1997.
- NUREG/CR-6396, Examples, Clarifications, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements, dated February, 1996.
- Crystal River Unit 3 Improved Technical Specifications.
- Crystal River Unit 3 Final Safety Analysis Report.
- Crystal River Unit 3 Enhanced Design Basis Documents.
- Crystal River Unit 3 Inservice Testing Basis Document.

## 1.8 References (cont.)

- Crystal River Unit 3 Nuclear Engineering Procedure, NEP-115, Control of Nuclear Engineering Manuals.

- Crystal River Unit 3 Nuclear Engineering Procedure, NEP-301, Control of ASME Section XI Examination Program Plans, Manuals, and Reports.

- Crystal River Unit 3 Nuclear Engineering Procedure, NEP-305, Control of Relief Requests.

- FPC Response to Generic Letter 89-04, FPC/Nuclear Regulatory Commission Letter 3F1089-01.

# 2.0 PUMP TESTING

## 2.1 Scope

The Inservice Pump Testing Program includes all ASME Class 1, 2 and 3 safety related centrifugal and positive displacement type pumps that are provided with an emergency power source, that are not exempt by Paragraph 2.2 of this section , and which function to:

a) mitigate the consequences of an accident or,

b) place the reactor in a safe shutdown condition and/or maintain the plant in a safe shutdown condition. (Crystal River Unit 3's license defines safe shutdown as hot standby)

## 2.2 Exemptions

The following are exempt from requirements of this program:

a) pumps that are supplied with emergency power solely for operating convenience.

b) drivers of pumps, except where the pump and driver form an integral unit and the pump bearings are in the driver.

## 2.3 Definitions

The following definitions are provided to ensure a uniform understanding of select terms associated with pump testing:

*Alert Range*: range of test results indicating that the associated component, although in a state of operational readiness, is exhibiting degraded performance. Testing of pumps with test results that fall in this range shall be at an increased frequency until corrective action is taken. Reference OM Part 10, Paragraph 6.1

*Increased Frequency*: for purposes of the Crystal River Unit 3 Inservice Testing Program, increased frequency applies to quarterly frequency testing only. The increased frequency for quarterly tests will be nominally every six (6) weeks.

*Inservice Test*: a test to determine the operational readiness of a pump.

*Instrument Accuracy*: is the allowable inaccuracy of a instrument loop, based on the Square Root Sum of the Squares (SRSS) of the inaccuracies of each instrument in the loop. As clarified in NUREG-1482, Section 5.5.4, interpretations to OM Part 6 have clarified that the accuracy of analog instruments specified in OM Part 6 applies only to the calibration of the instruments. Therefore, instrument loops calibrated within the requirements of Table 1, OM Part 6 are acceptable for determination of changes in pump parameters. Where loop calibrations are not performed, individual instrument or component calibration accuracy's will be combined using SRSS methodology. The combined accuracy must meet the requirements of Table 1, OM Part 6. Any substitution for process instrumentation (e.g. measurements of tank level, calculation of differential pressure, etc.) shall be reviewed to ensure accuracy requirements for the measured parameter are met.

*Instrument Loop*: Two or more instruments working together to provide a single output.

*Operational Readiness*: the ability of a pump to perform its intended safety function.

*Preservice Test Period*: the period following completion of construction activities related to the pump, and prior to first electrical generation by nuclear heat, in which component and system testing takes place.

*Pump*: a mechanical device used to move liquid.

*Reference Values*: one or more values of test parameters measured or determined when the equipment is known to be operating acceptably.

*Routine Servicing*: the performance of planned preventative maintenance (e.g. adjust packing, lubrication changes, mechanical seal maintenance, etc.).

*System Resistance*: The hydraulic resistance to flow in a system.

## 2.4 General Program Requirements

Inservice pump tests shall be conducted in accordance with ASME/ANSI Operations and Maintenance Standards Part 6, OM-1987 and 1988a Addenda, unless specific relief is granted by the Nuclear Regulatory Commission.

Inservice pump tests shall be conducted nominally every three months during normal plant operation except as provided below:

> Pumps that are operated more frequently than every three months need not be stopped for a special test provided the plant records show the pump was operated at least once every 3 months at reference conditions, and the quantities specified by OM Part 6 are determined , recorded, and analyzed.
>
> The Code requires performing pump tests throughout extended shutdown periods for operable equipment. For a pump in a system declared inoperable or not required to be operable, the test schedule need not be followed. Within 3 months prior to placing the system into an operable status, the pump shall be tested and the test schedule resumed. For pumps which can only be tested during plant startup or operation, the pump shall be tested within one week following plant startup unless more restrictive Technical Specification provisions apply.

Crystal River Unit 3 Improved Technical Specifications, Surveillance Requirement 3.0.2, specifies the frequency for each surveillance requirement is met if the surveillance is performed within 1.25 times the interval specified as measured from the previous surveillance performance.

Reference Values shall be determined from the results of preservice or inservice testing. Reference Values shall only be established when the pump is known to be operating acceptably. Reference values shall be at points of operation readily duplicated during subsequent tests. Test results shall be compared to these reference values or to new reference values as described below.

When a reference value, or set of reference values, may have been affected by repair, replacement, or routine servicing, a new reference value , or set of reference values, shall be determined or the previous reference value(s) reconfirmed by a test run prior to declaring the pump operable. Deviations between the previous and new reference value(s) shall be identified and verification that the new reference values represent acceptable operation shall be documented by a completed CP-102, IST Pump and Valve Data Review. This review shall consider the minimum design basis performance criteria as established by Nuclear Operations Engineering for the affected pump.

## 2.5 Technical Positions for Pump Testing

### 2.5.1 Implementation of Nuclear Regulatory Commission Generic Letter 89-04, Position 9

Crystal River Unit 3 has five (5) pumps in the Inservice Testing Program that have at least a portion of their test loop flowing through minimum flow recirculation lines that have no installed flow instrumentation. These pumps are the two Emergency Feedwater Pumps, EFP-1 and EFP-2, and the three Make-up Pumps, MUP-1A, MUP-1B, and MUP-1C. Additionally, available flow instrumentation for the Make-up Pumps does not meet Code range requirements at the reduced flow rates required for testing during normal plant operation.

For the above referenced pumps, Position 9 of Generic Letter 89-04 will be implemented. Quarterly testing of the Emergency Feedwater Pumps will be continued through the minimum flow recirculation lines with pump vibration and differential pressure measurements taken. The Make-up Pumps will continue to be tested quarterly with uninstrumented recirculation flow, and Reactor Coolant System makeup flow/Reactor Coolant Pump seal injection flow established with existing instrumentation. For the Make-up Pumps, differential pressure and vibration measurements will be taken. Emergency Feedwater and Make-up pump data from the quarterly tests will be analyzed for changes in pump vibration parameters and compared to the Acceptance Criteria of OM Part 6, Table 3a. Quarterly hydraulic test results will be compared to the Acceptance Criteria of OM Part 6, Table 3b, with the exception that more conservative limits may be established based on available pump margins as determined during testing at substantial flow conditions.

Additionally, for MUP-1A, 1B, and 1C, an "Administrative Alert" limit may be established, based on available pump margin, which will require evaluation of pump performance prior to reaching the "Action" limit for these pumps. This limit may be established to conservatively evaluate Make-up pump performance due to the relatively low available margin for these pumps coupled with variations in hydraulic margin evidenced at low and substantial flow conditions. This exceeds the requirements for pump testing as required by Generic Letter 89-04, Position 9, and OM Part 6.

On a refueling outage basis, the Emergency Feedwater and Make-up pumps will be tested at full or substantial flow conditions with flow, differential pressure and bearing vibration measurements taken. Evaluations of pump operability and available margin can be performed based upon these test results.

In accordance with clarifications provided in NUREG - 1482, ( Page A-42, Question Group 50, Current Considerations for Position 9) when testing using the guidance of Position 9, and finding the pump in the alert or required action range, it is recommended that efforts be made to take corrective actions during the outage and repeat the substantial flow test post-maintenance. When the required corrective action cannot be taken during the outage (e.g., a pump rebuild is needed but parts are not available), or when maintenance must be performed during power operations (e.g., seal or bearing replacement) it is recommended testing to the extent practicable during power operations be conducted following corrective actions and prior to returning the pump to service. Additionally, an evaluation will be performed to compare the testing performed with the historical results of both the quarterly testing using minimum flow recirculation flow paths and the full or substantial flow testing performed during outages to further ensure that the pump maintenance was adequate. To meet Position 9 of Generic Letter 89-04 guidance, the full or substantial flow testing would be conducted at the first available opportunity.

### 2.5.2 Skid Mounted Pumps

Crystal River Unit 3 has adopted the position that testing of the major component is an acceptable means of verifying the operational readiness of a skid mounted pump. Documentation of this position is being provided in this Program Manual as recommended by NUREG-1482, Section 3.4. Pumps which are surveilled in accordance with this provision include the following:

| PUMP ID | PUMP DESCRIPTION | ASME CLASS |
|---|---|---|
| DFP-2A | Emerg. Diesel Gen. Engine Driven Fuel Pump 2A | 3 |
| DFP-2B | Emerg. Diesel Gen. Engine Driven Fuel Pump 2B | 3 |
| DFP-3A | Emerg. Diesel Gen. Aux. Motor Driven Fuel Pump 3A | 3 |
| DFP-3B | Emerg. Diesel Gen. Aux. Motor Driven Fuel Pump 3B | 3 |
| DJP-1 | Emerg. Diesel Gen. Engine Driven Water Pump | 3 |
| DJP-2 | Emerg. Diesel Gen. Engine Driven Water Pump | 3 |
| DJP-3 | Emerg. Diesel Gen. Standby Coolant Pump | 3 |
| DJP-4 | Emerg. Diesel Gen. Standby Coolant Pump | 3 |
| DJP-5 | Emerg. Diesel Gen. Engine Driven Air Coolant Pump | 3 |
| DJP-6 | Emerg. Diesel Gen.. Engine Driven Air Coolant Pump | 3 |
| DLP-3 | Emerg. Diesel Gen. Engine Driven Main Lube Oil Pump | 3 |
| DLP-4 | Emerg. Diesel Gen. Engine Driven Main Lube Oil Pump | 3 |
| DLP-5 | Emerg.Diesel Gen. Standby Oil Circ. Pump with Rel. Valve | 3 |
| DLP-6 | Emerg.Diesel Gen. Standby Oil Circ. Pump with Rel. Valve | 3 |
| MUP-2A | MUP-1A Lube Oil Pump | 2 |
| MUP-2B | MUP-1B Lube Oil Pump | 2 |
| MUP-2C | MUP-1C Lube Oil Pump | 2 |
| MUP-4A | MUP-1A Lube Oil Pump | 2 |
| MUP-4B | MUP-1B Lube Oil Pump | 2 |
| MUP-4C | MUP-1C Lube Oil Pump | 2 |
| MUP-5A | MUP-1A Lube Oil Pump | 2 |
| MUP-5B | MUP-1B Lube Oil Pump | 2 |
| MUP-5C | MUP-1C Lube Oil Pump | 2 |

The operational readiness of the skid mounted pumps associated with the Emergency Diesel Generators is verified by the performance of one or more of the following surveillances :

| | |
|---|---|
| SP-300 | Operating Daily Surveillance Log |
| SP-354A | Monthly Functional Test of the Emergency Diesel Generator EGDG-1A |
| SP-354B | Monthly Functional Test of the Emergency Diesel Generator EGDG-1B |
| SP-457 | Refueling Interval ECCS Response to a Safety Injection Test Signal |

The operational readiness of the skid mounted pumps associated with the Make-up Pumps is verified by the performance of the following quarterly surveillances :

| | |
|---|---|
| SP-340C | MUP-1A, MUP-1B, and Valve Surveillance |
| SP-340F | MUP-1C and Valve Surveillance |

Additionally, operational readiness of these Make-up skid mounted pumps is verified on a refueling outage basis by the performance of SP-630, MUP/HPI Check Valves Full Flow Test.

The above skid mounted pumps are not included in the Pump Testing Program Plan included in this Section.

### 2.5.3 Maintenance Requiring/Not Requiring Surveillance Test

1) A pump may or may not require the surveillance procedures referenced in this manual as the required post-maintenance testing prior to being returned to service. Each instance should be evaluated separately to determine if surveillance procedure performance is required as the post-maintenance test. Typical maintenance activities that may require surveillance procedure performance as the post-maintenance test include the following :

- Partial or complete disassembly of pump.
- Disconnection of coupling.
- Disassembly of pump suction or discharge piping
- Disassembly of pump bearing housing and/or removal of bearing.
- Replacement or readjustment of pump packing/seal.

NOTE: Request for Engineering Assistance 93-1330 provides justification for not performing full hydraulic testing for RWP-2A/B or RWP-3A/B after replacement or adjustment of packing. Refer to Request for Engineering Assistance 93-1330 for required post maintenance testing. This is only applicable to the Vertical Wet Pit Nuclear Services and Decay Heat Sea Water System Pumps.

- Realignment.
- Balancing of pump.
- Replacement of pump.
- Changing of oil viscosity.

2) Typical activities not requiring post-maintenance pump testing include the following.

- Maintenance limited to the driver unless the coupling has been disconnected or the pump's bearings are located in the driver.
- Maintenance limited to any gear box, unless couplings have been disconnected or gears have been adjusted or replaced.
- Maintenance limited to support systems (lube oil coolers, cyclone separators, etc.).

### 2.5.4 Pump Fixed Reference Variance

NUREG-1482, Section 5.3 recognizes that certain plant designs are not conducive to adjusting system resistance to obtain an exact fixed reference value. The staff has determined that, if establishing and maintaining flow at an exact value is not possible, achieving a steady flow rate or differential pressure at approximately the set value does not require relief for establishing pump curves.

When system design does not support setting flow rate at a specific reference value, an allowable tolerance shall be determined based on the applicable instrument precision. The allowable variance from the reference value will not exceed +/- 2% without a corresponding adjustment to acceptance criteria or evaluation being performed to justify the greater variance.

Any adjustments to acceptance criteria or evaluations to increase the allowable tolerance must be documented in the inservice testing program documents.

### 2.5.5 Pump Speed

EFP-2, Turbine-Driven Emergency Feedwater Pump, is a variable speed turbine driven pump. During applicable surveillances, the pump's speed will be adjusted to the reference speed.

Except for EFP-2, Turbine-Driven Emergency Feedwater Pump, the pumps tested by the Crystal River Unit 3 Inservice Testing Program are directly coupled to a constant speed induction-type driver, and measurement of rotative speed is exempted according to OM Part 6, Paragraph 5.2 (a).

### 2. Vibration Data for Chiller Water Pumps

There are no bearings physically in the pump, the bearings for these pumps are contained in the motor. Therefore the vibration data collected for the Chilled Water Pumps (CHP-1A and CHP-1B) will be obtained from the motor.

### 2.5.7 Minimum Design Basis Verification

Inservice Testing is intended to monitor degradation of components. The Code does not require that pumps be tested at design-basis conditions. The Code allows a specific percentage of degradation of pump hydraulic performance from an established reference value before action must be taken. At Crystal River Unit 3, if the minimum design performance as specified in the plant design documentation is more stringent than the Code acceptance criteria, then the test acceptance criteria shall be adjusted to avoid the actual pump performance being allowed to degrade below the minimum acceptable design performance.

## 2.6 Pump Table Information

The Pump Table contains the following information:

- Pump - pump identification number.
- Flow Diagram Coord - This identifies the flow diagram number, sheet, and coordinates to locate the pump.
- Pump Type - pump design type as identified by the following:

  Centrifugal
  Positive Displacement
  Horizontal, Centrifugal, Single Stage
  Horizontal, Centrifugal
  Horizontal, Multistage, Centrifugal
  Vertical Line Shaft

- Driver Type - Type of driver as identified by the following:

  AC Induction Motor
  Steam Turbine

- Code Class - ASME Class 1, 2, OR 3
- Test - Parameter required to be measured:

  Flow
  Flow (Full)
  Flow (Min.)
  Differential Pressure
  Discharge Pressure
  Vibration
  Speed

- Freq - Frequency of test performance as identified by the following abbreviations:

  | | |
  |---|---|
  | Q | Quarterly |
  | RF | Refueling |

- Procedure - Procedure that test is performed in.

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: BS Reactor Building Spray***

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| BSP-1A | FD-302- 711 SH. 01 H-5 | Centrifugal | AC Induction Motor | 2 | | | |
| R.B. Spray Pump 3A | | | | | | | |
| | | | | | Flow | Q | SP-340B |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |
| BSP-1B | FD-302- 711 SH. 01 E-5 | Centrifugal | AC Induction Motor | 2 | | | |
| R.B. Spray Pump 3B | | | | | | | |
| | | | | | Flow | Q | SP-340E |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |

***SYSTEM: CH Chilled Water***

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| CHP-1A | FD-302- 756 SH. 01 C-7 | Centrifugal | AC Induction Motor | 3 | | | |
| Chilled Water Pump 1A | | | | | | | |
| | | | | | Flow | Q | SP-375A |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |
| CHP-1B | FD-302- 756 SH. 01 E-7 | Centrifugal | AC Induction Motor | 3 | | | |
| Chilled Water Pump 1B | | | | | | | |
| | | | | | Flow | Q | SP-375B |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |

**SYSTEM: DC Decay Heat Closed Cycle Cooling**

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| DCP-1A | FD-302- 631 SH. 01 D-3 | Centrifugal | AC Induction Motor | 3 | | | |
| Decay Heat Closed Cycle Cooling Water Pump 3A | | | | | | | |
| | | | | | Flow | Q | SP-340A |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |
| DCP-1B | FD-302- 631 SH. 02 D-3 | Centrifugal | AC Induction Motor | 3 | | | |
| Decay Heat Closed Cycle Cooling Water Pump 3B | | | | | | | |
| | | | | | Flow | Q | SP-340D |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |

**SYSTEM: DF Diesel Fuel Oil Transfer**

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| DFP-1A | FD-302- 281 SH. 01 E-3 | Positive Displacement | AC Induction Motor | 3 | | | |
| Emergency Diesel Generator Fuel Transfer Pump 3A | | | | | | | |
| | | | | | Flow | Q | SP-311 |
| | | | | | Discharge Pressure | | |
| | | | | | Vibration | | |
| DFP-1B | FD-302- 281 SH. 01 E-5 | Positive Displacement | AC Induction Motor | 3 | | | |
| Emergency Diesel Generator Fuel Transfer Pump 3B | | | | | | | |
| | | | | | Flow | Q | SP-311 |
| | | | | | Discharge Pressure | | |
| | | | | | Vibration | | |

**SYSTEM: DH Decay Heat Removal**

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| DHP-1A | FD-302- 641 SH. 01 G-4 | Horizontal, Centrifugal, Single Stage | AC Induction Motor | 2 | | | |
| Decay Heat Removal Pump 3A | | | | | | | |
| | | | | | Flow<br>Differential Pressure<br>Vibration | Q | SP-340B |
| DHP-1B | FD-302- 641 SH. 01 G-6 | Horizontal, Centrifugal, Single Stage | AC Induction Motor | 2 | | | |
| Decay Heat Removal Pump 3B | | | | | | | |
| | | | | | Flow<br>Differential Pressure<br>Vibration | Q | SP-340E |

**SYSTEM: EF Emergency Feedwater**

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| EFP-1 | FD-302- 082 SH. 01 G-4 | Centrifugal | AC Induction Motor | 3 | | | |
| Motor-Driven Emergency Feedwater Pump 3A | | | | | | | |
| | | | | | Differential Pressure<br>Vibration | Q | SP-349A |
| | | | | | Flow<br>Differential Pressure<br>Vibration | RF | SP-640A |
| EFP-2 | FD-302- 082 SH. 01 D-5 | Centrifugal | Steam Turbine | 3 | | | |
| Turbine-Driven Emergency Feedwater Pump 3B | | | | | | | |
| | | | | | Speed<br>Differential Pressure<br>Vibration | Q | SP-349B |
| | | | | | Speed<br>Flow<br>Differential Pressure<br>Vibration | RF | SP-640B |

**SYSTEM: MU Make-up and Purification**

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| MUP-1A | FD-302- 661 SH. 04 F-6 | Horizontal, Multistage, Centrifugal | AC Induction Motor | 2 | | | |
| Make-Up & Purification Pump 3A | | | | | | | |
| | | | | | Flow (Full)<br>Differential Pressure<br>Vibration | RF | SP-630 |
| | | | | | Flow (Min.)<br>Differential Pressure<br>Vibration | Q | SP-340C |
| MUP-1B | FD-302- 661 SH. 04 F-4 | Horizon al, Multistage, Centrifugal | AC Induction Motor | 2 | | | |
| Make-Up & Purification Pump 3B | | | | | | | |
| | | | | | Flow (Full)<br>Differential Pressure<br>Vibration | RF | SP-630 |
| | | | | | Flow (Min.)<br>Differential Pressure<br>Vibration | Q | SP-340C |

**SYSTEM: MU Make-up and Purification**

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| MUP-1C | FD-302- 661 SH. 04 F-1 | Horizontal, Multistage, Centrifugal | AC Induction Motor | 2 | | | |
| Make-Up & Purification Pump 3C | | | | | | | |
| | | | | | Flow (Full)<br>Differential Pressure<br>Vibration | RF | SP-630 |
| | | | | | Flow (Min.)<br>Differential Pressure<br>Vibration | Q | SP-340F |

***SYSTEM: RW Nuclear Services and Decay Heat Sea Water***

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| RWP-2A | FD-302- 611 SH. 01 G-4 | Vertical line shaft | AC Induction Motor | 3 | | | |
| Emergency Nuclear Service Sea Water Pump 3A | | | | | | | |
| | | | | | Flow<br>Differential Pressure<br>Vibration | Q | SP-344A |
| RWP-2B | FD-302- 611 SH. 01 G-6 | Vertical line shaft | AC Induction Motor | 3 | | | |
| Emergency Nuclear Service Sea Water Pump 3B | | | | | | | |
| | | | | | Flow<br>Differential Pressure<br>Vibration | Q | SP-344B |
| RWP-3A | FD-302- 611 SH. 01 G-3 | Vertical line shaft | AC Induction Motor | 3 | | | |
| Decay Heat Services Sea Water Pump 3A | | | | | | | |
| | | | | | Flow<br>Differential Pressure<br>Vibration | Q | SP-340A |
| RWP-3B | FD-302- 611 SH. 01 G-6 | Vertical line shaft | AC Induction Motor | 3 | | | |
| Decay Heat Services Sea Water Pump 3B | | | | | | | |
| | | | | | Flow<br>Differential Pressure<br>Vibration | Q | SP-340D |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: SF Spent Fuel Cooling***

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| SFP-1A | FD-302- 621 SH. 01 D-4 | Horizontal, Centrifugal | AC Induction Motor | 3 | | | |
| Spent Fuel Coolant Pump 3A | | | | | | | |
| | | | | | Flow | Q | SP-334A |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |
| SFP-1B | FD-302- 621 SH. 01 F-4 | Horizontal, Centrifugal | AC Induction Motor | 3 | | | |
| Spent Fuel Coolant Pump 3B | | | | | | | |
| | | | | | Flow | Q | SP-334B |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: SW Nuclear Services Closed Cycle Cooling***

| Pump | Flow Diagram -Coord | Pump Type | Driver Type | Code Class | Test | Freq | Procedure |
|---|---|---|---|---|---|---|---|
| SWP-1A | FD-302- 601 SH. 03 B-3 | Centrifugal | AC Induction Motor | 3 | | | |
| Nuclear Service Closed Cycle Cooling Pump 3A | | | | | | | |
| | | | | | Flow | Q | SP-344A |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |
| SWP-1B | FD-302- 601 SH. 03 C-3 | Centrifugal | AC Induction Motor | 3 | | | |
| Nuclear Service Closed Cycle Cooling Pump 3B | | | | | | | |
| | | | | | Flow | Q | SP-344B |
| | | | | | Differential Pressure | | |
| | | | | | Vibration | | |

# 4.0 VALVE TESTING

## 4.1 Scope

The Inservice Valve Testing Program includes ASME Class 1, 2 or 3 valves, pressure relief devices, and their actuating and position indicating systems that are not exempt by Paragraph 4.2 below. The active and passive valves included are those which are required to perform a specific function to:

a) mitigate the consequences of an accident or,

b) place the reactor in a safe shutdown condition and/or in maintaining the safe shutdown condition. (Crystal River Unit 3's license defines safe shutdown as hot standby)

The pressure relief devices included are those required for protecting systems or portions of systems which perform a required function to:

a) mitigate the consequences of an accident or,

b) place the reactor in a safe shutdown condition and/or in maintaining the safe shutdown condition.

## 4.2 Exemptions

The following are exempt from requirements of this program provided that the valves are not required to perform a specific function as specified above:

Maintenance Valves - valves that are used only for system and component maintenance.

a) Operating Convenience Valves - valves used only for operating convenience, such as vent, drain, instrument and test valves.

b) System Control Valves - valves used only for system control, such as pressure regulating, flow control, etc.

c) External Control and Protection Systems - valves in systems responsible for sensing plant conditions and providing signals for valve operation.

d) Relief Valves located in portions of safety related systems that are isolated or not required to function in mitigating the consequences of an accident or placing the plant in a safe shutdown condition.

## 4.3 Definitions

The following definitions are provided to ensure a uniform understanding of select terms associated with valve testing.

*Active Valves*: valves which are required to change obturator position to accomplish the required safety function(s).

*Exercising*: the demonstration based on direct visual or indirect positive indications that the moving parts of a valve function.

*Full-Stroke Time*: the time interval from the initiation of the actuating signal to the indication of the end of the operating stroke (switch to light).

*Obturator*: valve closure member ( disk, gate, plug, ball, etc.).

*Passive Valve*: a valve which maintains obturator position and is not required to change obturator position to accomplish the required safety function(s).

*Preservice Test Period*: the period of time following completion of construction activities related to a valve and prior to the first electrical generation by nuclear heat in which component and system testing takes place.

*Rapid Acting:* Valves with a stroke time of 2 seconds or less.

*Reference Values*: the stroke time measured or determined when the valve is known to be operating acceptably.

*Remote Position Indication Verification:* verification that position indication devices, remote from the valve, indicate proper valve position.

*Operational Readiness*: the ability of a valve to perform its intended safety function(s).

*Valve, Category A*: valves for which seat leakage, in the closed position, is limited to a specific maximum amount for fulfillment of their required safety function(s).

*Valve, Category B*: valves for which seat leakage, in the closed position, is inconsequential for fulfillment of their required safety function(s).

*Valve, Category C*: valves which are self-actuating in response to some system characteristic such as pressure (relief valves) or flow direction (check valves) for fulfillment of their required safety function(s).

*Valve, Category D*: valves which are actuated by an energy source capable of only one operation , such as rupture disks or explosively actuated valves.

## 4.4 General Requirements

Preservice and Inservice valve tests shall be conducted in accordance with ANSI/ASME Operations and Maintenance Standards, Part 10, OM-1987 and 1988a Addenda unless specific relief is granted by the Nuclear Regulatory Commission. Section 4.3.1 of OM Part 10 requires that safety and relief valves meet the requirements of Part 1, "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices", of the ASME/ANSI OM Standards, 1987.

### 4.4.1 Preservice Testing

Each new valve shall be tested during the preservice test period as required by the provisions of OM Part 10 (see Table 1, Section 3.3.2). These tests shall be conducted under conditions as near as practicable to those expected during subsequent inservice testing.

### 4.4.2 Inservice Testing

Inservice testing of active and passive valves shall be performed in accordance with the applicable Paragraphs of OM Part 10 as specified in Table 1 below:

TABLE 1
**INSERVICE TEST REQUIREMENTS**

| Category | Valve Function | Leakage Test Procedure | Exercise Test Procedure | Special Test Procedure (Note 1) | Position Indication Verification |
|---|---|---|---|---|---|
| A | Active | Para. 4.2.2 | Para 4.2.1 | None | Para 4.1 |
| A | Passive | Para. 4.2.2 | None | None | Para 4.1 |
| B | Active | None | Para 4.2.1 | None | Para 4.1 |
| B | Passive | None | None | None | Para 4.1 |
| C (Safety and Relief) | Active | None (Note 2) | Para 4.3.1 | None | Para 4.1 |
| C (Check) | Active | None (Note 2) | Para 4.3.2 | None | Para 4.1 |
| D | Active | None | None | Para 4.4 | None |

NOTES:

(1) Additional requirements for fail-safe testing are specified in Paragraph 4.2.1.6

(2) When more than one distinguishing category characteristic is applicable, (e.g. A/C) , all requirements of the individual categories are applicable. Duplication of common testing requirements is not necessary.

Inservice valve exercise tests shall be conducted nominally every three months during normal plant operation except as provided below:

a) If practicable, active Category A and B valves shall be full-stroke exercised during plant operation to the position(s) required to fulfill their safety function(s). If practicable, active Category C check valves shall be exercised or examined in a manner which verifies obturator travel to the closed, full open, or partial open position required to fulfill its function. For check valves that can accomplish their safety function at a partially open position, verification of obturator travel to this intermediate position fulfills "full-stroke" requirements.

b) If full-stroke exercising during plant operation is not practicable, it may be limited to part-stroke during plant operation and full stroke during cold shutdowns.

c) If exercising is not practicable during plant operation, it may be limited to full-stroke exercising at cold shutdowns

d) If exercising is not practicable during plant operation and full-stroke during cold shutdowns is also not practicable, it may be limited to part-stroke during cold shutdowns, and full-stroke during refueling outages.

e) If exercising is not practicable during operation or cold shutdowns, it may be limited to full-stroke during refueling outages.

f) Valves full-stroke exercised at cold shutdowns shall be exercised during each cold shutdown, except as specified in (g) below. Such exercise is not required if the time period since the previous full-stroke exercise is less than 3 months.

g) Valve exercising during cold shutdown shall commence within 48 hours of achieving cold shutdown, and continue until all testing is complete or the plant is ready to return to power. For extended outages, testing need not be commenced in 48 hours provided all valves required to be tested during cold shutdown will be tested prior to plant startup. However, it is not the intent of OM Part 10 to keep the plant in cold shutdown in order to complete cold shutdown testing.

h) All valve testing required to be performed during a refueling outage shall be completed prior to returning the plant to operation.

i) Valves which operate in the course of operation at a frequency which would satisfy the exercising requirements of this Section need not be additionally exercised, provided that the observations otherwise required for testing are made and analyzed during such operation and are recorded at intervals as specified in this Section.

j) For a valve in a system declared inoperable or not required to be operable, the exercising test schedule need not be followed. Within 3 months prior to placing the system in an operable status, the valves shall be exercised and the schedule resumed in accordance with the requirements of this Section.

Crystal River Unit 3 Improved Technical Specifications, Surveillance Requirement 3.0.2, specifies the frequency for each surveillance is met if the surveillance is performed within 1.25 times the interval specified as measured from the previous surveillance performance.

## 4.5 Technical Positions for Valve Testing

### 4.5.1 Limiting Value(s) of Full-Stroke Time

OM Part 10, Paragraph 4.2.1.4(a), states that the limiting value(s) of full-stroke time for power operated valves shall be specified by the Owner. For the Crystal River Unit 3 Inservice Testing Program, the limiting value of full-stroke time will be established based upon the more limiting value of A) or B) as determined below: ( RV = Reference Value)

A)

| Actuator Type | Reference Value | Limiting Stroke Time |
|---|---|---|
| Motor | RV > 2 seconds | 2.0 times RV |
| Other | RV > 2 seconds | 2.0 times RV |
| All | RV < 2 seconds | 2 seconds or value from above whichever is larger |

B) The limiting value design basis stroke time as presented in the Crystal River Unit 3 Design Basis Document, Technical Specifications, Final Safety Analysis Report or other applicable accident analyses.

### 4.5.2 Valve Exercising Requirements

Power Operated valves within the scope of the Inservice Testing Program will be stroke time tested in accordance with OM Part 10 requirements. For these valves, the stroke timing also satisfies OM Part 10 requirements for exercising the valve and additional testing need not be performed. Exercise testing is therefore not listed in the valve tables as a separate test.

### 4.5.3 Valve Fail-Safe Testing

Valves within the scope of the Inservice Testing Program which are equipped with fail-safe actuators will be tested in accordance with OM Part 10 by observing that the valve goes to its fail-safe position upon loss of actuator power. Those valves which have the actuator power removed during exercising via a control switch need not be additionally tested. A satisfactory exercise of the valve obturator to its fail-safe position via the control switch satisfies the fail-safe test requirement.

### 4.5.4 Valve or Actuator Replacement, Repair, or Maintenance

When a valve or its control system has been replaced, repaired, or has undergone maintenance that could affect the valves established reference values, a new reference value shall be determined or the previous reference value reconfirmed. This is accomplished by an inservice test or post maintenance test prior to the time it is returned to service or immediately if not removed from service. This testing is required to demonstrate the performance parameters which could have been affected by the replacement, repair, or maintenance are within acceptable limits. Deviations between the previous and new reference values shall be identified and analyzed. The difference between post maintenance stroke time and the previous reference value will be evaluated to determine if the new stroke time is consistent with the maintenance activity performed. If the new stroke time is found to be consistent with the changes to the valve, a new reference value will be established. If the changes in stroke times are inconsistent with the maintenance performed, the Inservice Testing Program Manager may elect to perform additional evaluations or testing prior to changing the reference value. Verification that new values represent acceptable operation shall be documented by Crystal River Unit 3 procedure CP-102, IST Pump and Valve Data Review.

Maintenance performed on a valve that could affect the obturator's ability to move to the position required for fulfillment of the valves safety function require that an inservice test or post maintenance test be performed to demonstrate obturator movement capability has not been affected.

Maintenance performed on a valve that could affect position indication of the valve obturator requires that an inservice or post maintenance test be performed to verify obturator position is accurately indicated.

Maintenance performed on Category A valves that could affect seat leakage characteristics shall be followed by an inservice test or a post maintenance test to insure valve seat leakage is within acceptable limits. Category A valves which are also Containment Isolation Valves tested in accordance with the Crystal River Unit 3 10CFR50 Appendix J - Option B Program, shall have an "as-found" leakage test performed prior to any maintenance which could affect the valve's seat leakage characteristics.

Refurbishment of safety and relief valves shall be followed by tests as delineated in OM Part 1 Paragraph 7.4. During scheduled surveillance testing of safety and relief valves included in this program, an "as found" test must be performed prior to any maintenance, adjustment, disassembly, or other activity which could affect "as found" set pressure or seat tightness. If the extent of disassembly of the valve includes main disk components, then valve disk stroke capability shall be verified by mechanical inspection or tests.

### 4.5.5 Maintenance Requiring/Not Requiring Surveillance Test

A valve may or may not require the referenced surveillance procedure to be performed as the required post-maintenance test prior to being returned to normal service following maintenance. The Nuclear Engineering Programs, Inservice Testing Section should be contacted if assistance is needed in making a determination.

1) Typical maintenance activities requiring the surveillance procedure (or equivalent post maintenance test) performance as post-maintenance testing include:

- Removal/replacement;
- Disassembly/rebuild (e.g., removal of bonnet assembly, stem, etc.);
- Disconnection/removal of power operator (air or electric);
- Limit switch or torque switch adjustment;
- Packing adjustment/replacement.
- Adjustment, replacement, or repair of control system components.
- In general, any maintenance activity that could affect valve operating, leakage or position indication functions.

2) Typical activities not requiring performance of the surveillance procedure as a post-maintenance valve test include the following:

- Removal/replacement of valve handwheel.
- Those minor maintenance activities, such as fuse replacement or tightening an air line fitting, or **when** adequate post-maintenance test requirements are included in the work package instructions to verify proper valve operation.
- In general, any maintenance activity that will not affect valve operating, leakage, set point, or position indication functions.

### 4.5.6 Containment Isolation Valves

Category A Valves, which are containment isolation valves, shall have seat leakage testing performed in accordance with 10CFR50, Appendix J. Crystal River Unit 3 has amended the Crystal River Unit 3 Technical Specifications on containment isolation valve testing so that Crystal River Unit 3 can implement Option B of 10CFR50 Appendix J. Paragraph (b) (2) (vii) of Section 50.55a modified the requirements of OM Part 10 for inservice testing of containment isolation valves. Specifically, Paragraph (b)(2)(vii) requires that, when using OM Part 10 for inservice testing, leakage rates for Category A containment isolation valves that do not provide a reactor coolant system pressure isolation function must be analyzed in accordance with Paragraph 4.2.2.3(e) of OM Part 10 and corrective actions for these valves must be made in accordance with Paragraph 4.2.2.3 (f) of OM Part 10. ***The Crystal River Unit 3 Containment Leakage Rate Testing Program implements the requirements of OM Part 10 Paragraphs 4.2.2.3 (e) and (f) for Category A containment isolation valves.*** The frequency for performing seat leakage testing for applicable Containment isolation valves will be as determined by the performance-based requirements of the Crystal River Unit 3 10CFR50 Appendix J - Option B Program.

The valves that close to isolate Containment, but are exempt from leak rate testing per the 10CFR50 Appendix J guidance, still have a safety function to close. Although there is no specific leak rate criteria applied, these valves still have to functionally close. In general, a system which penetrates containment has an important role to play in the overall operation of the plant. Some perform a safety function in a pre/post loss of coolant accident manner while others are important to the overall operation of the plant. In either case, however, the requirement to perform a containment isolation function is the same. Containment isolation is always considered to be a safety function, it is just a matter of when the isolation function needs to be performed.

In general, the Crystal River Unit 3 Containment Leakage Rate Testing Program verifies the Containment structure is isolated following a loss of coolant accident. In the Crystal River Unit 3 Containment Leakage Rate Testing Program, this is referred to as Containment Isolation.

A valve in a system with an open safety function during a loss of coolant accident is exempted from leak rate testing in accordance with the Crystal River Unit 3 Containment Leakage Rate Testing Program. The open safety function has a higher priority than the containment isolation function. As long as the system is able to provide its safety function, it should not be closed for containment isolation. However, if the system is not able to perform its safety function, then containment isolation becomes the priority. This containment isolation is beyond the scope of the Crystal River Unit 3 Containment Leakage Rate Testing Program. This is considered a closed safety function for the valve in the Crystal River Unit 3 Inservice Testing Program. In the Crystal River Unit 3 Inservice Testing Program, this is also referred to as Containment Isolation. These valves have no specified leak rate, so they are not categorized as A or AC valves, but they are tested in the closed position as category B or C valves.

### 4.5.7 Pressure Isolation Valves

The only pressure isolation valves included in this program for seat leakage testing are those identified under an Event-V evaluation required by the Reactor Safety Study, WASH-1400. These valves are listed along with their allowable leakage criteria in Crystal River Unit 3 Improved Technical Specification Limiting Condition for Operation 3.4.13 and associated Bases and are tested in accordance with Surveillance Requirement 3.4.13.1. These Pressure Isolation Valves are individually leak rate tested, leakage rates adjusted to "function maximum pressure differential" and corrective actions taken as required by OM Part 10.

### 4.5.8 Check Valve Exercising

Exercising check valves to the full open position utilizing flow is considered acceptable by Generic Letter 89-04 if the maximum required accident flowrate is passed through the valve. Where system design or operation prevents full-stroke exercising, Nuclear Regulatory Commission Generic Letter 89-04 allows the valve to be disassembled and manually exercised on a refueling outage frequency as an alternative. Disassembly and inspection of check valves is also provided as an alternate to exercising requirements as specified on Paragraph 4.3.2.4(c) of OM Part 10. Position 2 of Generic Letter 89-04 allows, if determined by the licensee that disassembly and inspection of all applicable valves each refueling outage is burdensome, a sample disassembly and inspection plan for groups of identical valves in similar applications may be employed. Crystal River Unit 3 employs the sample disassembly and inspection provision as allowed by Generic Letter 89-04. Valve groups are sized to limit the interval between successive inspections on the same valve to three (3) refuelings (nominally 6 years). Grouping of valves that would result in extensions of this interval between successive inspections must be performed in accordance with the provisions of Generic Letter 89-04 Position 2.

The sample disassembly and inspection program groups similar valves and inspects one valve from each group each refueling outage. The sampling technique requires that each valve in the group be the same design (manufacturer, size, model, and materials of construction) and have the same service conditions including orientation. Additionally, at each disassembly verification of full-stroke capability by manually exercising the disk of the valve and inspection of the valve internals for structural integrity ( no loose or corroded parts) is performed. A different valve of each group is required to be disassembled, inspected, and manually full-stroke exercised at each successive refueling outage, until the entire group has been inspected. If the disassembled valve is not capable of being full-stroke exercised or there is binding or failure of valve internals, all remaining valves in the group must be disassembled, inspected, and manually full-stroke exercised during the same outage. Once this is completed, the sequence of inspection is repeated. The check valve will be partial stroke tested upon re-assembly if practical.

### 4.5.9 Reactor Vessel Internal Vent Valves

Reactor vessel internal vent valves are exercised during refueling outages. These valves are considered as a manual exercise in lieu of full-stroke testing as allowed by OM Part 10 Paragraph 4.3.2.4(c). These valves are affixed to the Reactor Core Support Shield and are only accessible when the Reactor Vessel Head and Plenum are removed . They are demonstrated operable during refueling outages by verifying through manual actuation that the valve is capable of fully opening with a force of less than or equal to 425 lbs (applied vertically upward). Video inspection of the valve body, disc and attachment mechanism is also performed to ensure no abnormal degradation and structural integrity.

### 4.5.10 Active and Passive Valve Determination

The determination of whether a valve has an active or passive safety function is based upon the normal valve position as specified in the related operating instructions or procedures under normal plant (power) operational modes as compared with the required post-accident valve positions. There is no account for inadvertent valve mis-positioning.

### 4.5.11 Control Valves

Control valves are specifically excluded from testing per OM Part 10, Paragraph 1.2 provided they are used only for system control (e.g. pressure regulating valves). If a valve must change position to perform a safety function and is operated by an external power source (air, hydraulic, electric, etc.), or has a required safety related fail safe position, then it is designated as Category A or B and stroke tested accordingly.

### 4.5.12 Skid Mounted Valves

Crystal River Unit 3 has adopted the position that testing of the major component is an acceptable means of verifying the operational readiness of a skid mounted valve. This position is implemented, for example, on Emergency Diesel Generator support systems where testing of the Emergency Diesel Generator provides adequate assurance of the valves proper operation. Documentation of this position is being provided in this Program Manual as recommended by NUREG 1482, Section 3.4.

### 4.5.13 Valves with Both Open and Closed Safety Functions

Where a valve performs a safety function in both directions (open and closed) exercising in both directions is required . If the valve happens to be a power-operated valve, stroke time measurements in both directions are also required.

### 4.5.14 Passive Check Valves

A check valve in a system located such that flow through the check valve is blocked by other system features may be considered passive for the purposes of Inservice Testing. Additionally, if a valve obturator is held in position, for example a stop check valve, and the position is not required to change for accident mitigation or safe shutdown, the valve may be considered passive.

### 4.5.15 Relief Valves

Safety/relief valves shall be included to the extent that a valve performs a safety function or protects a system (or portions thereof) that performs a required function in shutting down the reactor to the safe shutdown condition, maintaining the safe shutdown condition, or mitigating the consequences of an accident.

## 4.6 Valve Table Information

The Valve Table contains the following information:

- Valve - valve identification number
- Flow Diagram Coord - This identifies the flow diagram number, sheet, and coordinates to locate the valve.
- Size - size of the valve in inches
- Type - valve design type as identified by the following abbreviations:

| | |
|---|---|
| ANG | Angle |
| BF | Butterfly |
| BL | Ball |
| CK | Check |
| DA | Diaphragm |
| GA | Gate |
| GL | Globe |
| PORV | Power operated relief |
| RD | Rupture disc |
| REL | Relief |
| SCK | Stop check |
| SPC | Special design |
| 3-Way | 3-Way |

- Actuator - Type of actuator as identified by the following abbreviations:

| | |
|---|---|
| A | Air |
| M | Manual |
| MO | Motor Operator |
| PV | Pilot Valve |
| SA | Self-Actuated |
| SO | Solenoid Operator |
| SP | Special |

- Code Class - ASME Class 1, 2, 3, OR 4

- Normal Position - Position of valve during normal operation as identified by the following abbreviations:

| | |
|---|---|
| C | Closed |
| O | Open |
| T | Throttled |
| L | Locked |
| S | Sealed |

- Cat - ASME Category A, B, C, D, AC, or AUG (Augmented)

- Act/Pas - Identification as ACTIVE or PASSIVE

- Safety Position - Valve position required to satisfy a safety function.

| | |
|---|---|
| O | Open |
| C | Closed |
| O/C | Open and Closed |

- Test - Required test as identified by the following abbreviations:

| | |
|---|---|
| CTO | Check valve open test |
| CTC | Check valve closed test |
| EXO | Exercise test open |
| EXC | Exercise test closed |
| STO | Stroke time open |
| STC | Stroke time closed |
| FSTO | Failsafe test open |
| FSTC | Failsafe test closed |
| PIT | Position indication test |
| RV | Relief valve setpoint test |
| LJ | 10CFR50 Appendix J leak test |
| LT | Category A seat leakage test |
| PS | Partial stroke test |
| RD | Rupture disc test |

- Freq - Frequency of test performance as identified by the following abbreviations:

| | |
|---|---|
| B | 10CFR50 Appendix J Option B frequency |
| Q | Quarterly |
| CS | Cold Shutdown |
| RF | Refueling |
| 2Y | 2 Year |
| 5Y | 5 Year |
| 10Y | 10 Year |
| SAM | Sample Plan |

- Procedure - Procedure that test is performed in.

- CSJ/ROJ/Notes - Cold Shutdown Justification / Refuel Outage Justification / Remarks

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: AH Air Handling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AHV-001A | FD-302- 751 SH. 01 B-4 | 48 | BF | A | 2 | LC | A | PASSIVE | C | Reactor Building Purge Isolation | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-01 |
| | | | | | | | | | | LJ | B | SP-177 | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-01 |
| AHV-001B | FD-302- 751 SH. 01 C-4 | 48 | BF | MO | 2 | LC | A | PASSIVE | C | Reactor Building Purge Isolation | | | |
| | | | | | | | | | | LJ | B | SP-177 | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-01 |
| AHV-001C | FD-302- 751 SH. 01 F-4 | 48 | BF | MO | 2 | LC | A | PASSIVE | C | Reactor Building Purge Isolation | | | |
| | | | | | | | | | | LJ | B | SP-177 | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-01 |
| AHV-001D | FD-302- 751 SH. 01 G-4 | 48 | BF | A | 2 | LC | A | PASSIVE | C | Reactor Building Purge Isolation | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-01 |
| | | | | | | | | | | LJ | B | SP-177 | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-01 |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: AS Auxiliary Steam**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASV-005 | FD-302- 051 SH. 01 E-7 | 4 | GA | MO | 3 | C | B | ACTIVE | O | EFP-2 Steam Inlet | | | |
| | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |
| ASV-050 | FD-302- 051 SH. 01 F-7 | 4 | SPC | SP | 3 | O/T | B | ACTIVE | O | EFP-2 Trip Valve | | | |
| | | | | | | | | | | EXC | Q | SP-349B | Augmented |
| | | | | | | | | | | EXO | Q | SP-349B | |
| | | | | | | | | | | FSTC | Q | SP-349B | Augmented |
| ASV-204 | FD-302- 051 SH. 01 E-8 | 4 | GA | MO | 3 | C | B | ACTIVE | O | EFP-2 Steam Inlet | | | |
| | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: BS Reactor Building Spray**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BSV-001 | FD-302- 711 SH. 01 H-8 | 10 | CK | SA | 2 | C | C | ACTIVE | O | 3A Spray Pump Suction Check Vlv | | | |
| | | | | | | | | | | CTO | Q | SP-340B | |
| BSV-003 | FD-302- 711 SH. 01 G-3 | 8 | GL | MO | 2 | C | B | ACTIVE | O/C | RB Spray Header Inlet | | | |
| | | | | | | | | | | PIT | 2Y | SP-340B | |
| | | | | | | | | | | STC | Q | SP-340B | |
| | | | | | | | | | | STO | Q | SP-340B | |
| BSV-004 | FD-302- 711 SH. 01 E-3 | 8 | GL | MO | 2 | C | B | ACTIVE | O/C | RB Spray Header Inlet Iso. Vlv | | | |
| | | | | | | | | | | PIT | 2Y | SP-340E | |
| | | | | | | | | | | STC | Q | SP-340E | |
| | | | | | | | | | | STO | Q | SP-340E | |
| BSV-008 | FD-302- 711 SH. 01 F-8 | 10 | CK | SA | 2 | C | C | ACTIVE | O | 3B Spray Pump Suction Check Vlv | | | |
| | | | | | | | | | | CTO | Q | SP-340E | |
| BSV-016 | FD-302- 711 SH. 01 F-8 | 10 | GA | MO | 2 | LO | B | PASSIVE | O | 3B Spray Pump Suction | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| BSV-017 | FD-302- 711 SH. 01 H-8 | 10 | GA | MO | 2 | LO | B | PASSIVE | O | 3A Spray Pump Suction | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| BSV-026 | FD-302- 711 SH. 01 E-2 | 8 | CK | SA | 2 | C | C | ACTIVE | O/C | RB Spray Header "B" Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | SAM | SP-620 | ROJ-01 |
| | | | | | | | | | | CTO | SAM | SP-620 | ROJ-01 |

**SYSTEM: BS Reactor Building Spray**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BSV-027 | FD-302- 711 SH. 01 G-2 | 8 | CK | SA | 2 | C | C | ACTIVE | O/C | RB Spray Header "A" Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | SAM | SP-620 | ROJ-01 |
| | | | | | | | | | | CTO | SAM | SP-620 | ROJ-01 |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: CA Chemical Addition, Liquid Sampling, and Post Accident Sampling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CARS-1 | FD-302- 700 SH. 1 D-3 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| CARS-2 | FD-302- 700 SH. 1 D-3 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| CARS-3 | FD-302- 700 SH. 1 C-5 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| CARS-4 | FD-302- 700 SH. 1 C-4 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| CARS-5 | FD-302- 672 SH. 1 D-4 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| CAV-001 | FD-302- 672 SH. 01 B-3 | 1 | GL | MO | 2 | C | A | ACTIVE | C | Pressurizer Steam Sample RB Isolation | | | |
| | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CAV-002 | FD-302- 672 SH. 01 A-4 | 1 | GL | SO | 2 | C | A | ACTIVE | C | Primary Systems Sample RB Isolation | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | PIT | 2Y | SP-179E | |
| | | | | | | | | | | STC | Q | SP-370 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: CA Chemical Addition, Liquid Sampling, and Post Accident Sampling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CAV-003 | FD-302- 672 SH. 01 B-3 | 1 | GL | MO | 2 | C | A | ACTIVE | C | Pressurizer Water Sample RB Isolation | | | |
| | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CAV-004 | FD-302- 672 SH. 01 C-3 | 1 | GL | MO | 2 | T | A | ACTIVE | C | OTSG 3A Sample RB Isolation | | | |
| | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CAV-005 | FD-302- 672 SH. 01 D-3 | 1 | GL | MO | 2 | T | A | ACTIVE | C | OTSG 3B Sample RB Isolation | | | |
| | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CAV-006 | FD-302- 672 SH. 01 C-4 | 1 | GL | A | 2 | T | A | ACTIVE | C | OTSG 3A Sample RB Isolation | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CAV-007 | FD-302- 672 SH. 01 D-4 | 1 | GL | A | 2 | T | A | ACTIVE | C | OTSG 3B Sample RB Isolation | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: CA Chemical Addition, Liquid Sampling, and Post Accident Sampling**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CAV-126 | FD-302-672 SH. 01 | A-3 | 1 | GL | MO | 2 | C | A | ACTIVE | C | RC Letdown Sample RB Isolation | | | |
| | | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | | STC | Q | SP-370 | |
| CAV-429 | FD-302-700 SH. 01 | C-2 | 0.375 | GL | SO | 2 | LC | A | PASSIVE | C | RCP-1A Discharge Sample Isolation to PASS | | | |
| | | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | | PIT | 2Y | SP-179E | |
| CAV-430 | FD-302-700 SH. 01 | C-2 | 0.375 | GL | SO | 2 | LC | A | PASSIVE | C | RCP-1C Suction Sample Isolation to PASS | | | |
| | | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | | PIT | 2Y | SP-179E | |
| CAV-431 | FD-302-700 SH. 01 | B-3 | 0.375 | GL | SO | 2 | C | A | ACTIVE | C | Containment Sample Isolation to PASS | | | |
| | | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | | PIT | 2Y | SP-179E | |
| | | | | | | | | | | | STC | Q | SP-370 | |
| CAV-432 | FD-302-700 SH. 01 | C-3 | 0.375 | GL | SO | 2 | LC | A | PASSIVE | C | Containment Samples Isolation to Pass | | | |
| | | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | | PIT | 2Y | SP-179E | |
| CAV-433 | FD-302-700 SH. 01 | D-2 | 0.375 | GL | SO | 2 | LC | A | PASSIVE | C | RB Sump Suction Isolation to PASS | | | |
| | | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | | PIT | 2Y | SP-179E | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: CA Chemical Addition, Liquid Sampling, and Post Accident Sampling**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CAV-434 | FD-302- 700 SH. 01 | E-2 | 0.375 | GL | SO | 2 | LC | A | PASSIVE | C | RB Sump Return Sample Isolation from PASS | | | |
| | | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | | PIT | 2Y | SP-179E | |
| CAV-435 | FD-302- 700 SH. 01 | E-3 | 0.375 | GL | SO | 2 | LC | A | PASSIVE | C | RB Sump Suction Isolation to PASS | | | |
| | | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | | PIT | 2Y | SP-179E | |
| CAV-436 | FD-302- 700 SH. 01 | E-3 | 0.375 | GL | SO | 2 | LC | A | PASSIVE | C | RB Sump Return Sample Isolation from PASS | | | |
| | | | | | | | | | | | LJ | B | SP-179E | |
| | | | | | | | | | | | PIT | 2Y | SP-179E | |

**SYSTEM: CD Condensate**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CDV-103 | FD-302- 101 SH. 02 | C-3 | 8 | GA | M | 4 | LC | AUG | PASSIVE | C | CST to EFP Suction | | | |
| | | | | | | | | | | | EXC | Q | SP-370 | Augmented |
| | | | | | | | | | | | EXO | Q | SP-370 | Augmented |
| CDV-288 | FD-302- 082 SH. 01 | H3 | 0.75 | GA | M | 4 | LO | AUG | ACTIVE | C | Tale-tell between FS and CD | | | |
| | | | | | | | | | | | EXC | Q | SP-370 | Augmented |
| | | | | | | | | | | | EXO | Q | SP-370 | Augmented |
| CDV-289 | FD-302- 082 SH 01 | H3 | 8 | GA | M | 4 | SC | AUG | ACTIVE | C | CD to FS boundary valve | | | |
| | | | | | | | | | | | EXC | Q | SP-370 | Augmented |
| | | | | | | | | | | | EXO | Q | SP-370 | Augmented |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: CF Core Flood**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CFRS-1 | FD-302- 702 SH. 1 E-5 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| CFV-001 | FD-302- 702 SH. 01 H-5 | 14 | CK | SA | 1 | C | AC | ACTIVE | O/C | CFT-1A/DHP-1B to RPV Inlet Check | | | |
| | | | | | | | | | | CTC | CS | SP-603 | CSJ-02 |
| | | | | | | | | | | CTO | RF | SP-610 | ROJ-02 |
| | | | | | | | | | | LT | CS | SP-603 | |
| | | | | | | | | | | PS | CS | SP-405 | |
| CFV-002 | FD-302- 702 SH. 01 H-4 | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | CFT-1A to RPV Inlet Check | | | |
| | | | | | | | | | | CTC | RF | SP-610 | ROJ-05 |
| | | | | | | | | | | CTO | RF | SP-610 | ROJ-05 |
| | | | | | | | | | | PS | CS | SP-405 | |
| CFV-003 | FD-302- 702 SH. 01 H-6 | 14 | CK | SA | 1 | C | AC | ACTIVE | O/C | CFT-1B/DHP-1A to RPV Inlet Check | | | |
| | | | | | | | | | | CTC | CS | SP-603 | CSJ-02 |
| | | | | | | | | | | CTO | RF | SP-610 | ROJ-02 |
| | | | | | | | | | | LT | CS | SP-603 | |
| | | | | | | | | | | PS | CS | SP-405 | |
| CFV-004 | FD-302- 702 SH. 01 H-7 | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | CFT-1B to RPV Inlet Check | | | |
| | | | | | | | | | | CTC | RF | SP-610 | ROJ-05 |
| | | | | | | | | | | CTO | RF | SP-610 | ROJ-05 |
| | | | | | | | | | | PS | CS | SP-405 | |
| CFV-005 | FD-302- 702 SH. 01 G-4 | 14 | GA | MO | 2 | LO | B | PASSIVE | O | CFT-1A Outlet Iso. | | | |
| | | | | | | | | | | PIT | 2Y | SP-405/610 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: CF Core Flood**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CFV-006 | FD-302- 702 | SH. 01 G-8 | 14 | GA | MO | 2 | LO | B | PASSIVE | O | CFT-1B Outlet Iso. | | | |
| | | | | | | | | | | | PIT | 2Y | SP-405/610 | |
| CFV-011 | FD-302- 702 | SH. 01 D-5 | 1 | GL | MO | 2 | C | A | ACTIVE | C | CFT-1A Sample Iso. | | | |
| | | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | | STC | Q | SP-370 | |
| CFV-012 | FD-302- 702 | SH. 01 D-6 | 1 | GL | MO | 2 | C | A | ACTIVE | C | CFT-1B Sample Iso. | | | |
| | | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | | STC | Q | SP-370 | |
| CFV-015 | FD-302- 702 | SH. 01 B-7 | 1 | GL | MO | 2 | C | A | ACTIVE | C | CFT-1B Vent to WD System | | | |
| | | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | | STC | Q | SP-370 | |
| CFV-016 | FD-302- 702 | SH. 01 B-4 | 1 | GL | MO | 2 | C | A | ACTIVE | C | CFT-1A Vent to WD System | | | |
| | | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | | STC | Q | SP-370 | |
| CFV-017 | FD-302- 702 | SH. 01 B-9 | 1 | CK | SA | 2 | C | AC | ACTIVE | C | CFT-1B Nitrogen Supply Check | | | |
| | | | | | | | | | | | CTC | RF | SP-179L | ROJ-03 |
| | | | | | | | | | | | LJ | B | SP-179L | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: CF Core Flood**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CFV-018 | FD-302- 702 SH. 01 B-9 | 1 | CK | SA | 2 | C | AC | ACTIVE | C | CFT-1B MU Supply Check | | | |
| | | | | | | | | | | CTC | RF | SP-179L | ROJ-24 |
| | | | | | | | | | | LJ | B | SP-179L | |
| CFV-019 | FD-302- 702 SH. 01 B-3 | 1 | CK | SA | 2 | C | AC | ACTIVE | C | CFT-1A MU Supply Check | | | |
| | | | | | | | | | | CTC | RF | SP-179L | ROJ-24 |
| | | | | | | | | | | LJ | B | SP-179L | |
| CFV-020 | FD-302- 702 SH. 01 B-2 | 1 | CK | SA | 2 | C | AC | ACTIVE | C | CFT-1A Nitrogen Supply Check | | | |
| | | | | | | | | | | CTC | RF | SP-179L | ROJ-03 |
| | | | | | | | | | | LJ | B | SP-179L | |
| CFV-023 | FD-302- 702 SH. 01 B-8 | 1 x 2 | REL | SA | 2 | C | C | ACTIVE | O/C | CFT-1B Pressure Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| CFV-024 | FD-302- 702 SH. 01 B-4 | 1 x 2 | REL | SA | 2 | C | C | ACTIVE | O/C | CFT-1A Pressure Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| CFV-025 | FD-302- 702 SH. 01 A-2 | 1 | GL | A | 2 | C | A | ACTIVE | C | CFT-1A Fill Control Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |

**SYSTEM: CF Core Flood**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CFV-026 | FD-302- 702 SH. 01 A-9 | 1 | GL | A | 2 | C | A | ACTIVE | C | CFT-1B Fill Control Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CFV-027 | FD-302- 702 SH. 01 B-10 | 1 | GL | A | 2 | C | A | ACTIVE | C | CFT-1B Nitrogen Supply Control Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CFV-028 | FD-302- 702 SH. 01 B-1 | 1 | GL | A | 2 | C | A | ACTIVE | C | CFT-1A Nitrogen Supply Control Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CFV-029 | FD-302- 702 SH. 01 A-6 | 1.5 | GL | A | 2 | C | A | ACTIVE | C | Vent Control Valve to WD System | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |

**SYSTEM:** **CF** **Core Flood**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CFV-042 | FD-302- 702 SH. 01 E-6 | 1 | GL | A | 2 | C | A | ACTIVE | C | Sample Control Valve Sample System and RB Sump | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179L | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |

**SYSTEM: CH Chilled Water**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHV-002 | FD-302- 756 SH. 01 D-4 | 6 | GA | M | 3 | O/C | B | ACTIVE | O/C | Outlet Hdr Isol | | | |
| | | | | | | | | | | EXC | Q | SP-370 | |
| | | | | | | | | | | EXO | Q | SP-370 | |
| CHV-004 | FD-302- 756 SH. 01 D-3 | 6 | GA | M | 3 | O | B | ACTIVE | O/C | Outlet Hdr Isol | | | |
| | | | | | | | | | | EXC | Q | SP-370 | |
| | | | | | | | | | | EXO | Q | SP-370 | |
| CHV-064 | FD-302- 756 SH. 01 D-7 | 6 | CK | SA | 3 | O/C | C | ACTIVE | O/C | CHHE-1A Chiller Outlet Check Valve | | | |
| | | | | | | | | | | CTC | Q | SP-375B | |
| | | | | | | | | | | CTO | Q | SP-375A | |
| CHV-065 | FD-302- 756 SH. 01 E-7 | 6 | CK | SA | 3 | O/C | C | ACTIVE | O/C | CHHE-1B Chiller Outlet Check Valve | | | |
| | | | | | | | | | | CTC | Q | SP-375A | |
| | | | | | | | | | | CTO | Q | SP-375B | |
| CHV-066 | FD-302- 756 SH. 01 B-6 | 0.5 x 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | Demin Makeup to Chill Water Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| CHV-068 | FD-302- 756 SH. 01 C-10 | 6 | GA | A | 3 | T | B | ACTIVE | O | CHHE-1A Return Control Valve | | | |
| | | | | | | | | | | FSTO | Q | SP-375A | |
| | | | | | | | | | | STO | Q | SP-375A | |
| CHV-069 | FD-302- 756 SH. 01 E-10 | 6 | GA | A | 3 | T | B | ACTIVE | O | CHHE-1B Return Control Valve | | | |
| | | | | | | | | | | FSTO | Q | SP-375B | |
| | | | | | | | | | | STO | Q | SP-375B | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: CH Chilled Water**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHV-090 | FD-302- 765 SH. 01 D-8 | 2 | GL | SO | 3 | O | B | ACTIVE | O | Chilled Water Inlet | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STO | Q | SP-375A | |
| CHV-091 | FD-302- 765 SH. 01 D-8 | 2 | CK | SA | 3 | O | C | ACTIVE | O | Chilled Water Inlet Check Vlv | | | |
| | | | | | | | | | | CTO | Q | SP-375B | |
| CHV-095 | FD-302- 765 SH. 01 D-8 | 2 | CK | SA | 3 | C | C | ACTIVE | C | App. R Chilled Water Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | RF | SP-620 | ROJ-04 |
| CHV-097 | FD-302- 765 SH. 01 E-8 | 2 | GL | SO | 3 | C | B | PASSIVE | C | Dedicated Chilled Water Outlet | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| CHV-100 | FD-302- 765 SH. 01 E-8 | 2 | GL | A | 3 | T | B | ACTIVE | O | Temp Controller | | | |
| | | | | | | | | | | FSTO | Q | SP-375A | |
| | | | | | | | | | | STO | Q | SP-375A | |
| CHV-101 | FD-302- 765 SH. 01 E-8 | 2 | GL | SO | 3 | O | B | PASSIVE | O | Chilled Water Outlet | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| CHV-102 | FD-302- 765 SH. 01 F-8 | 2 | GA | M | 3 | O | B | PASSIVE | O | Chilled Water Outlet | | | |
| | | | | | | | | | | EXC | Q | SP-370 | |
| | | | | | | | | | | EXO | Q | SP-370 | |
| CHV-108 | FD-302- 765 SH. 01 D-1 | 2 | GL | SO | 3 | O | B | ACTIVE | O | Chilled Water Inlet | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STO | Q | SP-375A | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: CH Chilled Water**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHV-113 | FD-302- 765 SH. 01 F-1 | 2 | GL | A | 3 | T | B | ACTIVE | O | Temp Controller | | | |
| | | | | | | | | | | FSTO | Q | SP-375A | |
| | | | | | | | | | | STO | Q | SP-375A | |
| CHV-200 | FD-302- 756 SH. 01 E-3 | 0.5 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | SWHE-2 Relief Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| CHV-202 | FD-302- 765 SH. 01 F-8 | 2 | CK | SA | 3 | O | C | ACTIVE | O/C | Chilled Water Outlet Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-375B | |
| CHV-229 | FD-302- 756 SH. 01 E-2 | 2.5 | GA | M | 3 | O | B | PASSIVE | | Supply Line Isolation to RB Cooling Coils | | | |
| | | | | | | | | | | EXC | Q | SP-370 | Augmented |
| | | | | | | | | | | EXO | Q | SP-370 | Augmented |
| CHV-233 | FD-302- 756 SH. 01 F-2 | 2 | GL | SO | 3 | O/C | B | ACTIVE | C | Isolation Valve for AHHE-13A | | | |
| | | | | | | | | | | FSTC | Q | SP-375A | |
| | | | | | | | | | | PIT | 2Y | SP-375A | |
| | | | | | | | | | | STC | Q | SP-375A | |
| CHV-234 | FD-302- 756 SH. 01 F-2 | 2 | GL | SO | 3 | O/C | B | ACTIVE | C | Isolation Valve for AHHE-13A | | | |
| | | | | | | | | | | FSTC | Q | SP-375A | |
| | | | | | | | | | | PIT | 2Y | SP-375A | |
| | | | | | | | | | | STC | Q | SP-375A | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: CH Chilled Water***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CHV-235 | FD-302- 756 SH. 01 F-2 | 2 | GL | SO | 3 | O/C | B | ACTIVE | C | Isolation Valve for AHHE-13B | | | |
| | | | | | | | | | | FSTC | Q | SP-375B | |
| | | | | | | | | | | PIT | 2Y | SP-375B | |
| | | | | | | | | | | STC | Q | SP-375B | |
| CHV-236 | FD-302- 756 SH. 01 F-2 | 2 | GL | SO | 3 | O/C | B | ACTIVE | C | Isolation Valve for AHHE-13B | | | |
| | | | | | | | | | | FSTC | Q | SP-375B | |
| | | | | | | | | | | PIT | 2Y | SP-375B | |
| | | | | | | | | | | STC | Q | SP-375B | |

**SYSTEM: CI Industrial Cooling Water**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CIV-034 | FD-302- 762 SH. 01 F-5 | 2.5 | GA | A | 2 | O | A | ACTIVE | C | Cavity Cooling System "A" Supply POV Iso. | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179F | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CIV-035 | FD-302- 762 SH. 01 F-2 | 2.5 | GA | A | 2 | O | A | ACTIVE | C | Cavity Cooling System "A" Return POV Iso. | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179F | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CIV-040 | FD-302- 762 SH. 01 G-2 | 2.5 | GA | A | 2 | O | A | ACTIVE | C | Cavity Cooling System "B" Return POV Iso. | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179F | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CIV-041 | FD-302- 762 SH. 01 G-5 | 2.5 | GA | A | 2 | O | A | ACTIVE | C | Cavity Cooling System "B" Supply POV Iso. | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179F | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| CIV-279 | FD-302- 762 SH. 01 F4 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | AHHE-14A Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: CI Industrial Cooling Water***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CIV-280 | FD-302- 762 SH. 01 H4 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | AHHE-14B Relief RV | 10Y | SP-602 | |

**SYSTEM: DC Decay Heat Closed Cycle Cooling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCV-009 | FD-302- 631 SH. 01 G-2 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | DCHE-1A Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-011 | FD-302- 631 SH. 02 F-2 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | DCHE-1B Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-055 | FD-302- 631 SH. 01 A-3 | 2 x 3 | REL | SA | 3 | C | C | ACTIVE | O/C | Safety Valve/Vacuum Breaker 3A Surge Tank | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-056 | FD-302- 631 SH. 02 B-2 | 2 x 3 | REL | SA | 3 | C | C | ACTIVE | O/C | Safety Valve/Vacuum Breaker 3B Surge Tank | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-057 | FD-302- 631 SH. 01 D-9 | 0.5 X 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | DHP-1A Motor Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-058 | FD-302- 631 SH. 02 D-8 | 0.5 X 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | DHP-1B Motor Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-105 | FD-302- 631 SH. 02 E-5 | 0.75 X 1 | REL | SA | 3 | C | C | ACTIVE | O/C | MUP-1C Motor Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-106 | FD-302- 631 SH. 02 E-5 | 0.5 X 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | MUP-1C Gear Oil Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-107 | FD-302- 631 SH. 02 F-5 | 0.75 X 1 | REL | SA | 3 | C | C | ACTIVE | O/C | MUP-1C Lube Oil Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-108 | FD-302- 631 SH. 01 F-6 | 0.5 X 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | MUP-1A Motor Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |

**SYSTEM: DC Decay Heat Closed Cycle Cooling**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCV-109 | FD-302-631 SH. 01 | F-6 | 0.5 X 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | MUP-1A Gear Oil Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-110 | FD-302-631 SH. 01 | F-6 | 0.75 X 1 | REL | SA | 3 | C | C | ACTIVE | O/C | MUP-1A Lube Oil Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-111 | FD-302-631 SH. 01 | B-7 | 0.75 X 1 | REL | SA | 3 | C | C | ACTIVE | O/C | RWP-3A Motor Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-112 | FD-302-631 SH. 02 | C-6 | 0.75 X 1 | REL | SA | 3 | C | C | ACTIVE | O/C | RWP-3B Motor Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-113 | FD-302-631 SH. 01 | D-8 | 0.5 X 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | BSP-1A Motor Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-114 | FD-302-631 SH. 02 | F-7 | 0.5 X 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | BSP-1B Motor Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-216 | FD-302-631 SH. 01 | B-10 | 1.5" x 2" | REL | SA | 3 | C | C | ACTIVE | O/C | DHHE-1A Shell Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DCV-217 | FD-302-631 SH. 02 | B-7 | 1.5" x 2" | REL | SA | 3 | C | C | ACTIVE | O/C | DHHE-1B Shell Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: DF Diesel Fuel Oil Transfer**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DFV-002 | FD-302- 281 SH. 01 D-2 | 2 | GA | M | 3 | C | B | ACTIVE | C | DFT-3A Outlet Isolation | | | |
| | | | | | | | | | | EXC | Q | SP-311 | |
| | | | | | | | | | | EXO | Q | SP-311 | |
| DFV-006 | FD-302- 281 SH. 01 E-3 | 1 | CK | SA | 3 | C | C | ACTIVE | O | DFP-1A Disch. Check Vlv. | | | |
| | | | | | | | | | | CTO | Q | SP-311 | |
| DFV-007 | FD-302- 281 SH. 01 D-3 | 1 | CK | SA | 3 | C | C | ACTIVE | C | DFP-1C Disch. Check Vlv. | | | |
| | | | | | | | | | | CTC | Q | SP-311 | |
| DFV-014 | FD-302- 281 SH. 01 E-6 | 1 | CK | SA | 3 | C | C | ACTIVE | O | DFP-1B Disch. Check Vlv. | | | |
| | | | | | | | | | | CTO | Q | SP-311 | |
| DFV-015 | FD-302- 281 SH. 01 D-6 | 1 | CK | SA | 3 | C | C | ACTIVE | C | DFP-1D Disch. Check Vlv. | | | |
| | | | | | | | | | | CTC | Q | SP-311 | |
| DFV-018 | FD-302- 281 SH. 01 C-6 | 2 | GA | M | 3 | C | B | ACTIVE | C | DFT-3B Outlet Isolation | | | |
| | | | | | | | | | | EXC | Q | SP-311 | |
| | | | | | | | | | | EXO | Q | SP-311 | |
| DFV-023 | FD-302- 281 SH. 01 C-1 | 1.5 | CK | SA | 3 | C | C | ACTIVE | O/C | Day Tank 3A Footvalve | | | |
| | | | | | | | | | | CTC | Q | SP-354A | Skid |
| | | | | | | | | | | CTO | Q | SP-354A | Skid |
| DFV-024 | FD-302- 281 SH. 01 C-7 | 1.5 | CK | SA | 3 | C | C | ACTIVE | O/C | Day Tank 3B Footvalve | | | |
| | | | | | | | | | | CTC | Q | SP-354B | Skid |
| | | | | | | | | | | CTO | Q | SP-354B | Skid |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: DF Diesel Fuel Oil Transfer**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DFV-025 | FD-302- 281 | SH. 01 | H-7 | 2.5 | CK | SA | 3 | C | C | ACTIVE | O/C | Stg. Tank 3B Footvalve | | |
| | | | | | | | | | | | CTC | Q | SP-311 | |
| | | | | | | | | | | | CTO | Q | SP-311 | |
| DFV-026 | FD-302- 281 | SH. 01 | H-2 | 2.5 | CK | SA | 3 | C | C | ACTIVE | O/C | Stg. Tank 3A Footvalve | | |
| | | | | | | | | | | | CTC | Q | SP-311 | |
| | | | | | | | | | | | CTO | Q | SP-311 | |
| DFV-029 | FD-302- 281 | SH. 01 | A-8 | 1 | CK | SA | 3 | C | C | ACTIVE | C | DFP-3B Disch. Check Vlv. | | |
| | | | | | | | | | | | CTC | Q | SP-354B | Skid |
| DFV-031 | FD-302- 281 | SH. 01 | A-9 | 1 | CK | SA | 3 | C | C | ACTIVE | O | EDG 3B Fuel Line Check Vlv. | | |
| | | | | | | | | | | | CTO | Q | SP-354B | Skid |
| DFV-037 | FD-302- 281 | SH. 01 | A-2 | 1 | CK | SA | 3 | C | C | ACTIVE | C | DFP-3A Disch. Check Vlv. | | |
| | | | | | | | | | | | CTC | Q | SP-354A | Skid |
| DFV-039 | FD-302- 281 | SH. 01 | A-3 | 1 | CK | SA | 3 | C | C | ACTIVE | O | EDG 3A Fuel Line Check Vlv. | | |
| | | | | | | | | | | | CTO | Q | SP-354A | Skid |
| DFV-045 | FD-302- 281 | SH. 01 | G-4 | 2.5 | GA | M | 3 | O | B | PASSIVE | O/C | Stg. Tank 3A Disch. | | |
| | | | | | | | | | | | EXC | Q | SP-370 | |
| | | | | | | | | | | | EXO | Q | SP-370 | |
| DFV-046 | FD-302- 281 | SH. 01 | G-5 | 2.5 | GA | M | 3 | O | B | ACTIVE | O/C | Stg. Tank 3B Disch. | | |
| | | | | | | | | | | | EXC | Q | SP-370 | |
| | | | | | | | | | | | EXO | Q | SP-370 | |

**SYSTEM: DF Diesel Fuel Oil Transfer**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DFV-047 | FD-302- 281 SH. 01 G-4 | 2.5 | GA | M | 3 | C | B | ACTIVE | O/C | Stg. Tank 3A/3B Cross Connect | | | |
| | | | | | | | | | | EXC | Q | SP-370 | |
| | | | | | | | | | | EXO | Q | SP-370 | |
| DFV-048 | FD-302- 281 SH. 01 G-5 | 2.5 | GA | M | 3 | C | B | ACTIVE | O/C | Stg. Tank 3A/3B Cross Connect | | | |
| | | | | | | | | | | EXC | Q | SP-370 | |
| | | | | | | | | | | EXO | Q | SP-370 | |
| DFV-061 | FD-302- 281 SH. 01 | 0.125 | CK | SA | 3 | C | C | ACTIVE | C | EGDG-1A Fuel Header Outlet Check Valve | | | |
| | | | | | | | | | | CTC | Q | SP-354A | Skid |
| DFV-062 | FD-302- 281 SH. 01 | 0.125 | CK | SA | 3 | C | C | ACTIVE | C | EGDG-1B Fuel Header Outlet Check Valve | | | |
| | | | | | | | | | | CTC | Q | SP-354B | Skid |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: DH Decay Heat Removal***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DHRS-1 | FD-302- 641 SH. 1 E-3 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| DHV-001 | FD-302- 641 SH. 01 C-1 | 10 | CK | SA | 1 | C | AC | ACTIVE | O/C | Decay Heat to RC System Check Vlv | | | |
| | | | | | | | | | | CTC | CS | SP-603 | CSJ-03 |
| | | | | | | | | | | CTO | CS | SP-435 | CSJ-03 |
| | | | | | | | | | | LT | CS | SP-603 | |
| DHV-002 | FD-302- 641 SH. 01 B-1 | 10 | CK | SA | 1 | C | AC | ACTIVE | O/C | Decay Heat to RC System Check Vlv | | | |
| | | | | | | | | | | CTC | CS | SP-603 | CSJ-03 |
| | | | | | | | | | | CTO | CS | SP-435 | CSJ-03 |
| | | | | | | | | | | LT | CS | SP-603 | |
| DHV-003 | FD-302- 641 SH. 02 B-2 | 12 | GA | MO | 1 | LC | B | ACTIVE | O/C | Motor-Operated Iso.-RC System to Decay Heat System | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-04 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-04 |
| DHV-004 | FD-302- 641 SH. 02 B-2 | 12 | GA | MO | 1 | C | B | ACTIVE | O/C | Motor-Operated Iso.-RC System to Decay Heat System | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-04 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-04 |

**SYSTEM: DH Decay Heat Removal**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DHV-005 | FD-302- 641 SH. 01 C-3 | 10 | GA | MO | 2 | C | B | ACTIVE | O/C | Decay Heat Isolation to RC System | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-05 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-05 |
| DHV-006 | FD-302- 641 SH. 01 B-3 | 10 | GA | MO | 2 | C | B | ACTIVE | O/C | Decay Heat Isolation to RC System | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-05 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-05 |
| DHV-007 | FD-302- 641 SH. 01 B-3 | 8 | GA | MO | 2 | C | B | ACTIVE | O/C | DHP-1B Recirc. Iso. | | | |
| | | | | | | | | | | PIT | 2Y | SP-340E | |
| | | | | | | | | | | STC | Q | SP-340E | |
| | | | | | | | | | | STO | Q | SP-340E | |
| DHV-008 | FD-302- 641 SH. 01 C-3 | 8 | GA | MO | 2 | C | B | ACTIVE | O/C | DHP-1A Recirc. Iso. | | | |
| | | | | | | | | | | PIT | 2Y | SP-340B | |
| | | | | | | | | | | STC | Q | SP-340B | |
| | | | | | | | | | | STO | Q | SP-340B | |
| DHV-011 | FD-302- 641 SH. 01 C-5 | 4 | GA | MO | 2 | C | B | ACTIVE | O/C | DHP-1A to MUP Suction | | | |
| | | | | | | | | | | PIT | 2Y | SP-340B | |
| | | | | | | | | | | STC | Q | SP-340B | |
| | | | | | | | | | | STO | Q | SP-340B | |

**SYSTEM: DH Decay Heat Removal**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DHV-012 | FD-302- 641 SH. 01 | B-6 | 4 | GA | MO | 2 | C | B | ACTIVE | O/C | DHP-1B to MUP Suction | | | |
| | | | | | | | | | | | PIT | 2Y | SP-340E | |
| | | | | | | | | | | | STC | Q | SP-340E | |
| | | | | | | | | | | | STO | Q | SP-340E | |
| DHV-017 | FD-302- 641 SH. 01 | F-4 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | DHP-1A Discharge Relief Vlv | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DHV-028 | FD-302- 641 SH. 01 | F-7 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | DHP-1B Discharge Relief Vlv | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DHV-033 | FD-302- 641 SH. 02 | D-8 | 14 | CK | SA | 2 | C | C | ACTIVE | O/C | BWST to DHP-1A/BSP-1A Check Vlv | | | |
| | | | | | | | | | | | CTC | SAM | SP-620 | ROJ-06 |
| | | | | | | | | | | | CTO | Q | SP-340B | |
| DHV-034 | FD-302- 641 SH. 02 | D-9 | 14 | GA | MO | 2 | C | B | ACTIVE | O/C | DHP-1A Suct from BWST | | | |
| | | | | | | | | | | | PIT | 2Y | SP-340B | |
| | | | | | | | | | | | STC | Q | SP-340B | |
| | | | | | | | | | | | STO | Q | SP-340B | |
| DHV-035 | FD-302- 641 SH. 02 | E-9 | 14 | GA | MO | 2 | C | B | ACTIVE | O/C | DHP-1B Suct from BWST | | | |
| | | | | | | | | | | | PIT | 2Y | SP-340E | |
| | | | | | | | | | | | STC | Q | SP-340E | |
| | | | | | | | | | | | STO | Q | SP-340E | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: DH Decay Heat Removal**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DHV-036 | FD-302- 641 SH. 02 E-8 | 14 | CK | SA | 2 | C | C | ACTIVE | O/C | BWST to DHP-1B/BSP-1B Check Vlv | | | |
| | | | | | | | | | | CTC | SAM | SP-620 | ROJ-06 |
| | | | | | | | | | | CTO | Q | SP-340E | |
| DHV-037 | FD-302- 641 SH. 02 C-4 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | DHP-1A/BSP-1A Suction Header Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DHV-038 | FD-302- 641 SH. 02 E-5 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | DHP-1B/BSP-1B Suction Header Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| DHV-039 | FD-302- 641 SH. 02 D-4 | 14 | GA | MO | 2 | C | B | ACTIVE | O/C | RC System Isolation to Decay Heat Suction | | | |
| | | | | | | | | | | PIT | 2Y | SP-340B | |
| | | | | | | | | | | STC | Q | SP-340B | |
| | | | | | | | | | | STO | Q | SP-340B | |
| DHV-040 | FD-302- 641 SH. 02 E-4 | 14 | GA | MO | 2 | C | B | ACTIVE | O/C | RC System Isolation to Decay Heat Suction | | | |
| | | | | | | | | | | PIT | 2Y | SP-340E | |
| | | | | | | | | | | STC | Q | SP-340E | |
| | | | | | | | | | | STO | Q | SP-340E | |
| DHV-041 | FD-302- 641 SH. 02 C-3 | 12 | GA | MO | 2 | C | B | ACTIVE | O/C | Motor-Operated Iso.-RC System to Decay Heat Suction | | | |
| | | | | | | | | | | PIT | 2Y | SP-340B | |
| | | | | | | | | | | STC | Q | SP-340B | |
| | | | | | | | | | | STO | Q | SP-340B | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: DH Decay Heat Removal**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DHV-042 | FD-302- 641 SH. 02 | D-3 | 14 | GA | MO | 2 | C | B | ACTIVE | O/C | DHP-1A Suct from RB Sump | | | |
| | | | | | | | | | | | PIT | 2Y | SP-340B | |
| | | | | | | | | | | | STC | Q | SP-340B | |
| | | | | | | | | | | | STO | Q | SP-340B | |
| DHV-043 | FD-302- 641 SH. 02 | E-3 | 14 | GA | MO | 2 | C | B | ACTIVE | O/C | DHP-1B Suct from RB Sump | | | |
| | | | | | | | | | | | PIT | 2Y | SP-340E | |
| | | | | | | | | | | | STC | Q | SP-340E | |
| | | | | | | | | | | | STO | Q | SP-340E | |
| DHV-044 | FD-302- 641 SH. 02 | C-1 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | Decay Heat Line from RCS Relief Vlv | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DHV-069 | FD-302- 641 SH. 01 | A-8 | 6 x 8 | REL | SA | 2 | C | C | ACTIVE | O/C | BWST Vacuum Breaker | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DHV-070 | FD-302- 641 SH. 01 | A-9 | 6 x 8 | REL | SA | 2 | C | C | ACTIVE | O/C | BWST Vacuum Breaker | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| DHV-075 | FD-302- 641 SH. 02 | C-4 | 2.5 | GA | MO | 2 | C | B | PASSIVE | C | Makeup Filter Return to Decay Heat System | | | |
| | | | | | | | | | | | PIT | 2Y | SP-435 | |
| DHV-076 | FD-302- 641 SH. 02 | E-6 | 2.5 | GA | MO | 2 | C | B | PASSIVE | C | Makeup Filter Return to Decay Heat System | | | |
| | | | | | | | | | | | PIT | 2Y | SP-435 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: DH Decay Heat Removal**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DHV-091 | FD-302- 641 SH. 01 D-3 | 2 | GL | MO | 2 | C | A | ACTIVE | O/C | Decay Heat Isolation to Pressurizer Spray | | | |
| | | | | | | | | | | LJ | B | SP-179D | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |
| DHV-093 | FD-302- 641 SH. 01 D-2 | 2 | CK | SA | 2 | C | AC | ACTIVE | O/C | Decay Heat to Pressurizer Spray Check Vlv | | | |
| | | | | | | | | | | CTC | RF | SP-179D | ROJ-23 |
| | | | | | | | | | | CTO | CS | SP-340B | CSJ-26 |
| | | | | | | | | | | LJ | B | SP-179D | |
| DHV-095 | FD-302- 641 SH. 01 D-2 | 0.75 | GL | M | 2 | C | A | PASSIVE | C | MU to DH Pressurizer Spray Line Iso | | | |
| | | | | | | | | | | LJ | B | SP-179D | |
| DHV-105 | FD-302- 641 SH. 01 D-4 | 2.5 | GL | MO | 2 | LC | B | PASSIVE | C | Decay Heat System to Makeup Filter | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| DHV-106 | FD-302- 641 SH. 01 C-6 | 2.5 | GL | MO | 2 | LC | B | PASSIVE | C | Decay Heat System to Makeup Filter | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |

**SYSTEM: DJ Diesel Jacket Coolant / Air Cooler Coolant**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DJV-027 | FD-302- 283 SH. 01 D-6 | | CK | SA | 3 | C | C | ACTIVE | O | Radiator Outlet Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-457 | Skid |
| | | | | | | | | | | PS | Q | SP-354A | Skid |
| DJV-028 | FD-302- 283 SH. 01 D-6 | | CK | SA | 3 | C | C | ACTIVE | O | Radiator Outlet Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-457 | Skid |
| | | | | | | | | | | PS | Q | SP-354B | Skid |
| DJV-029 | FD-302- 283 SH. 01 D-5 | | CK | SA | 3 | C | C | ACTIVE | O | Radiator Outlet Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-457 | Skid |
| | | | | | | | | | | PS | Q | SP-354A | Skid |
| DJV-030 | FD-302- 283 SH. 01 D-5 | | CK | SA | 3 | C | C | ACTIVE | O | Radiator Outlet Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-457 | Skid |
| | | | | | | | | | | PS | Q | SP-354B | Skid |
| DJV-031 | FD-302- 283 SH. 01 D-5 | | CK | SA | 3 | C | C | ACTIVE | O | Radiator Bypass Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-457 | Skid |
| | | | | | | | | | | PS | Q | SP-354A | Skid |
| DJV-032 | FD-302- 283 SH. 01 D-5 | | CK | SA | 3 | C | C | ACTIVE | O | Radiator Bypass Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-457 | Skid |
| | | | | | | | | | | PS | Q | SP-354B | Skid |
| DJV-038 | FD-302- 284 SH. 01 C-4 | | CK | SA | 3 | C | C | ACTIVE | O | Combustion Air Cooler Supply Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-457 | Skid |
| | | | | | | | | | | PS | Q | SP-354A | Skid |

**SYSTEM: DJ Diesel Jacket Coolant / Air Cooler Coolant**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DJV-039 | FD-302- 284 SH. 01 C-4 | | CK | SA | 3 | C | C | ACTIVE | O | Combustion Air Cooler Supply Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-457 | Skid |
| | | | | | | | | | | PS | Q | SP-354B | Skid |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: DL Diesel Lube Oil**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DLV-013 | FD-302- 285 SH. 01 F-5 | | CK | SA | 3 | C | C | ACTIVE | C | Hand Priming Pump DLP-7 Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-354A | Skid |
| DLV-014 | FD-302- 285 SH. 01 F-5 | | CK | SA | 3 | C | C | ACTIVE | C | Hand Priming Pump DLP-8 Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-354B | Skid |
| DLV-017 | FD-302- 285 SH. 01 D-5 | | CK | SA | 3 | C | C | ACTIVE | C | Pre-Lube Pump DLP-1 Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-354A | Skid |
| DLV-018 | FD-302- 285 SH. 01 D-5 | | CK | SA | 3 | C | C | ACTIVE | C | Pre-Lube Pump DLP-2 Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-354B | Skid |
| DLV-031 | FD-302- 285 SH. 01 D-4 | | CK | SA | 3 | O | C | ACTIVE | O/C | Lube Oil Heater DLHE-3 Outlet Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-354A | Skid |
| | | | | | | | | | | CTO | Q | SP-354A | Skid |
| DLV-032 | FD-302- 285 SH. 01 D-4 | | CK | SA | 3 | O | C | ACTIVE | O/C | Lube Oil Heater DLHE-4 Outlet Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-354B | Skid |
| | | | | | | | | | | CTO | Q | SP-354B | Skid |

**SYSTEM: DO Domestic Water**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DOV-376 | FD-302- 211 SH. 01 C-6 | 1.5 | CK | SA | 3 | O | C | ACTIVE | C | DO Supply to RWP-2A and RWP-3A Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344A | |
| DOV-377 | FD-302- 211 SH. 01 D-6 | 1.5 | CK | SA | 3 | O | C | ACTIVE | C | DO Supply to RWP-1, RWP-2B, RWP-3B Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344B | |

**SYSTEM: DW Condensate and Demineralized Water Supply**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DWV-160 | FD-302- 182 SH. 02 E-6 | 3 | GA | MO | 2 | O | A | ACTIVE | C | DW Supply Iso. to RB | | | |
| | | | | | | | | | | LJ | P | SP-179G | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-06 |
| DWV-162 | FD-302- 182 SH. 02 E-5 | 3 | CK | SA | 2 | O | AC | ACTIVE | C | DW Supply Iso. to RB | | | |
| | | | | | | | | | | CTC | RF | SP-179G | ROJ-07 |
| | | | | | | | | | | LJ | B | SP-179G | |

**SYSTEM: EF Emergency Feedwater**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EFV-005 | FD-302- 082 SH. 01 C-4 | 6 | CK | SA | 3 | C | C | ACTIVE | O | EFP-2 Discharge Check Vlv | | | |
| | | | | | | | | | | CTO | CS | SP-349B | CSJ-07 |
| | | | | | | | | | | PS | Q | SP-349B | |
| EFV-006 | FD-302- 082 SH. 01 G-4 | 6 | CK | SA | 3 | C | C | ACTIVE | O | EFP-1 Discharge Check Vlv | | | |
| | | | | | | | | | | CTO | CS | SP-349A | CSJ-07 |
| | | | | | | | | | | PS | Q | SP-349A | |
| EFV-007 | FD-302- 082 SH. 01 F-4 | 6 | SCK | MO | 3 | LO | C | ACTIVE | O/C | EFP-1 Discharge Stopcheck | | | |
| | | | | | | | | | | CTC | CS | SP-349B | CSJ-08 |
| | | | | | | | | | | CTO | CS | SP-349A | CSJ-08 |
| EFV-008 | FD-302- 082 SH. 01 B-4 | 6 | SCK | MO | 3 | LO | C | ACTIVE | O/C | EFP-2 Discharge Stopcheck | | | |
| | | | | | | | | | | CTC | CS | SP-349A | CSJ-08 |
| | | | | | | | | | | CTO | CS | SP-349B | CSJ-08 |
| EFV-011 | FD-302- 082 SH. 01 A-6 | 6 | GA | MO | 3 | O | B | ACTIVE | O/C | EFP-2 Discharge to OTSG 3A | | | |
| | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | STC | Q | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |
| EFV-012 | FD-302- 082 SH. 01 B-5 | 6 | GA | MO | 3 | SC | B | ACTIVE | O/C | EFP Discharge Header Cross-Connect Stop | | | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |

**SYSTEM: EF Emergency Feedwater**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EFV-014 | FD-302- 082 SH. 01 B-6 | 6 | GA | MO | 3 | O | B | ACTIVE | O/C | EFP-1 Discharge to OTSG 3A | | | |
| | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | STC | Q | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |
| EFV-015 | FD-302- 082 SH. 01 B-7 | 6 | CK | SA | 3 | C | C | ACTIVE | O | EFP-1 Discharge to OTSG 3A Check Vlv | | | |
| | | | | | | | | | | CTO | CS | SP-349A | CSJ-07 |
| EFV-016 | FD-302- 082 SH. 01 A-7 | 6 | CK | SA | 3 | C | C | ACTIVE | O | EFP-1 Discharge to OTSG 3B Check Vlv | | | |
| | | | | | | | | | | CTO | CS | SP-349A | CSJ-07 |
| EFV-017 | FD-302- 082 SH. 01 A-7 | 6 | CK | SA | 3 | C | C | ACTIVE | O | EFP-2 Discharge to OTSG 3A Check Vlv | | | |
| | | | | | | | | | | CTO | CS | SP-349B | CSJ-07 |
| EFV-018 | FD-302- 082 SH. 01 A-7 | 6 | CK | SA | 3 | C | C | ACTIVE | O | EFP-2 Discharge to OTSG 3B Check Vlv | | | |
| | | | | | | | | | | CTO | CS | SP-349B | CSJ-07 |
| EFV-032 | FD-302- 082 SH. 01 A-6 | 6 | GA | MO | 3 | O | B | ACTIVE | O/C | EFP-2 Discharge to OTSG 3B | | | |
| | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | STC | Q | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |
| EFV-033 | FD-302- 082 SH. 01 A-6 | 6 | GA | MO | 3 | O | B | ACTIVE | O/C | EFP-1 Discharge to OTSG 3B | | | |
| | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | STC | Q | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: EF Emergency Feedwater**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EFV-034 | FD-302- 082 SH. 01 B-4 | 1 | CK | SA | 3 | C | C | ACTIVE | O/C | EFP-2 Recirc Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-349A | |
| | | | | | | | | | | CTO | Q | SP-349B | |
| EFV-035 | FD-302- 082 SH. 01 F-4 | 1 | CK | SA | 3 | C | C | ACTIVE | O/C | EFP-1 Recirc Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-349B | |
| | | | | | | | | | | CTO | Q | SP-349A | |
| EFV-055 | FD-302- 082 SH. 01 D-10 | 4 | GL | SO | 2 | O/T | B | ACTIVE | O/C | EFW to OTSG B | | | |
| | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | STC | Q | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |
| EFV-056 | FD-302- 082 SH. 01 D-8 | 4 | GL | SO | 2 | O/T | B | ACTIVE | O/C | EFW to OTSG A | | | |
| | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | STC | Q | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |
| EFV-057 | FD-302- 082 SH. 01 D-9 | 4 | GL | SO | 2 | O/T | B | ACTIVE | O/C | EFW to OTSG B | | | |
| | | | | | | | | | | PIT | 2Y | SP-349A | |
| | | | | | | | | | | STC | Q | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |
| EFV-058 | FD-302- 082 SH. 01 D-7 | 4 | GL | SO | 2 | O/T | B | ACTIVE | O/C | EFW to OTSG A | | | |
| | | | | | | | | | | PIT | 2Y | SP-349A | |
| | | | | | | | | | | STC | Q | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |

**SYSTEM: EF Emergency Feedwater**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EFV-097 | FD-302- 082 SH. 02 B-4 | 6 | REL | SA | 3 | C | C | ACTIVE | O | EFT-2 Vacuum Breaker | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| EFV-098 | FD-302- 082 SH. 02 B-5 | 6 | REL | SA | 3 | C | C | ACTIVE | O | EFT-2 Vacuum Breaker | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| EFV-099 | FD-302- 082 SH. 02 B-4 | 6 x 8 | REL | SA | 3 | C | C | ACTIVE | O/C | EFT-2 Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| EFV-100 | FD-302- 082 SH. 02 B-5 | 6 x 6 | REL | SA | 3 | C | C | ACTIVE | O/C | EFT-2 Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| EFV-116 | FD-302- 082 SH. 01 H-2 | 8 | CK | SA | 3 | C | C | ACTIVE | C | EFP Suction from CST Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-370 | |

**SYSTEM: EG Diesel Compressed Starting Air and Engine Exhaust**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EGV-005 | FD-302- 282 SH. 01 F-2 | 1 x 2 | REL | SA | 3 | C | C | ACTIVE | O/C | Receiver 1A Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| EGV-006 | FD-302- 282 SH. 01 F-3 | 1 x 2 | REL | SA | 3 | C | C | ACTIVE | O/C | Receiver 1B Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| EGV-007 | FD-302- 282 SH. 01 F-6 | 1 x 2 | REL | SA | 3 | C | C | ACTIVE | O/C | Receiver 2A Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| EGV-008 | FD-302- 282 SH. 01 F-8 | 1 x 2 | REL | SA | 3 | C | C | ACTIVE | O/C | Receiver 2B Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| EGV-021 | FD-302- 282 SH. 01 G-1 | 1 | CK | SA | 3 | C | C | ACTIVE | C | Receiver 1A Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-370 | |
| EGV-022 | FD-302- 282 SH. 01 G-3 | 1 | CK | SA | 3 | C | C | ACTIVE | C | Receiver 1B Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-370 | |
| EGV-023 | FD-302- 282 SH. 01 G-6 | 1 | CK | SA | 3 | C | C | ACTIVE | C | Receiver 2A Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-370 | |
| EGV-024 | FD-302- 282 SH. 01 G-8 | 1 | CK | SA | 3 | C | C | ACTIVE | C | Receiver 2B Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-370 | |
| EGV-025 | FD-302- 282 SH. 01 E-4 | 2.5 | GA | M | 3 | SC | B | ACTIVE | C | Air Start Systems Cross Connect | | | |
| | | | | | | | | | | EXC | Q | SP-354A | |
| | | | | | | | | | | EXO | Q | SP-354A | |

**SYSTEM: EG Diesel Compressed Starting Air and Engine Exhaust**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EGV-026 | FD-302- 282 SH. 01 | E-5 | 2.5 | GA | M | 3 | SC | B | ACTIVE | C | Air Start Systems Cross Connect | | | |
| | | | | | | | | | | | EXC | Q | SP-354B | |
| | | | | | | | | | | | EXO | Q | SP-354B | |
| EGV-036 | FD-302- 282 SH. 01 | D-2 | 0.25 | 3-Way | SO | 3 | C | B | ACTIVE | C | EDG 3A Air Start Solenoid Vlv | | | |
| | | | | | | | | | | | FSTC | Q | SP-354A | Skid |
| | | | | | | | | | | | STC | Q | SP-354A | Skid |
| EGV-037 | FD-302- 282 SH. 01 | D-2 | 0.25 | 3-Way | SO | 3 | C | B | ACTIVE | C | EDG 3A Air Start Solenoid Vlv | | | |
| | | | | | | | | | | | FSTC | Q | SP-354A | Skid |
| | | | | | | | | | | | STC | Q | SP-354A | Skid |
| EGV-040 | FD-302- 282 SH. 01 | D-8 | 0.25 | 3-Way | SO | 3 | C | B | ACTIVE | C | EDG 3B Air Start Solenoid Vlv | | | |
| | | | | | | | | | | | FSTC | Q | SP-354B | Skid |
| | | | | | | | | | | | STC | Q | SP-354B | Skid |
| EGV-041 | FD-302- 282 SH. 01 | D-8 | 0.25 | 3-Way | SO | 3 | C | B | ACTIVE | C | EDG 3B Air Start Solenoid Vlv | | | |
| | | | | | | | | | | | FSTC | Q | SP-354B | Skid |
| | | | | | | | | | | | STC | Q | SP-354B | Skid |
| EGV-056 | FD-302- 282 SH. 01 | D-2 | 1.5 | GA | A | 3 | C | B | ACTIVE | O | EDG 3A Air Start Vlv | | | |
| | | | | | | | | | | | FSTO | Q | SP-354A | Skid |
| | | | | | | | | | | | STO | Q | SP-354A | Skid |
| EGV-057 | FD-302- 282 SH. 01 | D-2 | 1.5 | GA | A | 3 | C | B | ACTIVE | O | EDG 3A Air Start Vlv | | | |
| | | | | | | | | | | | FSTO | Q | SP-354A | Skid |
| | | | | | | | | | | | STO | Q | SP-354A | Skid |

**SYSTEM: EG Diesel Compressed Starting Air and Engine Exhaust**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EGV-058 | FD-302- 282 SH. 01 D-8 | 1.5 | GA | A | 3 | C | B | ACTIVE | O | EDG 3B Air Start Vlv | | | |
| | | | | | | | | | | FSTO | Q | SP-354B | Skid |
| | | | | | | | | | | STO | Q | SP-354B | Skid |
| EGV-059 | FD-302- 282 SH. 01 D-8 | 1.5 | GA | A | 3 | C | B | ACTIVE | O | EDG 3B Air Start Vlv | | | |
| | | | | | | | | | | FSTO | Q | SP-354B | Skid |
| | | | | | | | | | | STO | Q | SP-354B | Skid |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: FS Fire Service Water***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FSV-261 | FD-302- 231 SH. 01 D-3 | 4 | GA | M | 2 | LC | A | PASSIVE | C | Fire Service Water Supply Iso. to RB | | | |
| | | | | | | | | | | LJ | B | SP-179R | |
| FSV-262 | FD-302- 231 SH. 01 E-3 | 4 | CK | SA | 2 | C | AC | PASSIVE | C | Fire Service Water Supply Iso. to RB | | | |
| | | | | | | | | | | LJ | B | SP-179R | |

**SYSTEM: FW Main Feedwater**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FWV-014 | FD-302- 081 SH. 02 F-3 | 18 | GA | MO | 3 | O | B | ACTIVE | C | FWP-2A Suction | | | |
| | | | | | | | | | | PIT | CS | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-09 |
| FWV-015 | FD-302- 081 SH. 02 F-1 | 18 | GA | MO | 3 | O | B | ACTIVE | C | FWP-2B Suction | | | |
| | | | | | | | | | | PIT | CS | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-09 |
| FWV-028 | FD-302- 081 SH. 02 A-2 | 18 | GA | MO | 3 | C | B | ACTIVE | C | FWP's Discharge Crosstie | | | |
| | | | | | | | | | | PIT | CS | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-09 |
| FWV-029 | FD-302- 081 SH. 01 C-7 | 18 | GA | MO | 2 | O | B | ACTIVE | C | "B" Main Block | | | |
| | | | | | | | | | | PIT | CS | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-09 |
| FWV-030 | FD-302- 081 SH. 01 C-3 | 18 | GA | MO | 2 | O | B | ACTIVE | C | "A" Main FW Block | | | |
| | | | | | | | | | | PIT | CS | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-09 |
| FWV-031 | FD-302- 081 SH. 01 C-3 | 10 | GA | MO | 2 | O/C | B | ACTIVE | C | "A" Low Load Block | | | |
| | | | | | | | | | | PIT | CS | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-09 |
| FWV-032 | FD-302- 081 SH. 01 C-7 | 10 | GA | MO | 2 | O/C | B | ACTIVE | C | "B" Low Load Block | | | |
| | | | | | | | | | | PIT | CS | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-09 |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: FW Main Feedwater**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FWV-033 | FD-302- 081 SH. 01 D-6 | 6 | GA | MO | 2 | C | B | ACTIVE | C | "B" SU FW Block | | | |
| | | | | | | | | | | PIT | CS | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-09 |
| FWV-034 | FD-302- 081 SH. 01 D-6 | 6 | GA | MO | 2 | LC | B | PASSIVE | C | FW to Upper Nozzles | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| FWV-035 | FD-302- 081 SH. 01 D-2 | 6 | GA | MO | 2 | LC | B | PASSIVE | C | FW to Upper Nozzles | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| FWV-036 | FD-302- 081 SH. 01 D-2 | 6 | GA | MO | 2 | C | B | ACTIVE | C | "A" SU FW Block | | | |
| | | | | | | | | | | PIT | CS | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-09 |
| FWV-043 | FD-302- 081 SH. 01 E-6 | 6 | CK | SA | 2 | C | AC | ACTIVE | O/C | "B" OTSG Emergency Feedwater Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-349B | |
| | | | | | | | | | | CTO | CS | SP-349A | CSJ-10 |
| | | | | | | | | | | LT | 2Y | SP-604 | |
| FWV-044 | FD-302- 081 SH. 01 E-2 | 6 | CK | SA | 2 | C | AC | ACTIVE | O/C | "A" OTSG Emergency Feedwater Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-349B | |
| | | | | | | | | | | CTO | CS | SP-349A | CSJ-10 |
| | | | | | | | | | | LT | 2Y | SP-604 | |
| FWV-045 | FD-302- 081 SH. 01 F-3 | 18 | CK | SA | 2 | O | C | ACTIVE | C | "A" OTSG Feedwater Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | SAM | SP-620 | ROJ-08 |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: FW Main Feedwater***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FWV-046 | FD-302- 081 SH. 01 F-7 | 18 | CK | SA | 2 | O | C | ACTIVE | C | "B" OTSG Feedwater Inlet Check Vlv | | | |
| | | | | | | | | | | CTC | SAM | SP-620 | ROJ-08 |

**SYSTEM: IA instrument Air**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IAV-028 | FD-302- 271 SH. 01 E-2 | 2 | GA | M | 2 | LC | A | PASSIVE | C | Instrument Air Supply Iso. to RB | | | |
| | | | | | | | | | | LJ | B | SP-179N | |
| IAV-029 | FD-302- 271 SH. 01 E-2 | 2 | GA | M | 2 | LC | A | PASSIVE | C | Instrument Air Supply Iso. to RB | | | |
| | | | | | | | | | | LJ | B | SP-179N | |
| IAV-569 | FD-302- 803 SH. 01 B-3 | .375 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWV-35 Accumulator check | | | |
| | | | | | | | | | | CTC | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | CTO | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | LT | 2Y | PT-224 | |
| IAV-570 | FD-302- 803 SH. 01 B-3 | .375 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWV-37 Accumulator check | | | |
| | | | | | | | | | | CTC | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | CTO | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | LT | 2Y | PT-224 | |
| IAV-571 | FD-302- 803 SH. 01 B-3 | .375 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWV-39 Accumulator check | | | |
| | | | | | | | | | | CTC | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | CTO | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | LT | 2Y | PT-224 | |
| IAV-572 | FD-302- 803 SH. 01 B-3 | .375 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWV-41 Accumulator check | | | |
| | | | | | | | | | | CTC | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | CTO | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | LT | 2Y | PT-224 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: IA Instrument Air***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IAV-573 | FD-302- 803 SH. 01 B-3 | .375 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWV-43 Accumulator check | | | |
| | | | | | | | | | | CTC | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | CTO | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | LT | 2Y | PT-224 | |
| IAV-574 | FD-302- 803 SH. 01 B-3 | .375 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWV-45 Accumulator check | | | |
| | | | | | | | | | | CTC | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | CTO | RF | PT-224 | ROJ-09 |
| | | | | | | | | | | LT | 2Y | PT-224 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: LR Reactor Building Leak Rate Testing and Post accident Hydrogen Purge**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LRV-036 | FD-302- 722 SH. 01 F-2 | 8 | GA | M | 2 | C | A | PASSIVE | C | Air Supply Iso to Pen. #121 | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-044 | FD-302- 722 SH. 01 G-4 | 2 | GL | M | 2 | LC | A | PASSIVE | C | Pen. #202 Iso. Valve | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-045 | FD-302- 722 SH. 01 G-5 | 2 | GL | M | 2 | LC | A | PASSIVE | C | Pen. #116 Iso. Valve | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-046 | FD-302- 722 SH. 01 G-5 | 1 | GL | M | 2 | C | A | PASSIVE | C | Pen. #116 to LR Test Panel Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-050 | FD-302- 722 SH. 1 G-2 | 8 | GA | M | 2 | LC | A | PASSIVE | C | Pen. #121 Iso. Valve | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-070 | FD-302- 723 SH. 1 B-2 | 6 | GL | SO | 2 | C | A | ACTIVE | O/C | Post Acc H2 Purge Filter Isol | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179K | |
| | | | | | | | | | | PIT | 2Y | SP-179K | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: LR Reactor Building Leak Rate Testing and Post accident Hydrogen Purge***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LRV-071 | FD-302- 723 SH. 1 B-2 | 6 | GL | SO | 2 | C | A | ACTIVE | O/C | Post Acc H2 Purge Filter Isol | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179K | |
| | | | | | | | | | | PIT | 2Y | SP-179K | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |
| LRV-072 | FD-302- 723 SH. 1 B-2 | 6 | GL | SO | 2 | C | A | ACTIVE | O/C | Post Acc H2 Purge Filter Isol | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179K | |
| | | | | | | | | | | PIT | 2Y | SP-179K | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |
| LRV-073 | FD-302- 723 SH. 1 B-2 | 6 | GL | SO | 2 | C | A | ACTIVE | O/C | Post Acc H2 Purge Filter Isol | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179K | |
| | | | | | | | | | | PIT | 2Y | SP-179K | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |
| LRV-087 | FD-302- 722 SH. 1 G-1 | 3 | GA | M | 2 | LC | A | PASSIVE | C | H2 Recombiner Suction Iso. Vlv. | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-088 | FD-302- 722 SH. 1 G-2 | 3 | GA | M | 2 | C | A | PASSIVE | C | H2 Recombiner Suction Iso. Vlv. | | | |
| | | | | | | | | | | LJ | B | SP-179K | |

**SYSTEM: LR Reactor Building Leak Rate Testing and Post accident Hydrogen Purge**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LRV-089 | FD-302- 722 SH. 1 G-2 | 3 | GA | M | 2 | LC | A | PASSIVE | C | H2 Recombiner Suction Iso. Vlv. | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-090 | FD-302- 722 SH. 1 G-3 | 3 | GA | M | 2 | C | A | PASSIVE | C | H2 Recombiner Suction Iso. Vlv. | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-091 | FD-302- 722 SH. 1 G-4 | 3 | GA | M | 2 | LC | A | PASSIVE | C | H2 Recombiner Discharge Iso. Vlv. | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-092 | FD-302- 722 SH. 1 G-4 | 3 | GA | M | 2 | C | A | PASSIVE | C | H2 Recombiner Discharge Iso. Vlv. | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-093 | FD-302- 722 SH. 1 G-3 | 3 | GA | M | 2 | LC | A | PASSIVE | C | H2 Recombiner Discharge Iso. Vlv. | | | |
| | | | | | | | | | | LJ | B | SP-179K | |
| LRV-094 | FD-302- 722 SH. 1 G-3 | 3 | GA | M | 2 | C | A | PASSIVE | C | H2 Recombiner Discharge Iso. Vlv. | | | |
| | | | | | | | | | | LJ | B | SP-179K | |

**SYSTEM: MS Main Steam**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSRS-1 | FD-302- 011 SH. 2 G-1 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| MSRS-2 | FD-302- 011 SH. 2 G-5 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| MSV-009 | FD-302- 011 SH. 1 D-6 | 6 | GL | A | 4 | C | AUG | ACTIVE | O | OTSG 3A TURBINE BYPASS CONTROL VALVE | | | |
| | | | | | | | | | | EXC | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | EXO | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | FSTC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STO | RF | PT-320 | ROJ-10 |
| MSV-010 | FD-302- 011 SH. 1 C-6 | 6 | GL | A | 4 | C | AUG | ACTIVE | O | OTSG 3A TURBINE BYPASS CONTROL VALVE | | | |
| | | | | | | | | | | EXC | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | EXO | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | FSTC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STO | RF | PT-320 | ROJ-10 |
| MSV-011 | FD-302- 011 SH. 1 G-6 | 6 | GL | A | 4 | C | AUG | ACTIVE | O | OTSG 3B TURBINE BYPASS CONTROL VALVE | | | |
| | | | | | | | | | | EXC | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | EXO | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | FSTC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STO | RF | PT-320 | ROJ-10 |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: MS Main Steam**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSV-014 | FD-302- 011 SH. 1 H-6 | 6 | GL | A | 4 | C | AUG | ACTIVE | O | OTSG 3B TURBINE BYPASS CONTROL VALVE | | | |
| | | | | | | | | | | EXC | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | EXO | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | FSTC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STO | RF | PT-320 | ROJ-10 |
| MSV-025 | FD-302- 011 SH. 01 C-1 | 6 | GA | A | 2 | C | B | ACTIVE | O/C | "A" OTSG Atmospheric Dump Valve | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-11 |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-11 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-11 |
| MSV-026 | FD-302- 011 SH. 01 F-1 | 6 | GA | A | 2 | C | B | ACTIVE | O/C | "B" OTSG Atmospheric Dump Valve | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-11 |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-11 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-11 |
| MSV-027 | FD-302- 011 SH. 01 C-1 | 6 | GA | M | 2 | O/C | B | ACTIVE | O/C | Atmo Dump Isolation | | | |
| | | | | | | | | | | EXC | CS | PT-320 | CSJ-11 |
| | | | | | | | | | | EXO | CS | PT-320 | CSJ-11 |
| MSV-028 | FD-302- 011 SH. 01 F-1 | 6 | GA | M | 2 | O/C | B | ACTIVE | O/C | Atmo Dump Isolation | | | |
| | | | | | | | | | | EXC | CS | PT-320 | CSJ-11 |
| | | | | | | | | | | EXO | CS | PT-320 | CSJ-11 |
| MSV-033 | FD-302- 011 SH. 01 B-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line A-2 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |

**SYSTEM: MS Main Steam**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSV-014 | FD-302- 011 SH. 1 H-6 | 6 | GL | A | 4 | C | AUG | ACTIVE | O | OTSG 3B TURBINE BYPASS CONTROL VALVE | | | |
| | | | | | | | | | | EXC | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | EXO | CS | SP-435 | ROJ-10 |
| | | | | | | | | | | FSTC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STC | RF | PT-320 | ROJ-10 |
| | | | | | | | | | | STO | RF | PT-320 | ROJ-10 |
| MSV-025 | FD-302- 011 SH. 01 C-1 | 6 | GA | A | 2 | C | B | ACTIVE | O/C | "A" OTSG Atmospheric Dump Valve | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-11 |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-11 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-11 |
| MSV-026 | FD-302- 011 SH. 01 F-1 | 6 | GA | A | 2 | C | B | ACTIVE | O/C | "B" OTSG Atmospheric Dump Valve | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-11 |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-11 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-11 |
| MSV-027 | FD-302- 011 SH. 01 C-1 | 6 | GA | M | 2 | O/C | B | ACTIVE | O/C | Atmo Dump Isolation | | | |
| | | | | | | | | | | EXC | CS | PT-320 | CSJ-11 |
| | | | | | | | | | | EXO | CS | PT-320 | CSJ-11 |
| MSV-028 | FD-302- 011 SH. 01 F-1 | 6 | GA | M | 2 | O/C | B | ACTIVE | O/C | Atmo Dump Isolation | | | |
| | | | | | | | | | | EXC | CS | PT-320 | CSJ-11 |
| | | | | | | | | | | EXO | CS | PT-320 | CSJ-11 |
| MSV-033 | FD-302- 011 SH. 01 B-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line A-2 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |

**SYSTEM: MS Main Steam**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSV-034 | FD-302- 011 SH. 01 C-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line A-1 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-035 | FD-302- 011 SH. 01 E-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line B-1 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-036 | FD-302- 011 SH. 01 F-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line B-2 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-037 | FD-302- 011 SH. 01 B-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line A-2 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-038 | FD-302- 011 SH. 01 C-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line A-1 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-039 | FD-302- 011 SH. 01 E-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line B-1 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-040 | FD-302- 011 SH. 01 C-2 | 6 x 8 | REL | SA | 2 | C | C | ACTIVE | O/C | Line A-1 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-041 | FD-302- 011 SH. 01 F-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line B-2 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-042 | FD-302- 011 SH. 01 B-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line A-2 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-043 | FD-302- 011 SH. 01 C-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line A-1 Main Steam Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-650 | |

**SYSTEM: MS Main Steam**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSV-044 | FD-302- 011 SH. 01 | E-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line B-1 Main Steam Safety Valve | | | |
| | | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-045 | FD-302- 011 SH. 01 | F-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line B-2 Main Steam Safety Valve | | | |
| | | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-046 | FD-302- 011 SH. 01 | B-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line A-2 Main Steam Safety Valve | | | |
| | | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-047 | FD-302- 011 SH. 01 | E-2 | 6 x 10 | REL | SA | 2 | C | C | ACTIVE | O/C | Line B-1 Main Steam Safety Valve | | | |
| | | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-048 | FD-302- 011 SH. 01 | F-2 | 6 x 8 | REL | SA | 2 | C | C | ACTIVE | O/C | Line B-2 Main Steam Safety Valve | | | |
| | | | | | | | | | | | RV | 10Y | SP-650 | |
| MSV-055 | FD-302- 011 SH. 01 | D-3 | 3 | SCK | MO | 2 | O/C | C | ACTIVE | O/C | "A" OTSG to EFP-2 | | | |
| | | | | | | | | | | | CTC | SAM | SP-620 | ROJ-11 |
| | | | | | | | | | | | CTO | CS | SP-349B | CSJ-13 |
| | | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | | PS | Q | SP-349B | |
| | | | | | | | | | | | STO | Q | SP-349B | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: MS Main Steam***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSV-056 | FD-302- 011 SH. 01 F-3 | 3 | SCK | MO | 2 | O/C | C | ACTIVE | O/C | "B" OTSG to EFP-2 | | | |
| | | | | | | | | | | CTC | SAM | SP-620 | ROJ-11 |
| | | | | | | | | | | CTO | CS | SP-349B | CSJ-13 |
| | | | | | | | | | | PIT | 2Y | SP-349B | |
| | | | | | | | | | | PS | Q | SP-349B | |
| | | | | | | | | | | STO | Q | SP-349B | |
| MSV-114 | FD-302- 011 SH. 02 A-3 | 1.5 | GL | M | 2 | LC | A | PASSIVE | C | "A" OTSG Vent | | | |
| | | | | | | | | | | LJ | B | SP-179S | |
| MSV-128 | FD-302- 011 SH. 02 H-2 | 4 | GL | M | 2 | LC | A | PASSIVE | C | "A" OTSG Drain to MWST | | | |
| | | | | | | | | | | LJ | B | SP-179S | |
| MSV-130 | FD-302- 011 SH. 02 H-3 | 3 | GL | A | 2 | C | A | ACTIVE | C | "A" OTSG Drain Header Isol | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-14 |
| | | | | | | | | | | LJ | B | SP-179S | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-14 |
| MSV-132 | FD-302- 011 SH. 02 A-7 | 1.5 | GL | M | 2 | LC | A | PASSIVE | C | "B" OTSG Vent | | | |
| | | | | | | | | | | LJ | B | SP-179S | |
| MSV-146 | FD-302- 011 SH. 02 H-6 | 4 | GL | M | 2 | LC | A | PASSIVE | C | "B" OTSG Drain to MWST | | | |
| | | | | | | | | | | LJ | B | SP-179S | |

**SYSTEM: MS Main Steam**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSV-148 | FD-302- 011 SH. 02 H-7 | 3 | GL | A | 2 | C | A | ACTIVE | C | "B" OTSG Drain Header Isol | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-14 |
| | | | | | | | | | | LJ | B | SP-179S | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-14 |
| MSV-186 | FD-302- 051 SH. 01 E-7 | 6 | CK | SA | 3 | C | C | ACTIVE | O/C | "B" OTSG to EFP-2 Check Valve | | | |
| | | | | | | | | | | CTC | SAM | SP-620 | ROJ-12 |
| | | | | | | | | | | CTO | CS | SP-349B | CSJ-13 |
| | | | | | | | | | | PS | Q | SP-349B | |
| MSV-187 | FD-302- 051 SH. 01 E-7 | 6 | CK | SA | 3 | C | C | ACTIVE | O/C | "A" OTSG to EFP-2 Check Valve | | | |
| | | | | | | | | | | CTC | SAM | SP-620 | ROJ-12 |
| | | | | | | | | | | CTO | CS | SP-349B | CSJ-13 |
| | | | | | | | | | | PS | Q | SP-349B | |
| MSV-411 | FD-302- 011 SH. 01 B-5 | 24 | GL | A | 2 | O | B | ACTIVE | O/C | MS Line A-2 Iso. Vlv. | | | |
| | | | | | | | | | | FSTC | CS | SP-255 | CSJ-12 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-12 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-12 |
| MSV-412 | FD-302- 011 SH. 01 C-4 | 24 | GL | A | 2 | O | B | ACTIVE | C | MS Line A-1 Iso. Vlv. | | | |
| | | | | | | | | | | FSTC | CS | SP-255 | CSJ-12 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-12 |

**SYSTEM: MS Main Steam**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MSV-413 | FD-302- 011 SH. 01 E-4 | 24 | GL | A | 2 | O | B | ACTIVE | O/C | MS Line B-1 Iso. Vlv. | | | |
| | | | | | | | | | | FSTC | CS | SP-255 | CSJ-12 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-12 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-12 |
| MSV-414 | FD-302- 011 SH. 01 F-4 | 24 | GL | A | 2 | O | B | ACTIVE | C | MS Line B-2 Iso. Vlv. | | | |
| | | | | | | | | | | FSTC | CS | SP-255 | CSJ-12 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-12 |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: MU Make-up and Purification***

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MURS-1 | FD-302- 661 SH. 1 | C-4 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | | RD | 5Y | SP-602 | |
| MURS-2 | FD-302- 661 SH. 2 | D-4 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | | RD | 5Y | SP-602 | |
| MUV-001 | FD-302- 661 SH. 04 | E-1 | 3 | CK | SA | 2 | O/C | C | ACTIVE | O | MUP 3C Disch. Check Vlv | | | |
| | | | | | | | | | | | CTO | RF | SP-630 | ROJ-13 |
| | | | | | | | | | | | PS | Q | SP-340F | |
| MUV-002 | FD-302- 661 SH. 04 | E-1 | 3 | SCK | M | 2 | T | C | ACTIVE | O/C | MUP 3C Disch. Stop Check | | | |
| | | | | | | | | | | | CTC | Q | SP-340F | |
| | | | | | | | | | | | CTO | RF | SP-630 | ROJ-13 |
| | | | | | | | | | | | PS | Q | SP-340F | |
| MUV-003 | FD-302- 661 SH. 04 | D-2 | 4 | GA | MO | 2 | LO | B | PASSIVE | O | MUP-3C to 3B Disch. X-Conn. | | | |
| | | | | | | | | | | | PIT | 2Y | SP-340F | |
| | | | | | | | | | | | STC | Q | SP-340F | Augmented |
| | | | | | | | | | | | STO | Q | SP-340F | Augmented |
| MUV-004 | FD-302- 661 SH. 04 | D-3 | 4 | GA | M | 2 | O | B | PASSIVE | O | MUP 3B to 3C Disch. X-Conn. | | | |
| | | | | | | | | | | | EXC | Q | SP-340F | Augmented |
| | | | | | | | | | | | EXO | Q | SP-340F | Augmented |

**SYSTEM: MU Make-up and Purification**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MUV-006 | FD-302- 661 SH. 04 E-4 | 3 | SCK | M | 2 | T | C | ACTIVE | O/C | MUP 3B Disch. Stop Check | | | |
| | | | | | | | | | | CTC | Q | SP-340C | |
| | | | | | | | | | | CTO | RF | SP-630 | ROJ-13 |
| | | | | | | | | | | PS | Q | SP-340C | |
| MUV-007 | FD-302- 661 SH. 04 E-4 | 3 | CK | SA | 2 | O/C | C | ACTIVE | O | MUP 3B Disch. Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-630 | ROJ-13 |
| | | | | | | | | | | PS | Q | SP-340C | |
| MUV-008 | FD-302- 661 SH. 04 D-6 | 4 | GA | M | 2 | O | B | PASSIVE | O | MUP 3B to 3A Disch. X-Conn. | | | |
| | | | | | | | | | | EXC | Q | SP-340C | Augmented |
| | | | | | | | | | | EXO | Q | SP-340C | Augmented |
| MUV-009 | FD-302- 661 SH. 04 D-6 | 4 | GA | MO | 2 | LO | B | PASSIVE | O | MUP-3A to 3B Disch. X-Conn. | | | |
| | | | | | | | | | | PIT | 2Y | SP-340C | |
| | | | | | | | | | | STC | Q | SP-340C | Augmented |
| | | | | | | | | | | STO | Q | SP-340C | Augmented |
| MUV-010 | FD-302- 661 SH. 04 E-7 | 3 | SCK | M | 2 | T | C | ACTIVE | O/C | MUP 3A Disch. Stop Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-340C | |
| | | | | | | | | | | CTO | RF | SP-630 | ROJ-13 |
| | | | | | | | | | | PS | Q | SP-340C | |
| MUV-011 | FD-302- 661 SH. 04 E-7 | 3 | CK | SA | 2 | O/C | C | ACTIVE | O | MUP 3A Disch. Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-630 | ROJ-13 |
| | | | | | | | | | | PS | Q | SP-340C | |

**SYSTEM: MU Make-up and Purification**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MUV-018 | FD-302- 661 SH. 03 F-4 | 4 | GA | MO | 2 | O | B | ACTIVE | C | RCP's Seal Injection Iso. | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-16 |
| MUV-023 | FD-302- 661 SH. 03 A-4 | 3 | GL | MO | 2 | C | B | ACTIVE | O/C | HPI to Loop A2 | | | |
| | | | | | | | | | | PIT | 2Y | SP-340C | |
| | | | | | | | | | | STC | Q | SP-340C | |
| | | | | | | | | | | STO | Q | SP-340C | |
| MUV-024 | FD-302- 661 SH. 03 C-4 | 3 | GL | MO | 2 | C | B | ACTIVE | O/C | HPI to Loop A1 | | | |
| | | | | | | | | | | PIT | 2Y | SP-340C | |
| | | | | | | | | | | STC | Q | SP-340C | |
| | | | | | | | | | | STO | Q | SP-340C | |
| MUV-025 | FD-302- 661 SH. 04 A-2 | 3 | GL | MO | 2 | C | B | ACTIVE | O/C | HPI to Loop B1 | | | |
| | | | | | | | | | | PIT | 2Y | SP-340F | |
| | | | | | | | | | | STC | Q | SP-340F | |
| | | | | | | | | | | STO | Q | SP-340F | |
| MUV-026 | FD-302- 661 SH. 04 C-2 | 3 | GL | MO | 2 | C | B | ACTIVE | O/C | HPI to Loop B2 | | | |
| | | | | | | | | | | PIT | 2Y | SP-340F | |
| | | | | | | | | | | STC | Q | SP-340F | |
| | | | | | | | | | | STO | Q | SP-340F | |
| MUV-027 | FD-302- 661 SH. 03 C-4 | 2.5 | GA | MO | 2 | O | B | ACTIVE | C | Makeup FCV Outlet Iso. | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-16 |

**SYSTEM: MU Make-up and Purification**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MUV-036 | FD-302- 661 SH. 04 A-4 | 2.5 | CK | SA | 1 | C | C | ACTIVE | O | HPI to Loop B1 Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-630 | ROJ-14 |
| MUV-037 | FD-302- 661 SH. 04 C-4 | 2.5 | CK | SA | 1 | C | C | ACTIVE | O | HPI to Loop B2 Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-630 | ROJ-14 |
| MUV-042 | FD-302- 661 SH. 03 A-2 | 2.5 | CK | SA | 1 | C | C | ACTIVE | O | HPI to Loop A2 Check Vlv | | | |
| | | | | | | | | | | CTO | RF | SP-630 | ROJ-14 |
| MUV-043 | FD-302- 661 SH. 03 C-2 | 2.5 | CK | SA | 1 | O | C | ACTIVE | O/C | HPI to Loop A1 Check Vlv | | | |
| | | | | | | | | | | CTC | RF | SP-929 | ROJ-16 |
| | | | | | | | | | | CTO | RF | SP-630 | ROJ-14 |
| | | | | | | | | | | PS | Q | SP-340C | |
| MUV-049 | FD-302- 661 SH. 01 B-5 | 2.5 | GA | A | 2 | O | A | ACTIVE | C | L/D Coolers Outlet Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179H | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-15 |
| MUV-053 | FD-302- 661 SH. 02 G-1 | 4 | GL | MO | 2 | O | B | ACTIVE | C | MUP's Downstr. Recirc. Iso. | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-18 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-18/Aug |

**SYSTEM: MU Make-up and Purification**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MUV-058 | FD-302- 661 SH. 04 H-2 | 6 | GA | MO | 2 | O/C | B | ACTIVE | O/C | MUP 1C Suction from BWST | | | |
| | | | | | | | | | | PIT | 2Y | SP-340F | |
| | | | | | | | | | | STC | Q | SP-340F | |
| | | | | | | | | | | STO | Q | SP-340F | |
| MUV-060 | FD-302- 661 SH. 04 H-2 | 6 | CK | SA | 2 | C | C | ACTIVE | O/C | MUP-1C Suction from BWST Check Vlv | | | |
| | | | | | | | | | | CTC | SAM | SP-620 | ROJ-15 |
| | | | | | | | | | | CTO | RF | SP-630 | ROJ-15 |
| MUV-061 | FD-302- 661 SH. 04 G-1 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | MUP-1C Suction Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| MUV-062 | FD-302- 661 SH. 04 G-2 | 6 | GA | MO | 2 | O/C | B | PASSIVE | O/C | MUP-3C Suct. From MUT Downstream Iso. | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| MUV-065 | FD-302- 661 SH. 04 H-7 | 4 | CK | SA | 2 | O | C | ACTIVE | C | MUT Outlet Check Vlv | | | |
| | | | | | | | | | | CTC | C3 | SP-435 | CSJ-28 |
| MUV-067 | FD-302- 661 SH. 04 G-4 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | MUP-1B Suction Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| MUV-069 | FD-302- 661 SH. 04 G-6 | 6 | GA | MO | 2 | O/C | B | PASSIVE | O/C | MUP-3A Suct. From MUT Downstream Iso. | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| MUV-071 | FD-302- 661 SH. 04 G-7 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | MUP-1A Suction Relief Vlv | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: MU Make-up and Purification**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MUV-072 | FD-302- 661 SH. 04 | F-8 | 6 | CK | SA | 2 | C | C | ACTIVE | O/C | MUP-1A Suction from BWST Check Vlv | | | |
| | | | | | | | | | | | CTC | SAM | SP-620 | ROJ-15 |
| | | | | | | | | | | | CTO | RF | SP-630 | ROJ-15 |
| MUV-073 | FD-302- 661 SH. 04 | F-8 | 6 | GA | MO | 2 | O/C | B | ACTIVE | O/C | MUP-1A Suction from BWST | | | |
| | | | | | | | | | | | PIT | 2Y | SP-340C | |
| | | | | | | | | | | | STC | Q | SP-340C | |
| | | | | | | | | | | | STO | Q | SP-340C | |
| MUV-137 | FD-302- 661 SH. 04 | H-8 | 3 x 4 | REL | SA | 3 | C | C | ACTIVE | O/C | MUT Outlet Relief Vlv | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| MUV-139 | FD-302- 661 SH. 02 | F-6 | 1 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | MUT Relief Vlv | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| MUV-153 | FD-302- 661 SH. 04 | E-7 | 2 | SCK | SA | 2 | SO | C | ACTIVE | C | MUP 3A Recirc. Line Stop Check Vlv | | | |
| | | | | | | | | | | | CTC | RF | SP-630 | ROJ-18 |
| MUV-160 | FD-302- 661 SH. 03 | A-3 | 2.5 | CK | SA | 1 | C | C | ACTIVE | O/C | HPI to Loop A2 Containment Iso. Check Vlv | | | |
| | | | | | | | | | | | CTC | RF | SP-929 | ROJ-17 |
| | | | | | | | | | | | CTO | RF | SP-630 | ROJ-14 |
| MUV-161 | FD-302- 661 SH. 03 | C-3 | 2.5 | CK | SA | 1 | O | C | ACTIVE | O/C | HPI to Loop A1 Containment Iso. Check Vlv | | | |
| | | | | | | | | | | | CTC | RF | SP-929 | ROJ-17 |
| | | | | | | | | | | | CTO | RF | SP-630 | ROJ-14 |
| | | | | | | | | | | | PS | Q | SP-340C | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: MU Make-up and Purification**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MUV-162 | FD-302-661 | SH. 03 F-3 | 4 | CK | SA | 2 | O | C | ACTIVE | C | RCP's Seal Injection Containment Iso. Check Vlv | | | |
| | | | | | | | | | | | CTC | RF | SP-929 | ROJ-19 |
| MUV-163 | FD-302-661 | SH. 04 A-3 | 2.5 | CK | SA | 1 | C | C | ACTIVE | O/C | HPI to Loop B1 Containment Iso. Check Vlv | | | |
| | | | | | | | | | | | CTC | RF | SP-929 | ROJ-17 |
| | | | | | | | | | | | CTO | RF | SP-630 | ROJ-14 |
| MUV-164 | FD-302-661 | SH. 04 C-3 | 2.5 | CK | SA | 1 | C | C | ACTIVE | O/C | HPI to Loop B2 Containment Iso. Check Vlv | | | |
| | | | | | | | | | | | CTC | RF | SP-929 | ROJ-17 |
| | | | | | | | | | | | CTO | RF | SP-630 | ROJ-14 |
| MUV-253 | FD-302-661 | SH. 02 C-4 | 1 | GL | A | 2 | O | A | ACTIVE | C | RCP's Cont. Bleedoff Iso. | | | |
| | | | | | | | | | | | FSTC | CS | SP-435 | CSJ-19 |
| | | | | | | | | | | | LJ | B | SP-179H | |
| | | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | | STC | CS | SP-435 | CSJ-19 |
| MUV-257 | FD-302-661 | SH. 02 H-1 | 4 | GL | MO | 2 | O | B | ACTIVE | C | MUP's Upstr. Recirc. Iso. | | | |
| | | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | | STC | CS | SP-435 | CSJ-18 |
| | | | | | | | | | | | STO | CS | SP-435 | CSJ-18/Aug |
| MUV-258 | FD-302-661 | SH. 02 D-2 | 1 | GL | MO | 2 | O | A | ACTIVE | C | RCP-3A1 Cont. Bleedoff | | | |
| | | | | | | | | | | | LJ | B | SP-179H | |
| | | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | | STC | CS | SP-435 | CSJ-19 |

**SYSTEM: MU Make-up and Purification**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MUV-259 | FD-302- 661 SH. 02 C-2 | 1 | GL | MO | 2 | O | A | ACTIVE | C | RCP-3A2 Cont. Bleedoff | | | |
| | | | | | | | | | | LJ | B | SP-179H | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-19 |
| MUV-260 | FD-302- 661 SH. 02 C-2 | 1 | GL | MO | 2 | O | A | ACTIVE | C | RCP-3B1 Cont. Bleedoff | | | |
| | | | | | | | | | | LJ | B | SP-179H | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-19 |
| MUV-261 | FD-302- 661 SH. 02 B-2 | 1 | GL | MO | 2 | O | A | ACTIVE | C | RCP-3B2 Cont. Bleedoff | | | |
| | | | | | | | | | | LJ | B | SP-179H | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-19 |
| MUV-265 | FD-302- 661 SH. 04 E-2 | 2 | SCK | SA | 2 | SO | C | ACTIVE | C | MUP 3C Recirc. Line Stop Check Vlv | | | |
| | | | | | | | | | | CTC | RF | SP-630 | ROJ-18 |
| MUV-267 | FD-302- 661 SH. 04 E-5 | 2 | SCK | SA | 2 | SO | C | ACTIVE | C | MUP 3B Recirc. Line Stop Check Vlv | | | |
| | | | | | | | | | | CTC | RF | SP-630 | ROJ-18 |
| MUV-541 | FD-302- 661 SH. 02 B-7 | 2.5 | GA | A | 3 | C | A | ACTIVE | C | MU & P System Feed | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-17 |
| | | | | | | | | | | LT | 2Y | SP-179H | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-17 |

**SYSTEM: MU Make-up and Purification**

| Valve | Flow Diagram-Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MUV-543 | FD-302- 661 SH. 04 B-9 | 3 | GL | SO | 2 | LC | A | ACTIVE | O/C | HPI to RB Sump Solenoid Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179H | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |
| MUV-544 | FD-302- 661 SH. 04 C-9 | 3 | GL | SO | 2 | LC | B | ACTIVE | O/C | HPI to RB Sump Solenoid Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |
| MUV-545 | FD-302- 661 SH. 04 B-8 | 3 | GL | SO | 2 | LC | A | ACTIVE | O/C | HPI to RB Sump Solenoid Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179H | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |
| MUV-546 | FD-302- 661 SH. 04 B-9 | 3 | GL | SO | 2 | LC | B | ACTIVE | O/C | HPI to RB Sump Solenoid Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |

**SYSTEM: MU Make-up and Purification**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MUV-559 | FD-302- 661 SH. 04 B-7 | 3 | CK | SA | 2 | C | A | ACTIVE | O/C | HPI to RB Sump Check Valve | | | |
| | | | | | | | | | | CTO | RF | SP-435 | ROJ-25 |
| | | | | | | | | | | LJ | B | SP-179H | |
| MUV-567 | FD-302- 661 SH. 01 B-5 | 2.5 | GA | MO | 1 | O | A | ACTIVE | C | Letdown Line Inboard Containment Isolation | | | |
| | | | | | | | | | | LJ | B | SP-179H | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-20 |
| MUV-578 | FD-302- N/A SH. N/A N/A | 1 x 2 | REL | SA | 3 | C | C | ACTIVE | O/C | Relief Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| MUV-579 | FD-302- N/A SH. N/A N/A | Tubing | CK | SA | 3 | O/C | C | ACTIVE | O/C | MUV-49 Accumulator check | | | |
| | | | | | | | | | | CTC | CS | SP-435 | CSJ-29 |
| | | | | | | | | | | CTO | CS | SP-435 | CSJ-29 |
| | | | | | | | | | | LT | 2Y | SP-435 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: NG Nitrogen***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NGV-062 | FD-302- 673 SH. 02 E-2 | 1.5 | GA | M | 2 | LC | A | PASSIVE | C | N2 to OTSG "A" | | | |
| | | | | | | | | | | LJ | B | SP-179M | |
| NGV-081 | FD-302- 673 SH. 02 E-3 | 1.5 | GA | M | 2 | LC | A | PASSIVE | C | N2 to OTSG "B" | | | |
| | | | | | | | | | | LJ | B | SP-179M | |
| NGV-082 | FD-302- 673 SH. 02 E-4 | 1 | GA | M | 2 | LC | A | PASSIVE | C | N2 to Pressurizer | | | |
| | | | | | | | | | | LJ | B | SP-179M | |
| NGV-249 | FD-302- 082 SH. 02 B-7 | 1.5 | CK | SA | 3 | C | C | ACTIVE | C | EFT-2 Nitrogen Supply Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-349A | |

**SYSTEM: RC Reactor Coolant**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCV-008 | FD-302- 651 SH. 01 A-3 | 2.5 x 6 | REL | SA | 1 | C | C | ACTIVE | O/C | Pzr. Code Safety Vlv. | | | |
| | | | | | | | | | | RV | 5Y | SP-650 | |
| RCV-009 | FD-302- 651 SH. 01 A-4 | 2.5 x 6 | REL | SA | 1 | C | C | ACTIVE | O/C | Pzr. Code Safety Vlv. | | | |
| | | | | | | | | | | RV | 5Y | SP-650 | |
| RCV-010 | FD-302- 651 SH. 01 A-6 | 2.5 x 4 | PORV | PV | 1 | C | B | ACTIVE | O/C | Electromatic Relief (Pzr. PORV) | | | |
| | | | | | | | | | | EXC | CS | SP-379 | ROJ-21 |
| | | | | | | | | | | EXO | CS | SP-379 | ROJ-21 |
| | | | | | | | | | | FSTC | CS | SP-379 | ROJ-21 |
| | | | | | | | | | | PIT | 2Y | SP-379 | |
| | | | | | | | | | | RV | RF | Contract | |
| | | | | | | | | | | STC | RF | Contract | ROJ-21 |
| | | | | | | | | | | STO | RF | Contract | ROJ-21 |
| RCV-011 | FD-302- 651 SH. 01 B-6 | 2.5 | GA | MO | 1 | O | B | ACTIVE | O/C | Pzr. Relief Stop Vlv. | | | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| | | | | | | | | | | STO | Q | SP-370 | |
| RCV-012 | FD-302- 651 SH. 01 B-4 | 2 | CK | SA | 1 | C | C | ACTIVE | O | Pzr. Aux. Spray Check Vlv. | | | |
| | | | | | | | | | | CTO | CS | SP-340B | CSJ-26 |
| RCV-053 | FD-302- 651 SH. 01 C-4 | 2 | GL | MO | 1 | C | B | ACTIVE | O/C | Pzr. Aux. Spray Control | | | |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-27 |
| | | | | | | | | | | STO | CS | SP-435 | CSJ-27 |

**SYSTEM: RC Reactor Coolant**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCV-157 | FD-302- 651 SH. 01 E-1 | 0.5 | GA | SO | 2 | LC | B | ACTIVE | O/C | Hi Point Vent OTSG A | | | |
| | | | | | | | | | | FSTC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | PIT | 2Y | SP-410 | |
| | | | | | | | | | | STC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | STO | CS | SP-410 | CSJ-21 |
| RCV-158 | FD-302- 651 SH. 01 F-1 | 0.5 | GA | SO | 2 | LC | B | ACTIVE | C/C | Hi Point Vent OTSG A | | | |
| | | | | | | | | | | FSTC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | PIT | 2Y | SP-410 | |
| | | | | | | | | | | STC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | STO | CS | SP-410 | CSJ-21 |
| RCV-159 | FD-302- 651 SH. 01 A-5 | 0.5 | GA | SO | 2 | LC | B | ACTIVE | O/C | Hi Point Vent Pzr. | | | |
| | | | | | | | | | | FSTC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | PIT | 2Y | SP-410 | |
| | | | | | | | | | | STC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | STO | CS | SP-410 | CSJ-21 |
| RCV-160 | FD-302- 651 SH. 01 A-4 | 0.5 | GA | SO | 2 | LC | B | ACTIVE | O/C | Hi Point Vent Pzr. | | | |
| | | | | | | | | | | FSTC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | PIT | 2Y | SP-410 | |
| | | | | | | | | | | STC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | STO | CS | SP-410 | CSJ-21 |

**SYSTEM: RC Reactor Coolant**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCV-163 | FD-302- 651 SH. 01 C-10 | 0.5 | GA | SO | 2 | LC | B | ACTIVE | O/C | Hi Point Vent OTSG B | | | |
| | | | | | | | | | | FSTC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | PIT | 2Y | SP-410 | |
| | | | | | | | | | | STC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | STO | CS | SP-410 | CSJ-21 |
| RCV-164 | FD-302- 651 SH. 01 C-10 | 0.5 | GA | SO | 2 | LC | B | ACTIVE | O/C | Hi Point Vent OTSG B | | | |
| | | | | | | | | | | FSTC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | PIT | 2Y | SP-410 | |
| | | | | | | | | | | STC | CS | SP-410 | CSJ-21 |
| | | | | | | | | | | STO | CS | SP-410 | CSJ-21 |
| RCV-168 | FD-302- N/A SH. N/A N/A | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | RPV Internals Vent Valve | | | |
| | | | | | | | | | | CTC | RF | SP-202 | ROJ-20 |
| | | | | | | | | | | CTO | RF | SP-202 | ROJ-20 |
| RCV-169 | FD-302- N/A SH. N/A N/A | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | RPV Internals Vent Valve | | | |
| | | | | | | | | | | CTC | RF | SP-202 | ROJ-20 |
| | | | | | | | | | | CTO | RF | SP-202 | ROJ-20 |
| RCV-170 | FD-302- N/A SH. N/A N/A | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | RPV Internals Vent Valve | | | |
| | | | | | | | | | | CTC | RF | SP-202 | ROJ-20 |
| | | | | | | | | | | CTO | RF | SP-202 | ROJ-20 |
| RCV-171 | FD-302- N/A SH. N/A N/A | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | RPV Internals Vent Valve | | | |
| | | | | | | | | | | CTC | RF | SP-202 | ROJ-20 |
| | | | | | | | | | | CTO | RF | SP-202 | ROJ-20 |

**SYSTEM: RC Reactor Coolant**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RCV-172 | FD-302- N/A SH. N/A N/A | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | RPV Internals Vent Valve | | | |
| | | | | | | | | | | CTC | RF | SP-202 | ROJ-20 |
| | | | | | | | | | | CTO | RF | SP-202 | ROJ-20 |
| RCV-173 | FD-302- N/A SH. N/A N/A | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | RPV Internals Vent Valve | | | |
| | | | | | | | | | | CTC | RF | SP-202 | ROJ-20 |
| | | | | | | | | | | CTO | RF | SP-202 | ROJ-20 |
| RCV-174 | FD-302- N/A SH. N/A N/A | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | RPV Internals Vent Valve | | | |
| | | | | | | | | | | CTC | RF | SP-202 | ROJ-20 |
| | | | | | | | | | | CTO | RF | SP-202 | ROJ-20 |
| RCV-175 | FD-302- N/A SH. N/A N/A | 14 | CK | SA | 1 | C | C | ACTIVE | O/C | RPV Internals Vent Valve | | | |
| | | | | | | | | | | CTC | RF | SP-202 | ROJ-20 |
| | | | | | | | | | | CTO | RF | SP-202 | ROJ-20 |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: RW Nuclear Services and Decay Heat Sea Water***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RWV-034 | FD-302- 611 SH. 01 E-6 | 20 | CK | SA | 3 | C | C | ACTIVE | O/C | RWP-3B Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-340D | |
| | | | | | | | | | | CTO | Q | SP-340D | |
| RWV-035 | FD-302- 611 SH. 01 E-5 | 24 | CK | SA | 3 | C | C | ACTIVE | O/C | RWP-2B Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344A | |
| | | | | | | | | | | CTO | Q | SP-344B | |
| RWV-036 | FD-302- 611 SH. 01 E-5 | 24 | CK | SA | 3 | O | C | ACTIVE | C | RWP-1 Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344A | |
| RWV-037 | FD-302- 611 SH. 01 E-3 | 20 | CK | SA | 3 | C | C | ACTIVE | O/C | RWP-3A Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-340A | |
| | | | | | | | | | | CTO | Q | SP-340A | |
| RWV-038 | FD-302- 611 SH. 01 E-4 | 24 | CK | SA | 3 | C | C | ACTIVE | O/C | RWP-2A Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344B | |
| | | | | | | | | | | CTO | Q | SP-344A | |
| RWV-057 | FD-302- 611 SH. 01 C-9 | 1 x 1.5 | REL | SA | 3 | C | C | ACTIVE | O/C | SWHE-1A Tube Side Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| RWV-058 | FD-302- 611 SH. 01 C-8 | 1 x 1.5 | REL | SA | 3 | C | C | ACTIVE | O/C | SWHE-1B Tube Side Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| RWV-059 | FD-302- 611 SH. 01 C-7 | 1 x 1.5 | REL | SA | 3 | C | C | ACTIVE | O/C | SWHE-1C Tube Side Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |

**SYSTEM: RW Nuclear Services and Decay Heat Sea Water**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RWV-060 | FD-302- 611 SH. 01 C-6 | 1 x 1.5 | REL | SA | 3 | C | C | ACTIVE | O/C | SWHE-1D Tube Side Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| RWV-061 | FD-302- 611 SH. 01 C-3 | 1 x 1.5 | REL | SA | 3 | C | C | ACTIVE | O/C | DCHE-1A Tube Side Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| RWV-062 | FD-302- 611 SH. 01 C-4 | 1 x 1.5 | REL | SA | 3 | C | C | ACTIVE | O/C | DCHE-1B Tube Side Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| RWV-128 | FD-302- 611 SH. 01 F-3 | 1.5 | CK | SA | 3 | C | C | ACTIVE | O/C | RWP-3A Flush Water to DO Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344A | |
| | | | | | | | | | | CTO | Q | SP-340A | |
| RWV-129 | FD-302- 611 SH. 01 F-4 | 1.5 | CK | SA | 3 | C | C | ACTIVE | O/C | RWP-2A Flush Water to DO Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-340A | |
| | | | | | | | | | | CTO | Q | SP-340D | |
| RWV-130 | FD-302- 611 SH. 01 F-5 | 1.5 | CK | SA | 3 | C | C | ACTIVE | C | RWP-1 Flush Water to DO Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-340D | |
| RWV-131 | FD-302- 611 SH. 01 E-6 | 1.5 | CK | SA | 3 | C | C | ACTIVE | O/C | RWP-2B Flush Water to DO Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-340D | |
| | | | | | | | | | | CTO | Q | SP-344B | |
| RWV-132 | FD-302- 611 SH. 01 F-6 | 1.5 | CK | SA | 3 | C | C | ACTIVE | O/C | RWP-3B Flush Water to DO Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344B | |
| | | | | | | | | | | CTO | Q | SP-340D | |

**SYSTEM: RW Nuclear Services and Decay Heat Sea Water**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RWV-133 | FD-302- 611 SH. 01 F-3 | 1.5 | CK | SA | 3 | C | C | ACTIVE | O | Train A RW to DO Check Vlv | | | |
| | | | | | | | | | | CTO | Q | SP-340D | |
| RWV-134 | FD-302- 611 SH. 01 F-6 | 1.5 | CK | SA | 3 | C | C | ACTIVE | O | Train B RW to DO Check Vlv | | | |
| | | | | | | | | | | CTO | Q | SP-340D | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: SA Service Air**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAV-024 | FD-302- 271 SH. 02 F-2 | 3 | GA | M | 2 | LC | A | PASSIVE | C | Station Service Air Supply Iso. to RB | | | |
| | | | | | | | | | | LJ | B | SP-179N | |

**SYSTEM: SF Spent Fuel Cooling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SFRS-1 | FD-302- 621 SH. 01 G-2 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| SFV-018 | FD-302- 621 SH. 01 F-1 | 10 | GL | M | 2 | LC | A | PASSIVE | C | FTC Containment Iso. RB | | | |
| | | | | | | | | | | LJ | B | SP-179P | |
| SFV-019 | FD-302- 621 SH. 01 F-2 | 10 | GA | M | 2 | LC | A | PASSIVE | C | FTC Containment Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179P | |
| SFV-026 | FD-302- 621 SH. 01 D-5 | 10 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SFCP-A Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-334B | |
| | | | | | | | | | | CTO | Q | SP-334A | |
| SFV-027 | FD-302- 621 SH. 01 F-5 | 10 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SFCP-B Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-334A | |
| | | | | | | | | | | CTO | Q | SP-334B | |
| SFV-057 | FD-302- 621 SH. 01 D-5 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | SFCP-A Disch. Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SFV-058 | FD-302- 621 SH. 01 E-5 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | SFCP-B Disch. Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SFV-123 | FD-302- 631 SH. 01 E-6 | 0.5 x 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | SFHE-1B Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SFV-124 | FD-302- 631 SH. 01 D-6 | 0.5 x 0.5 | REL | SA | 3 | C | C | ACTIVE | O/C | SFHE-1A Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-008 | FD-302- 601 SH. 03 B-3 | 14 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWP-1A Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344B | |
| | | | | | | | | | | CTO | Q | SP-344A | |
| SWV-009 | FD-302- 601 SH. 03 C-3 | 14 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWP-1B Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344A | |
| | | | | | | | | | | CTO | Q | SP-344B | |
| SWV-010 | FD-302- 601 SH. 03 D-3 | 18 | CK | SA | 3 | O | C | ACTIVE | C | SWP-1C Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344A | |
| SWV-012 | FD-302- 601 SH. 04 B-7 | 12 | BF | A | 3 | O | B | ACTIVE | C | Evap., Seal Return Coolers, & Waste Gas Compr. Iso. | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-22 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-22 |
| SWV-021 | FD-302- 601 SH. 04 F-1 | 10 | BF | M | 3 | O/C | B | ACTIVE | O/C | SF Cooler A Inlet Vlv | | | |
| | | | | | | | | | | EXC | Q | SP-334B | |
| | | | | | | | | | | EXO | Q | SP-334A | |
| SWV-022 | FD-302- 601 SH. 04 F-2 | 10 | BF | M | 3 | O/C | B | ACTIVE | O/C | SF Cooler B Inlet Vlv | | | |
| | | | | | | | | | | EXC | Q | SP-334A | |
| | | | | | | | | | | EXO | Q | SP-334B | |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-035 | FD-302- 601 SH. 01 F-1 | 8 | BF | A | 2 | O | B | ACTIVE | O/C | RB Fan Assembly 1A Supply Line RB Iso. Vlv | | | |
| | | | | | | | | | | PIT | 2Y | SP-344C | |
| | | | | | | | | | | STC | Q | SP-344C | |
| | | | | | | | | | | STO | Q | SP-344C | |
| SWV-037 | FD-302- 601 SH. 01 F-3 | 8 | BF | A | 2 | O | B | ACTIVE | O/C | RB Fan Assembly 1B Supply Line RB Iso. Vlv | | | |
| | | | | | | | | | | PIT | 2Y | SP-344C | |
| | | | | | | | | | | STC | Q | SP-344C | |
| | | | | | | | | | | STO | Q | SP-344C | |
| SWV-039 | FD-302- 601 SH. 01 F-5 | 8 | BF | A | 2 | O | B | ACTIVE | O/C | RB Fan Assembly 1C Supply Line RB Iso. Vlv | | | |
| | | | | | | | | | | PIT | 2Y | SP-344C | |
| | | | | | | | | | | STC | Q | SP-344C | |
| | | | | | | | | | | STO | Q | SP-344C | |
| SWV-041 | FD-302- 601 SH. 01 F-2 | 8 | BF | A | 2 | O/C | B | ACTIVE | O/C | RB Fan Assembly 1A Return Line RB Iso. Vlv | | | |
| | | | | | | | | | | PIT | 2Y | SP-344C | |
| | | | | | | | | | | STC | Q | SP-344C | |
| | | | | | | | | | | STO | Q | SP-344C | |
| SWV-043 | FD-302- 601 SH. 01 F-5 | 8 | BF | A | 2 | O/C | B | ACTIVE | O/C | RB Fan Assembly 1B Return Line RB Iso. Vlv | | | |
| | | | | | | | | | | PIT | 2Y | SP-344C | |
| | | | | | | | | | | STC | Q | SP-344C | |
| | | | | | | | | | | STO | Q | SP-344C | |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-045 | FD-302- 601 SH. 01 F-7 | 8 | BF | A | 2 | O/C | B | ACTIVE | O/C | RB Fan Assembly 1C Return Line RB Iso. Vlv | | | |
| | | | | | | | | | | PIT | 2Y | SP-344C | |
| | | | | | | | | | | STC | Q | SP-344C | |
| | | | | | | | | | | STO | Q | SP-344C | |
| SWV-047 | FD-302- 601 SH. 01 B-7 | 8 | BF | A | 2 | O | B | ACTIVE | C | A/C LD Cooler Supply RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-23 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-23 |
| SWV-048 | FD-302- 601 SH. 01 B-6 | 8 | BF | A | 2 | O | B | ACTIVE | C | LD Cooler B Supply RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-23 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-23 |
| SWV-049 | FD-302- 601 SH. 01 B-5 | 8 | BF | A | 2 | O | B | ACTIVE | C | B LD Cooler Return Line RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-23 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-23 |
| SWV-050 | FD-302- 601 SH. 01 B-4 | 8 | BF | A | 2 | O | B | ACTIVE | C | A/C LD Cooler Return RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-23 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-23 |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-059 | FD-302-601 SH. 04 | C-3 | 8 | BF | M | 3 | O/C | B | ACTIVE | O/C | Control Complex Water Chiller A Inlet Vlv | | | |
| | | | | | | | | | | | EXC | Q | SP-370 | |
| | | | | | | | | | | | EXO | Q | SP-370 | |
| SWV-060 | FD-302-601 SH. 04 | B-3 | 8 | BF | M | 3 | O/C | B | ACTIVE | O/C | Control Complex Water Chiller B Inlet Vlv | | | |
| | | | | | | | | | | | EXC | Q | SP-370 | |
| | | | | | | | | | | | EXO | Q | SP-370 | |
| SWV-079 | FD-302-601 SH. 02 | E-10 | 6 | BF | A | 2 | O | B | ACTIVE | C | RC Pump 1B Supply Line RB Iso. Vlv | | | |
| | | | | | | | | | | | FSTC | CS | SP-435 | CSJ-24 |
| | | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | | STC | CS | SP-435 | CSJ-24 |
| SWV-080 | FD-302-601 SH. 02 | F-7 | 6 | BF | A | 2 | O | B | ACTIVE | C | RC Pump 1A Supply Line RB Iso. Vlv | | | |
| | | | | | | | | | | | FSTC | CS | SP-435 | CSJ-24 |
| | | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | | STC | CS | SP-435 | CSJ-24 |
| SWV-081 | FD-302-601 SH. 02 | F-5 | 6 | BF | A | 2 | O | B | ACTIVE | C | RC Pump 1D Supply Line RB Iso. Vlv | | | |
| | | | | | | | | | | | FSTC | CS | SP-435 | CSJ-24 |
| | | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | | STC | CS | SP-435 | CSJ-24 |
| SWV-082 | FD-302-601 SH. 02 | F-2 | 6 | BF | A | 2 | O | B | ACTIVE | C | RC Pump 1C Supply Line RB Iso. Vlv | | | |
| | | | | | | | | | | | FSTC | CS | SP-435 | CSJ-24 |
| | | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | | STC | CS | SP-435 | CSJ-24 |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: SW Nuclear Services Closed Cycle Cooling***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-083 | FD-302- 601 SH. 02 E-9 | 6 | BF | A | 2 | O | B | ACTIVE | C | RC Pump 1B Return Line RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-24 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-24 |
| SWV-084 | FD-302- 601 SH. 02 F-6 | 6 | BF | A | 2 | O | B | ACTIVE | C | RC Pump 1A Return Line RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-24 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-24 |
| SWV-085 | FD-302- 601 SH. 02 E-4 | 6 | BF | A | 2 | O | B | ACTIVE | C | RC Pump 1D Return Line RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-24 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-24 |
| SWV-086 | FD-302- 601 SH. 02 E-1 | 6 | BF | A | 2 | O | B | ACTIVE | C | RC Pump 1C Return Line RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-24 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-24 |
| SWV-109 | FD-302- 601 SH. 01 C-7 | 3 | GA | A | 2 | O | B | ACTIVE | C | CRD Cooling Water Supply Line RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-25 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-25 |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-110 | FD-302- 601 SH. 01 A-9 | 3 | GA | A | 2 | O | B | ACTIVE | C | CRD Cooling Water Return Line RB Iso. Vlv | | | |
| | | | | | | | | | | FSTC | CS | SP-435 | CSJ-25 |
| | | | | | | | | | | PIT | 2Y | SP-435 | |
| | | | | | | | | | | STC | CS | SP-435 | CSJ-25 |
| SWV-151 | FD-302- 601 SH. 01 H-7 | 10 | BF | A | 3 | O | B | ACTIVE | C | Industrial Cooling Return from RB Fan Assemblies | | | |
| | | | | | | | | | | FSTC | Q | SP-344A | |
| | | | | | | | | | | PIT | 2Y | SP-344A | |
| | | | | | | | | | | STC | Q | SP-344A | |
| SWV-152 | FD-302- 601 SH. 01 H-6 | 10 | BF | A | 3 | O | B | ACTIVE | C | Industrial Cooling Water Supply to RB Fan Assemblies | | | |
| | | | | | | | | | | FSTC | Q | SP-344A | |
| | | | | | | | | | | PIT | 2Y | SP-344A | |
| | | | | | | | | | | STC | Q | SP-344A | |
| SWV-175 | FD-302- 601 SH. 03 F-5 | 0.5 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | SWHE-1A Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-176 | FD-302- 601 SH. 03 G-5 | 0.5 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | SWHE-1B Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-177 | FD-302- 601 SH. 03 F-7 | 0.5 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | SWHE-1C Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-178 | FD-302- 601 SH. 03 G-8 | 0.5 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | SWHE-1D Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-199 | FD-302- 601 SH. 03 B-7 | 1 x 2 | REL | SA | 3 | C | C | ACTIVE | O/C | SW Surge Tank SWT-1 Safety Valve | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-353 | FD-302- 601 SH. 01 H-7 | 16 | BF | A | 3 | C | B | ACTIVE | O | NS Supply to RB Fan Assemblies | | | |
| | | | | | | | | | | FSTO | Q | SP-344A | |
| | | | | | | | | | | PIT | 2Y | SP-344A | |
| | | | | | | | | | | STO | Q | SP-344A | |
| SWV-354 | FD-302- 601 SH. 01 G-7 | 16 | BF | A | 3 | C | B | ACTIVE | O | NS Return from RB Fan Assemblies | | | |
| | | | | | | | | | | FSTO | Q | SP-344A | |
| | | | | | | | | | | PIT | 2Y | SP-344A | |
| | | | | | | | | | | STO | Q | SP-344A | |
| SWV-355 | FD-302- 601 SH. 01 H-7 | 10 | BF | A | 3 | O | B | ACTIVE | C | Industrial Cooling Return from RB Fan Assemblies | | | |
| | | | | | | | | | | FSTC | Q | SP-344A | |
| | | | | | | | | | | PIT | 2Y | SP-344A | |
| | | | | | | | | | | STC | Q | SP-344A | |
| SWV-356 | FD-302- 601 SH. 01 H-6 | 10 | CK | SA | 3 | O | C | ACTIVE | C | CI Supply to RB Fan Assemblies Check Vlv | | | |
| | | | | | | | | | | CTC | RF | SP-620 | ROJ-22 |
| | | | | | | | | | | PS | Q | SP-344A | |
| SWV-362 | FD-302- 601 SH. 01 B-2 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | Letdown Cooler MUHE-1A Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-364 | FD-302- 601 SH. 01 B-4 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | RCDT Cooler WDHE-1 Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-365 | FD-302- 601 SH. 01 B-3 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | Letdown Cooler MUHE-1B Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-367 | FD-302- 601 SH. 01 D-1 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | RB Fan Assembly AHHE-31A Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-368 | FD-302- 601 SH. 01 D-3 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | RB Fan Assembly AHHE-31B Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-369 | FD-302- 601 SH. 01 D-6 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | RB Fan Assembly AHHE-31C Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-370 | FD-302- 601 SH. 02 A-2 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1C Seal Area Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-371 | FD-302- 601 SH. 02 B-2 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1C Lower Bearing Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-372 | FD-302- 601 SH. 02 D-2 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1C Air Cooler Thermal Relief | | | |
| SWV-373 | FD-302- 601 SH. 02 C-2 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1C Upper Bearing Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-374 | FD-302- 601 SH. 02 A-5 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1D Seal Area Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-375 | FD-302- 601 SH. 02 B-5 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1D Lower Bearing Cooler Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-376 | FD-302-601 SH. 02 | C-5 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1D Air Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-377 | FD-302-601 SH. 02 | C-5 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1D Upper Bearing Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-378 | FD-302-601 SH. 02 | A-7 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1A Seal Area Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-379 | FD-302-601 SH. 02 | B-7 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1A Lower Bearing Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-380 | FD-302-601 SH. 02 | C-7 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1A Air Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-381 | FD-302-601 SH. 02 | C-7 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1A Upper Bearing Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-382 | FD-302-601 SH. 02 | A-10 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1B Seal Area Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-383 | FD-302-601 SH. 02 | B-10 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1B Lower Bearing Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-384 | FD-302-601 SH. 02 | C-10 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1B Air Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-385 | FD-302-601 SH. 02 | C-10 | 0.75 x 1 | REL | SA | 2 | C | C | ACTIVE | O/C | RCP-1B Upper Bearing Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram | Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-386 | FD-302-601 SH. 01 | B-7 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | CRDM Cooler DRRD-1 Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-387 | FD-302-601 SH. 04 | F-1 | 0.5 x .5 | REL | SA | 3 | C | C | ACTIVE | O/C | SFHE-1A Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-388 | FD-302-601 SH. 04 | F-2 | 0.5 x .5 | REL | SA | 3 | C | C | ACTIVE | O/C | SFHE-1B Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-389 | FD-302-601 SH. 04 | F-2 | 0.5 x .5 | REL | SA | 3 | C | C | ACTIVE | O/C | AHHE-29A Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-390 | FD-302-601 SH. 04 | F-3 | 0.5 x .5 | REL | SA | 3 | C | C | ACTIVE | O/C | AHHE-29B Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-391 | FD-302-601 SH. 04 | B-3 | 0.5 x .5 | REL | SA | 3 | C | C | ACTIVE | O/C | CHHE-1A Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-392 | FD-302-601 SH. 04 | B-3 | 0.5 x .5 | REL | SA | 3 | C | C | ACTIVE | O/C | CHHE-1B Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-398 | FD-302-601 SH. 04 | D-8 | 0.5 x .5 | REL | SA | 3 | C | C | ACTIVE | O/C | MUP-1B Motor Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-399 | FD-302-601 SH. 04 | D-8 | 0.5 x .5 | REL | SA | 3 | C | C | ACTIVE | O/C | MUP-1B Oil Cooler Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-403 | FD-302-601 SH. 01 | E-1 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | RB Fan Motor Cooler AHHE-32A Thermal Relief | | | |
| | | | | | | | | | | | RV | 10Y | SP-602 | |

**SYSTEM: SW Nuclear Services Closed Cycle Cooling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWV-404 | FD-302- 601 SH. 01 E-3 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | RB Fan Motor Cooler AHHE-32B Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-405 | FD-302- 601 SH. 01 E-5 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | RB Fan Motor Cooler AHHE-32C Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-412 | FD-302- 601 SH. 03 A-3 | 14 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWP-1A Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344B | |
| | | | | | | | | | | CTO | Q | SP-344A | |
| SWV-413 | FD-302- 601 SH. 03 B-3 | 14 | CK | SA | 3 | O/C | C | ACTIVE | O/C | SWP-1B Disch. Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344A | |
| | | | | | | | | | | CTO | Q | SP-344B | |
| SWV-695 | FD-302- 601 SH. 01 A-1 | 0.75 x 1 | REL | SA | 3 | C | C | ACTIVE | O/C | Letdown Cooler MUHE-1C Thermal Relief | | | |
| | | | | | | | | | | RV | 10Y | SP-602 | |
| SWV-730 | FD-302- 601 SH. 03 D-10 | 0.375 | CK | SA | 3 | C | C | ACTIVE | | Chemical Pump to Surge Tank Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344A | |
| SWV-731 | FD-302- 601 SH. 03 D-10 | 0.375 | CK | SA | 3 | C | C | ACTIVE | | Chemical Pump to Surge Tank Check Vlv | | | |
| | | | | | | | | | | CTC | Q | SP-344A | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

**SYSTEM: WD** ***Liquid Waste Disposal, Gas Waste Disposal and Waste Gas Sampling***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WDRS-1 | FD-302- 681 SH. 01 C-4 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| WDRS-2 | FD-302- 681 SH. 03 D-4 | 0.5 | RD | SA | 2 | C | D | ACTIVE | O/C | Rupture Seal Disc Assembly | | | |
| | | | | | | | | | | RD | 5Y | SP-602 | |
| WDV-003 | FD-302- 681 SH. 01 B-3 | 4 | GA | MO | 2 | O | A | ACTIVE | C | Sump Pump Discharge Isolation Valve | | | |
| | | | | | | | | | | LJ | B | SP-179I | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| WDV-004 | FD-302- 681 SH. 01 B-4 | 4 | DA | A | 2 | O | A | ACTIVE | C | RB Sump Discharge Header Isolation | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179I | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| WDV-060 | FD-302- 681 SH. 03 A-4 | 2 | GL | MO | 2 | C | A | ACTIVE | C | RC Drain Tank Vent Isolation Valve | | | |
| | | | | | | | | | | LJ | B | SP-179I | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| WDV-061 | FD-302- 681 SH. 01 A-4 | 2 | DA | A | 2 | C | A | ACTIVE | C | RC Drain Tank Vent Line Outside Isolation Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179I | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |

**SYSTEM: WD Liquid Waste Disposal, Gas Waste Disposal and Waste Gas Sampling**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WDV-062 | FD-302- 681 SH. 03 C-4 | 3 | DA | A | 2 | C | A | ACTIVE | C | RC Drain Tank Discharge Header Isolation Valve | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179I | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| WDV-094 | FD-302- 681 SH. 03 C-4 | 3 | GL | MO | 2 | C | A | ACTIVE | C | RC Drain Tank Isolation Valve | | | |
| | | | | | | | | | | LJ | B | SP-179I | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| WDV-405 | FD-302- 691 SH. 01 A-3 | 1.5 | GL | MO | 2 | C | A | ACTIVE | C | Reactor Building Vent Header Isolation Valve | | | |
| | | | | | | | | | | LJ | B | SP-179I | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| WDV-406 | FD-302- 691 SH. 01 A-2 | 1.5 | GL | MO | 2 | C | A | ACTIVE | C | Reactor Building Vent Header Isolation Valve | | | |
| | | | | | | | | | | LJ | B | SP-179I | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: WS Containment Monitoring***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WSV-001 | FD-302- 693 SH. 01 D-3 | 1 | DA | M | 2 | LC | A | PASSIVE | C | Post-Accident Analysis RB Isolation | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-002 | FD-302- 693 SH. 01 D-4 | 1 | DA | M | 2 | LC | A | PASSIVE | C | Post-Accident Analysis RB Isolation | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-003 | FD-302- 693 SH. 01 E-3 | 1 | BL | A | 2 | O | A | ACTIVE | C | Normal Containment Air Sample RB Isolation | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179J | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| WSV-004 | FD-302- 693 SH. 01 E-4 | 1 | BL | A | 2 | O | A | ACTIVE | C | Normal Containment Air Sample RB Isolation | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179J | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| WSV-005 | FD-302- 693 SH. 01 F-3 | 1 | BL | A | 2 | O | A | ACTIVE | C | Normal Containment Air Sample RB Isolation | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179J | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |

# FLORIDA POWER CORPORATION
# CRYSTAL RIVER UNIT 3

*ASME Section XI*
*Pump and Valve Program*
*Inservice Testing*

***SYSTEM: WS Containment Monitoring***

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WSV-006 | FD-302- 693 SH. 01 F-4 | 1 | BL | A | 2 | O | A | ACTIVE | C | Normal Containment Air Sample RB Isolation | | | |
| | | | | | | | | | | FSTC | Q | SP-370 | |
| | | | | | | | | | | LJ | B | SP-179J | |
| | | | | | | | | | | PIT | 2Y | SP-370 | |
| | | | | | | | | | | STC | Q | SP-370 | |
| WSV-026 | FD-302- 693 SH. 01 B-5 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Containment Atmos. to H2 Analyzer "B" RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-027 | FD-302- 693 SH. 01 B-5 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Containment Atmos. to H2 Analyzer "B" RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-028 | FD-302- 693 SH. 01 B-4 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Containment Atmos. to H2 Analyzer "A" RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-029 | FD-302- 693 SH. 01 B-4 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Containment Atmos. to H2 Analyzer "A" RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-030 | FD-302- 693 SH. 01 B-3 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Containment Atmos. to H2 Analyzer "A" RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-031 | FD-302- 693 SH. 01 B-3 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Containment Atmos. to H2 Analyzer "A" RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-032 | FD-302- 693 SH. 01 B-5 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Post-Accident Gas Sample RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |

**SYSTEM: WS Containment Monitoring**

| Valve | Flow Diagram -Coord | Size | Type | Actuator | Code Class | Normal Position | Cat. | Act/Pas | Safety Position | Test | Freq | Procedure | CSJ/ROJ/Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WSV-033 | FD-302- 693 SH. 01 B-5 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Post-Accident Gas Sample RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-034 | FD-302- 693 SH. 01 C-3 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Post-Accident Gas Sample RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-035 | FD-302- 693 SH. 01 C-4 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Post-Accident Gas Sample RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-038 | FD-302- 693 SH. 01 B-4 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Containment Atmos. to H2 Analyzer "B" RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-039 | FD-302- 693 SH. 01 B-4 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | Containment Atmos. to H2 Analyzer "B" RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-040 | FD-302- 693 SH. 01 G-2 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | H2 Analyzer "B" Return Line RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-041 | FD-302- 693 SH. 01 G-3 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | H2 Analyzer "B" Return Line RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-042 | FD-302- 693 SH. 01 G-3 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | H2 Analyzer "A" Return Line RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |
| WSV-043 | FD-302- 693 SH. 01 G-2 | 0.5 | GL | SO | 2 | LC | A | PASSIVE | C | H2 Analyzer "A" Return Line RB Iso. | | | |
| | | | | | | | | | | LJ | B | SP-179J | |

Florida Power Corporation
ASME Section XI
RELIEF REQUEST
98-001-IT

Referenced Codes: ASME Boiler and Pressure Vessel Code, Section XI, 1989

ASME/ANSI OM (Part 6), 1987 and 1988a addenda

I. Components for Which Relief is Requested:

a) Name and identification number (component tag):

| | | |
|---|---|---|
| CH-646-PI | CHP-1A suction pressure | Class 3 |
| CH-651-PI | CHP-1B suction pressure | Class 3 |
| DC-1-PI | DCP-1A suction pressure | Class 3 |
| DC-2-PI | DCP-1B suction pressure | Class 3 |
| MU-9-PI1 | MUP-1A suction pressure | Class 2 |
| MU-9-PI2 | MUP-1B suction pressure | Class 2 |
| MU-9-PI3 | MUP-1C suction pressure | Class 2 |
| BS-9-PI2 | BSP-1B suction pressure | Class 2 |
| RWV-146 | Flow indication used for RWP-3A | Non-class |
| RWV-147 | Flow indication used for RWP-3B | Non-class |

b) Function:

Provide suction pressure or flow indication for each specified pump.

c) ASME Section III Code Class:

specified above

d) Valve Category:

N/A

II. Referenced Code Requirement for which approval of an Alternative is requested:

The Code of Reference for the Crystal River Unit 3 Pump and Valve Testing Program is the 1989 Edition, which endorses the 1987 ASME/ANSI OM Part 6 1988a addenda.

OM-6, Paragraph 4.6.1.2(a), states, "The full-scale range of each analog instrument shall not be greater than three times the reference value."

Contrary to this requirement, the installed pressure instruments listed in section I.a) of this relief request have a full scale range that exceeds the three times reference value criteria specified by OM-6. The flow instruments listed in section I.a) of this relief request exceed the ±2% accuracy requirement. Although these instruments do not meet the Code requirements, they are able to provide the same or better indication accuracy than allowed by the Code, and ensure repeatability of test data. The flow instruments listed in section I.a) of this relief request are not permanently installed by design, but are permanent equipment. These annubars are not seismically qualified for continuous service, they are inserted into the flow stream as needed.

For instruments to be in compliance with OM-6, two requirements must be satisfied. The first requirement states that instrumentation must be accurate to within ±2% of the full scale value; the second requirement states that the full scale range of each instrument shall be three times the reference value or less (for analog instruments). Based on these requirements, a maximum indicated accuracy of ±6% can be calculated by comparing the actual tolerance of the instrument to the reference value being measured.

An example of calculating indicated instrument accuracy is as follows (from NUREG-1482, Paragraph 5.5.1):

> This example uses a reference pressure value of 20 psig and an analog pressure gauge with full scale range of 60 psig that is calibrated to ±2% of full scale.
>
> Code requirement:
>
> | | | |
> |---|---|---|
> | Reference value | = | 20 psig |
> | 3 x reference value | = | 60 psig |
> | instrument tolerance | = | 1.2 psig (±2% x 60 psig) |
>
> Indicated accuracy:
>
> ±1.2 psig / 20 psig x 100 = ±6%

Following the methodology used in NUREG-1482 and the example above, the indicated instrument accuracy can be calculated for each pressure instrument listed in section I.a) of this relief request. The following table provides the calculated indicated instrument accuracies:

Table 1: Calculated Instrument Accuracies for Selected Pressure Instruments

| PUMP ID | INSTR NUMBER | PARAMETER | REF VALUE | INSTR RANGE | INSTR ACCUR | INSTR TOL | IND ACCUR |
|---|---|---|---|---|---|---|---|
| CHP-1A | CH-646-PI | SUCTION PRESSURE | 8 PSIG | 0-60 PSIG | ± 0.5 % | ± 0.3 PSIG | ± 3.75 % |
| CHP-1B | CH-651-PI | SUCTION PRESSURE | 8 PSIG | 0-60 PSIG | ± 0.5 % | ± 0.3 PSIG | ± 3.75 % |
| DCP-1A | DC-1-PI | SUCTION PRESSURE | 7 PSIG | 0-30 PSIG | ± 1 % | ± 0.3 PSIG | ± 4.29 % |
| DCP-1B | DC-2-PI | SUCTION PRESSURE | 7 PSIG | 0-30 PSIG | ± 1 % | ± 0.3 PSIG | ± 4.29 % |
| MUP-1A | MU-9-PI1 | SUCTION PRESSURE | 15 PSIG | 0-60 PSIG | ± 0.5 % | ± 0.3 PSIG | ± 2.00 % |
| MUP-1B | MU-9-PI2 | SUCTION PRESSURE | 15 PSIG | 0-60 PSIG | ± 0.5 % | ± 0.3 PSIG | ± 2.00 % |
| MUP-1C | MU-9-PI3 | SUCTION PRESSURE | 15 PSIG | 0-60 PSIG | ± 0.5 % | ± 0.3 PSIG | ± 2.00 % |
| BSP-1B | BS-9-PI2 | SUCTION PRESSURE | 30 PSIG | 0-100 PSIG | ± 0.5 % | ± 0.5 PSIG | ± 1.67 % |

Where:

REF VALUE = reference value established by the procedure.
INSTR ACCUR = accuracy to which instrument is calibrated.
INSTR TOL = maximum INSTR RANGE times INSTR ACCUR.
IND ACCUR = INSTR TOL divided by REF VALUE times 100.

Table 2: Calculated Instrument Accuracies for Selected Flow Instruments

| PUMP ID | INSTR NUMBER | INSTR TYPE | PARAMETER | REF VALUE | INSTR RANGE | ACCUR |
|---|---|---|---|---|---|---|
| RWP-3A | Temp (RWV-146) | ANNUBAR | FLOW | 10,100 GPM | 0-20,000 GPM | ± 4.1 % |
| RWP-3B | Temp (RWV-147) | ANNUBAR | FLOW | 9,700 GPM | 0-20,000 GPM | ± 4.3 % |

Where:

REF VALUE = reference value established by the procedure.
ACCUR = instrument accuracy provided by vendor.

As shown on Tables 1 and 2, the indicated accuracy for all the instruments is less than ±6% of the reference value. These accuracy's are the same or better than those allowed by the Code. Therefore, there is no overall impact on the capability to detect and monitor degradation during pump tests based on use of these instruments. Continued use of the existing installed instruments is supported by NUREG-1482, Paragraph 5.5.1 which states that when the range of an installed analog instrument is greater than 3 times the reference value but the accuracy of the instrument is more conservative than the Code, NRC staff will grant relief when the combination of the range and accuracy yields a reading at least equivalent to the reading achieved from instruments that meet the Code requirements (i.e. up to ± 6%).

IV. Alternate Examination:

Since the indicated accuracy of each permanently installed instrument is less than the ±6% allowed tolerance, CR-3 requests approval for continued use of the instruments listed in section I.a) of the relief request.

V. Implementation Schedule:

The Alternate Examination requirements will be implemented until the end of the third ten year inspection interval at CR-3.

VI. References:

ASME Section XI, 1989 Edition, Subsection IWP
ASME/ASNI OM-6 "Standards and Guides for Operation and Maintenance of Nuclear Power Plants, Part 6" 1988a Edition.
NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants"

# COLD SHUTDOWN JUSTIFICATIONS

## COLD SHUTDOWN JUSTIFICATION (CSJ) INDEX

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| CSJ-01 | AHV-1A/B/C/D STC and FSTC (A, D) |
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| CSJ-16 | MUV-18,27 STC |
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| CSJ-27 | RCV-53 STO, STC |
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| CSJ-29 | MUV-579 CTO, CTC |

## COLD SHUTDOWN JUSTIFICATION - CSJ - 01

COMPONENTS: AHV-1A, AHV-1B, AHV-1C, AHV-1D

FUNCTION:

These normally locked closed Reactor Building Purge Isolation valves perform a passive safety function in the closed position for containment isolation during modes 1 through 4. In modes 5 and 6, they receive an automatic close signal due to high radiation.

CATEGORY: A CLASS: 2

DEFERRED TEST JUSTIFICATION:

Exercising of these valves during operation is not possible because they are required to be locked closed in modes 1 through 4. Stroke timing is not required by the code since this is not a safety function in modes 5 or 6. Timing is performed to verify operability per Technical Specification. Stroke time closed test will be considered an augmented test in the Inservice Testing Program.

ALTERNATE TESTING:

When these valves are opened in modes 5 or 6 they will be stroke timed to the closed position. This testing is not required to be performed more often than quarterly during cold shutdown or refuel. If they are not energized, no testing will be performed since they are considered passive closed. Fail safe testing of valves AHV-1A and AHV-1D is satisfied by stroke timing of the valve.

Second ten-year interval did not identify this testing.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 02

COMPONENTS: CFV-1 and CFV-3

FUNCTION:

These check valves are in the flow path from the Core Flood tanks to the Reactor Coolant System. They provide isolation from the high pressure Reactor Coolant System to the low pressure Core Flood Tanks and Decay Heat Removal System. They are required to open to allow the core flood tanks to discharge to the Reactor Coolant System or when initiating Decay Heat System flow to the Reactor Coolant System.

CATEGORY: AC CLASS: 1

DEFERRED TEST JUSTIFICATION:

Exercising of these valves during operation is not possible because the operating pressure of the Reactor Coolant System would not allow stroking of these valves either by use of the Core Flood Tanks or the Decay Heat Removal Pumps. The pressure available from these two sources is not capable of overcoming Reactor Coolant System pressure. Also, any flow from these sources would affect Reactor Coolant System boron concentration and reactivity.

ALTERNATE TESTING:

A partial stroke for CFV-1 and CFV-3 will be performed during cold shutdown outages. CFV-1 and CFV-3 shall also be leak rate tested per Improved Technical Specification 3.4.13 surveillance requirements. This Technical Specification frequency is prior to entering mode 2 whenever in mode 5 for seven (7) days or more, if not performed in the previous nine (9) months. This Pressure Isolation Valve leak rate test satisfies closure test requirements. A full-stroke open test is performed during refueling outages. In case of frequent cold shutdowns these valves will not be tested partial open more often than once every 3 months.

Second ten-year interval identified this justification as CS-060.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 03

COMPONENTS: DHV-1 and DHV-2

FUNCTION:

These check valves are in the flow path from the Decay Heat Removal System to the Reactor Coolant System. During normal plant operation, these normally closed check valves provide isolation between the Core Flood and Decay Heat Removal System. Additionally, each valve is the second closed check valve that provides reactor coolant isolation from the Decay Heat Removal System. They are required to open to allow Decay Heat System flow to the Reactor Coolant System.

CATEGORY: AC CLASS: 1

DEFERRED TEST JUSTIFICATION:

Exercising of these valves during operation is not possible because the operating pressure of the Reactor Coolant System would not allow stroking of these valves either by use of the Core Flood Tanks or the Decay Heat Removal Pumps. The pressure available from these two sources is not capable of overcoming Reactor Coolant System pressure. Also, any flow from these sources would affect Reactor Coolant System boron concentration and reactivity.

ALTERNATE TESTING:

These valves shall be full-stroke exercised open during cold shutdowns and leak tested per schedule as required by Improved Technical Specification 3.4.13. This Technical Specification frequency is prior to entering mode 2 whenever in mode 5 for seven (7) days or more; if not performed in the previous nine (9) months. This leak rate test satisfies closure test requirements. In case of frequent cold shutdowns these valves need not be tested open more often than once every three (3) months.

Second ten-year interval identified this justification as CS-120.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 04

COMPONENTS: DHV-3 and DHV-4

FUNCTION:

During normal plant operation, these valves isolate the Decay Heat Removal System (low pressure) from the reactor coolant hot leg (high pressure). They automatically close when the Reactor Coolant System pressure reaches 284 psig, increasing. They are opened during normal cooldown of the Reactor to the Cold Shutdown condition, and during post-Loss of Coolant Accident to prevent boron precipitation in the Core which could block flow channels.

CATEGORY: B CLASS: 1

DEFERRED TEST JUSTIFICATION:

DHV-3 and DHV-4 have design interlocks which require them to be closed during normal plant operation when the Reactor Coolant System is $\geq$ 284 psig (ITS 3.4.13). Due to their design, these valves cannot be exercised during normal plant operation. They are normally "Locked" Closed by power removed to prevent spurious opening in the event of a fire.

ALTERNATE TESTING:

These valves shall be full-stroke exercised and timed open and closed during cold shutdowns. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-121.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 05

COMPONENTS: DHV-5 and DHV-6

FUNCTION:

These normally closed low pressure injection containment isolation valves have a safety function in both the open and closed positions. They open upon receiving a low pressure injection signal for injection and also for normal cooldown to Cold Shutdown condition. They close for containment isolation.

CATEGORY: B CLASS: 2

DEFERRED TEST JUSTIFICATION:

Environmental Qualification 89-0725 and Environmental Qualification 89-0361 both recommend not to stroke DHV-5 and DHV-6 during normal plant operations. DHV-5 and DHV-6 assist in providing positive isolation of the Reactor Coolant System from the Decay Heat System. If these valves were opened during normal plant operation and the line was pressurized upstream of the valves due to leakage past DHV-1 or DHV-2, overpressurization of the Decay Heat System piping could occur.

ALTERNATE TESTING:

These valves shall be full-stroke exercised and timed open and closed during cold shutdowns. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-122.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 06

COMPONENTS: DWV-160

FUNCTION:

This valve is open during normal operations of the plant to supply demineralized water for continuous flushing of the Reactor Coolant Pump seals. It receives an Engineered Safeguard signal for Containment Isolation when the Reactor Building reaches 4 psig pressure and increasing.

CATEGORY: A CLASS: 2

DEFERRED TEST JUSTIFICATION:

Each Reactor Coolant Pump seal receives demineralized water through a small needle valve that, prior to a plant startup, is manually set to a predetermined flow. Once the flow has been set, via local flow indicators, these four separate values are used in the daily Reactor Coolant System inventory calculations. The cycling of DWV-160, when Condensate and Demineralized Water Supply flow is established to the Reactor Coolant Pump seal flushing system, causes the needle valves to receive a surge which changes the preset position of these needles. This, in turn, causes the daily Reactor Coolant System inventory calculations to have an error in them. The control circuitry of this valve does not permit partial exercising.

ALTERNATE TESTING:

This valve shall be full-stroke exercised and timed closed during cold shutdowns. In case of frequent cold shutdowns this valve need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-140.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 07

COMPONENTS: EFV-5, EFV-6, EFV-15, EFV-16, EFV-17, EFV-18

FUNCTION:

EFV-15, EFV-16, EFV-17 & EFV-18, Emergency feedwater to Once Through Steam Generators A & B check valves; EFV-5 & EFV-6, emergency feed pump discharge check to steam generators; all must open to allow full flow when emergency feed is required.

CATEGORY: C CLASS: 3

DEFERRED TEST JUSTIFICATION:

To insure a full-stroke of the valve disk requires initiation of flow to the Once Through Steam Generators. Initiating this flow during normal plant operation would require flow of emergency feedwater to the Once Through Steam Generators through the emergency feedwater nozzles, causing undue thermal transients on the upper Once Through Steam Generators nozzles. Additionally, this would cause a transient in the main steam and feedwater control system. Partial flow testing would result in the same consequences for the Once Through Steam Generators checks.

ALTERNATE TESTING:

These valves shall be full-stroke exercised open during cold shutdowns. Partial stroke test of EFV-5 and EFV-6 will be performed quarterly during pump testing on minimum flow. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-152 and CS-153.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 08

COMPONENTS: EFV-7 and EFV-8

FUNCTION:

These valves open to allow full flow to the Once Through Steam Generators when Emergency Feedwater is required. Valves must close to prevent diversion of flow from the opposite loop should one pump fail to start.

CATEGORY: C CLASS: 3

DEFERRED TEST JUSTIFICATION:

To insure the valve disk comes off its seat requires indication of flow to the Once Through Steam Generators. This cannot be done during normal plant operation as it would require flow of emergency feedwater to the Once Through Steam Generators through the emergency feedwater nozzles, causing undue thermal transients on the upper Once Through Steam Generators nozzles. Additionally, this would cause a transient in the main steam and feedwater control system, subjecting the plant to possible unsafe condition. Valves cannot be partially stroked for the same reasons during normal operating conditions. Additionally, a closure verification would require pressurizing the downstream side of these valves by running one Emergency Feedwater pump during normal operations with the cross-tie open. This would allow the same flow into the Once Through Steam Generators since both loops of emergency feed cannot be isolated while at power.

ALTERNATE TESTING:

These valves shall be full-stroke exercised open during cold shutdowns. Closure test will be performed by verifying adequate Differential Pressure during cold shutdowns. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-151.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 09

COMPONENTS: FWV-14, FWV-15, FWV-28, FWV-29, FWV-30, FWV-31, FWV-32, FWV-33, FWV-36

FUNCTION:

FWV-14 and FWV-15, Turbine Driven Main Feedwater Pump Suction Isolation Valves; FWV-28, Main Feedwater Pump 3B to Steam Generator 3A cross tie; FWV-29 and FWV-30, Main Feedwater Block Valves; FWV-31 and FWV-32, Main Feedwater Low-Load Block Valves; FWV-33 and FWV-36, Main Feedwater Throttling Start-up Block Valves. These valves are the Main Feedwater Isolation Valves. Under normal conditions these valves are open to various positions to supply feedwater to the steam generators depending on power level and feedwater demand. In the event of reactor trip and/or emergency feedwater initiation, FWV-14, 15, 29, 30, 31 and 32 are automatically isolated by the Integrated Control System. Automatic controls, independent of the Integrated Control System, are designed to assure closure of all Feedwater Block valves (FWV-14, 15, 28, 29, 30, 31, 32, 33 and 36) in the event of a main steam line break to prevent the addition of positive reactivity and a resulting power increase.

CATEGORY: B CLASS: 2 (valves FWV-29, -30, -31, -32, -33, and -36)
3 (valves FWV-14, -15, and -28)

DEFERRED TEST JUSTIFICATION:

Full-stroke exercising of these valves during Plant Operation is not possible because loss of feedwater supply to a steam generator would likely cause the plant to trip due to low feedwater level in the generator. For this reason partial stroke testing of the end devices has also been discontinued as a part of the monthly Feedwater Isolation Functional Test and only matrix logic is verified.

ALTERNATE TESTING:

These valves are full-stroke exercised and timed closed during cold shutdowns. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-190.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 10

COMPONENTS: FWV-43 and FWV-44

FUNCTION:

FWV-43 & FWV-44; Steam Generator 3B & 3A check valves to emergency feedwater injection. These check valves outside containment must open for emergency feedwater to reach Once Through Steam Generator's and close for containment isolation and prevention of back flow in the line. Valve is closed during normal plant operation.

CATEGORY: AC CLASS: 2

DEFERRED TEST JUSTIFICATION:

To insure each valve disk comes off its seat, requires a positive indication of emergency feedwater flow through the emergency feedwater nozzles to the Once Through Steam Generator. These valves can not be partial-stroke nor full-stroke exercised during normal operation without causing undue thermal transients on the upper Once Through Steam Generator nozzles. Exercising these valves would also cause a transient in the main steam and feedwater control systems subjecting the plant to possible unsafe conditions.

ALTERNATE TESTING:

This valve shall be full-stroke open exercised during cold shutdowns. Reverse flow closure test is performed quarterly by verifying adequate Differential Pressure across the valve. Leak testing is performed every refueling outage. In case of frequent cold shutdowns this valve need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-180.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 11

COMPONENTS: MSV-25, MSV-26, MSV-27, MSV-28

FUNCTION:

The Main Steam Line Atmospheric Dump Valves (MSV-25, MSV-26) function as Control Valves to provide pressure control for the removal of decay heat from the Reactor Coolant System following a reactor trip; they prevent excessive challenges to the Main Steam Safety Valves. The manual isolation valves (MSV-27, MSV-28) allow the Dump valves to relieve when open and prevent excessive cooldown if the Dump valve fails open.

CATEGORY: B CLASS: 2

DEFERRED TEST JUSTIFICATION:

In order to exercise the dump valves during normal plant operations, they would have to be isolated from the Main Steam system via single isolation valves MSV-27 (for MSV-25) and MSV-28 (for MSV-26). These isolation valves are manually operated. If significant leakage past the single isolation valve were to occur, and MSV-25 or MSV-26 were exercised, the steam dumped to atmosphere may cause a transient on the system that could lead to a low main steam pressure event which, if low enough, would actuate the Emergency Feedwater Initiation and Control System. Additionally, in order to time-stroke exercise MSV-25 and MSV-26, lifted leads, jumpers, etc. are required, as the timing measures the valve stroke using a simulation of current signals to the valves' control system (4-20 ma, close-to-open). For personnel safety reasons, this should not be performed with single valve isolation from the Main Steam system.

ALTERNATE TESTING:

MSV-25 and MSV-26 are full-stroke exercised during Cold Shutdown outages. Fail-safe testing of these valves naturally occurs as they are air-operated, and the closure signal bleeds air off, simulating a loss of power. Manual valves MSV-27 and MSV-28 are exercised during the dump valve test at cold shutdown frequency. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-211.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 12

COMPONENTS: MSV-411, MSV-412, MSV-413, MSV-414

FUNCTION:

During operation, these normally open Piston Operated Valves provide for Main Steam line isolation in the event of an upstream Main Steam line break to prevent the uncontrolled blowdown of a steam generator; and the addition of positive reactivity to the core and a resulting power increase. In addition, the MSV-411 and MSV-413 valves must open after closure to mitigate the consequences of a Once Through Steam Generator tube rupture by utilizing the Turbine Bypass Valves to reduce the amount of iodine released to the environment.

CATEGORY: B CLASS: 2

DEFERRED TEST JUSTIFICATION:

Full-stroke exercising these valves during plant operation is not practical as it would cause steam generator and feedwater temperature and pressure fluctuation that would likely trip the plant. Partial stroke testing is no longer performed due to recommendations in Improved Technical Specification Surveillance Requirement 3.7.2.1 and NUREG 1482 Section 4.2.4.

ALTERNATE TESTING:

These valves shall be full-stroke exercised and timed closed during cold shutdowns. Fail-safe testing is performed at the same frequency. Valves MSV-411 and MSV-413 will be stroke timed open as well during cold shutdown. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-212.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 13

COMPONENTS: MSV-55, MSV-56, MSV-186, MSV-187

FUNCTION:

Main Steam supply stop-check valves (MSV-55, MSV-56) for the turbine driven Emergency Feedwater Pumps. These stop-check valves have electric motor operators to allow the capability of isolation of the respective steam line, when necessary. The operators are normally in the open position to allow them to act strictly as a check valve. The downstream check valves (MSV-186, MSV-187) are in series with motor operated stop-check valves MSV-56 and MSV-55, respectively, to allow the capability of isolation of the respective steam line in the event of a steam line break. Both valves in the specific line must open to provide steam to EFP-2. They also must close to prevent backflow resulting in loss of driving steam to the turbine of EFP-2 in the event of a main steam line break.

CATEGORY: C CLASS: 2 (valves MSV-55, -56)
3 (valves MSV-186, -187)

DEFERRED TEST JUSTIFICATION:

Full-stroke exercising of the check valves in the open direction cannot be performed on a quarterly basis since the emergency feedwater pump recirculation line is too small to allow full flow. To verify full flow would require an injection of 500-600 gpm into the Steam Generators with the speed of EFP-2 capable of being maintained.

ALTERNATE TESTING:

These valves shall be part-stroke exercised in the open direction quarterly during plant operation, and full-stroke exercised during Cold Shutdown outages by the injection of water into the Steam Generators. Additionally, the motor operator is time stroked open on a quarterly basis (MSV-55, MSV-56). Closure testing is performed by disassemble/inspection on a sampling frequency (see ROJ-11 and ROJ-12). In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ter -year interval identified this justification as CS-213 and CS-214.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 14

COMPONENTS: MSV-130 and MSV-148

FUNCTION:

MSV-130 & MSV-148, Steam Generator 3A & 3B drain isolation valves. These are block valves outside containment to drain the secondary side of the steam generator. These valves remain closed and are not opened during normal plant operation.

CATEGORY: A CLASS: 2

DEFERRED TEST JUSTIFICATION:

Stroking these valves during normal plant operation would drain feedwater from the Once Through Steam Generator and create severe system upset transients. Valve control circuitry is not provided with partial stroke capability.

ALTERNATE TESTING:

These valves shall be full-stroke exercised and timed in the closed direction during cold shutdowns. Fail-safe testing is satisfied by stroke timing since air is vented. Additionally, they are tested in accordance with 10CFR50, Appendix J, Type C leak rate testing at the specified 10CFR50 Option B frequency. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-210.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 15

COMPONENTS: MUV-49

FUNCTION:

This valve is the Letdown cooler isolation block valve outside containment. All Reactor Coolant system letdown passes through this valve. It has a close safety function to automatically isolate containment on Engineered Safeguard or Diverse Containment isolation signal.

CATEGORY: A CLASS: 2

DEFERRED TEST JUSTIFICATION:

Stroking this valve during normal plant operation would temporarily isolate the Reactor Coolant Letdown flowpath. Should this valve fail in the closed position while stroking during normal plant operation, the Reactor Coolant system letdown capabilities would be lost. Reactor Coolant pump seal injection cannot be terminated, therefore the plant would eventually have to be tripped on high pressurizer level. Additionally, this valve is not designed for partial stroking.

ALTERNATE TESTING:

This valve shall be full-stroke exercised and timed in the closed direction during cold shutdowns. Fail-safe test is not required since air supply is from a dedicated accumulator. Leak testing is performed in accordance with 10CFR50 Appendix J Option B frequency requirements. In case of frequent cold shutdowns this valve need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-223.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 16

COMPONENTS: MUV-18 and MUV-27

FUNCTION:

MUV-18, Reactor Coolant Pump Seal Isolation Valve; normally open block valve outside containment for isolation of Reactor Coolant pump seal injection.

MUV-27, Makeup isolation valve to reactor coolant system. Normally open for makeup to reactor coolant system. Auto closes on Engineered Safeguard signal or diverse containment isolation signal.

Both valves must be capable of closure for some accidents.

CATEGORY: B CLASS: 2

DEFERRED TEST JUSTIFICATION:

Stroking of the MUV-18 valve would interrupt seal injection flow to the Reactor Coolant pump seal packages, resulting in potential damage to the seals. During accident conditions, the valve will remain open for seal cooling from the Makeup pumps unless manually isolated. Additionally, the control circuitry of this valve does not permit partial exercising.

Stroking of the MUV-27 valve during normal operation would temporarily isolate normal makeup flowpath to the Reactor Coolant system. Should this valve fail in the closed position during a full-stroke test during normal plant operation, the normal means of pressurizer level control is removed. This would cause a potential unsafe plant condition. Additionally, the control circuitry of this valve does not permit partial exercising.

ALTERNATE TESTING:

These valves will be full-stroke exercised and timed closed during cold shutdowns. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-220 and CS-221.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 17

COMPONENTS: MUV-541

FUNCTION:

Normal operational function is to allow for the addition of boric acid and/or demineralized water to the Reactor Coolant System to maintain proper boron concentration and Reactor Coolant System inventory. Closes when preset batch limit has been reached or rods are inserted a predetermined amount.

CATEGORY: A CLASS: 3

DEFERRED TEST JUSTIFICATION:

Stroking this valve during power operations affects boron concentration and Reactor Coolant System inventory. A failure during stroke timing would result a transient that could challenge safety systems. Quarterly exercising of this valve is therefore considered impractical and does not provide a commensurate increase in the level of plant safety considering the possible adverse affects.

ALTERNATE TESTING:

This valve shall be full-stroke exercised and timed closed during cold shutdowns. Fail-safe testing is satisfied by stroke timing of the valve. In case of frequent cold shutdowns this valve need not be exercised more often than once every three (3) months.

Second ten-year interval did not identify this testing. Valve added by modification.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 18

COMPONENTS: MUV-53 and MUV-257

FUNCTION:

These normally open Makeup recirculation valves close automatically on receipt of Engineered Safeguard signal to ensure maximum flow to the Reactor Coolant System when in the High Pressure Injection mode. Isolates non-essential portion of the Makeup System when in post-Loss of Coolant Accident injection and recirculation phases. The valves provide redundant isolation capability to satisfy single failure. Open function is to protect equipment, but not a safety function required for accident mitigation.

CATEGORY: B CLASS: 2

DEFERRED TEST JUSTIFICATION:

The stroking of these valves during normal plant operation would provide insufficient minimum recirculation flow on the running makeup (high pressure injection) pump. All three pumps have a common minimum recirculation flow line. Should either valve fail in the closed position, damage would result to the running pump. Valve actuating circuitry does not provide for controlled partial stroke capability.

ALTERNATE TESTING:

These valves shall be full-stroke exercised and timed during cold shutdowns. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-224.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 19

COMPONENTS: MUV-253, MUV-258, MUV-259, MUV-260, MUV-261

FUNCTION:

Controlled bleedoff Reactor Building isolation and controlled bleedoff isolation valves from Reactor Coolant pumps 3A1, 3A2, 3B1 and 3B2. These normally open valves have an active safety function to close for containment isolation.

CATEGORY: A CLASS: 2

DEFERRED TEST JUSTIFICATION:

Quarterly stroking of these valves will temporarily isolate Reactor Coolant Pump controlled bleedoff. Should any of these valves fail in the closed position while full stroking during normal plant operation, the design mode of normal controlled bleedoff of one (1) gpm of the Reactor Coolant pump seal would be lost. This could lead to seal degradation and possibly premature Reactor Coolant pump seal failure. Seal replacement is a high dose exposure maintenance item. The control circuitry of these valves does not permit partial exercising.

ALTERNATE TESTING:

These valves shall be full-stroke exercised and timed closed during cold shutdowns. Fail-safe test of MUV-253 is satisfied by stroke timing since air is vented. Leak testing is performed in accordance with 10CFR50 Appendix J Option B frequency requirements. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-226.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 20

COMPONENTS: MUV-567

FUNCTION:

This valve provides Reactor Coolant System letdown line isolation inside containment. Since all Reactor Coolant System letdown passes through this valve, it is required to be open during power operations. Modification 97-06-20-01 installed this valve and it replaces the containment isolation function of valves MUV-40, MUV-41 and MUV-505. Therefore, the valve must close on a Containment Isolation Signal to ensure containment integrity.

CATEGORY: A CLASS: 1

DEFERRED TEST JUSTIFICATION:

Stroking this valve during normal plant operation would temporarily isolate the Reactor Coolant Letdown flowpath. Should this valve fail in the closed position while stroking during normal plant operation, the Reactor Coolant System letdown capabilities would be lost. Since Reactor Coolant pump seal injection cannot be terminated, the plant would eventually have to be tripped on high pressurizer level. This valve's circuitry is not designed to permit a partial stroke. Additionally, stroking this valve could result in thermal shock to the inservice letdown cooler by readmitting hot water to the cooled heat exchanger. Previous plant experience indicates that this thermal cycling can lead to letdown cooler failure and is therefore not conducive to safe plant operation. Quarterly stroking of this valve during normal plant operation is therefore considered impractical.

ALTERNATE TESTING:

This valve shall be full-stroke exercised and timed in the closed direction during cold shutdowns. Leak testing is performed in accordance with 10CFR50 Appendix J Option B frequency requirements. In case of frequent cold shutdowns, this valve need not be exercised more often than once every three (3) months.

Second ten-year interval identified this justification as CS-222 ( for MUV-40, MUV-41, and MUV-505).

## COLD SHUTDOWN JUSTIFICATION - CSJ - 21

COMPONENTS: RCV-157, RCV-158, RCV-159, RCV-160, RCV-163, RCV-164

FUNCTION:

These valves are the Reactor Coolant System vent valves. These valves were installed in response to NUREG 0737 commitments. Their function is to open to vent non-condensable gases from the Reactor Coolant System in the event of an accident. Formation of gas pockets could prevent natural circulation of the coolant when required for Core heat removal. These valves also have a closed function to provide Reactor Coolant System pressure integrity.

CATEGORY: B CLASS: 2

DEFERRED TEST JUSTIFICATION:

These normally closed, fail closed, solenoid operated valves provide Reactor Coolant System pressure boundary during plant operation. Since these valves are designed to vent gases to the containment atmosphere post accident, exercising these valves during normal operation could result in discharge of Reactor Coolant System to the containment atmosphere and increase radioactive contamination levels for the containment and nearby equipment. Additionally, failure of a vent valve to close, if opened, would degrade the double valve isolation requirements for Reactor Coolant System pressure boundary and increase the potential for Reactor Coolant System leakage. Quarterly exercising of these valves is therefore, impractical and does not provide a commensurate increase in the level of plant safety considering the possible adverse affects.

ALTERNATE TESTING:

These valves will be exercised, stroke timed, and fail safe tested in accordance with OM Part 10 requirements during cold shutdown outages. Position indication verification will be performed on at least a refueling outage frequency. For Pressurizer vent valves RCV-159 and RCV-160, the above testing will only be performed during cold shutdown outages of sufficient duration where the Pressurizer steam bubble has been collapsed and a nitrogen bubble established. This may result in postponing testing of RCV-159 and RCV-160 during short duration cold shutdowns. In case of frequent cold shutdowns this valve need not be exercised more often than once every three (3) months.

Second ten-year interval did not identify this justification.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 22

COMPONENTS: SWV-12

FUNCTION:

This valve is required to close on Reactor Building Cooling Actuation "A" or "B" to isolate non-essential loads from the Nuclear Services Closed Cycle Cooling System post accident. The valve is normally open and provides Nuclear Services Closed Cycle Cooling System cooling to non essential loads during power operations.

CATEGORY: B CLASS: 3

DEFERRED TEST JUSTIFICATION:

During normal plant operations, this valve remains in the open position to ensure a continuos supply of cooling water to the Reactor Coolant Pump Seal Return Coolers and other loads. Quarterly stroking of this valve will temporarily isolate cooling water to the Seal Return Coolers thereby preventing adequate cooling of both Makeup pump recirculation and Reactor Coolant Pump seals controlled bleedoff. Should this valve fail in the closed position while full stroking during normal plant operation, a plant shutdown could be required in addition to possible component damage. Quarterly exercising of this valve is therefore, impractical and does not provide a commensurate increase in the level of plant safety considering the possible adverse affects.

ALTERNATE TESTING:

This valve shall be full-stroke exercised, time closed, and fail-safe tested during cold shutdowns. In case of frequent cold shutdowns this valve need not be tested more often than once every three (3) months.

Second ten-year interval identified this justification as CS-280.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 23

COMPONENTS: SWV-47, SWV-48, SWV-49, SWV-50

FUNCTION:

These valves provide containment isolation for Reactor Building Penetrations associated with Nuclear Services Closed Cycle Cooling lines to and from the Reactor Coolant System Letdown Coolers and Reactor Coolant Drain Tank Cooler. These valves are open during normal operation to assure adequate cooling water is provided to components served.

CATEGORY: B CLASS: 2

DEFERRED TEST JUSTIFICATION:

Quarterly stroking of these valves will temporarily isolate cooling water to the operating letdown cooler(s). The stroking of these valves could therefore result in thermal shock to the inservice letdown cooler(s) by readmitting cooling water to the hot heat exchanger. Previous plant experience indicates that this thermal cycling can lead to letdown cooler failure and is therefore not conducive to safe plant operation. Should any of these valves fail in the closed position while full stroking during normal plant operation, transfer of cooling to an alternate letdown cooler may be required and could result in operational burden. Quarterly testing of these valves is therefore considered impractical.

ALTERNATE TESTING:

These valves shall be full-stroke exercised, stroke timed closed, and fail safe tested during cold shutdowns. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months. Although these valves are Containment Isolation Valves for their affected Reactor Building penetrations, the Nuclear Services Closed Cycle Cooling System is considered a closed system outside Containment and per the Crystal River Unit 3 Final Safety Analysis Report, local leakage rate testing of these valves is not required.

Second ten-year interval identified this justification as CS-281.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 24

COMPONENTS: SWV-79, SWV-80, SWV-81, SWV-82, SWV-83, SWV-84, SWV-85, SWV-86

FUNCTION:

These valves are normally open for supplying Nuclear Services Closed Cycle Cooling to the Reactor Coolant Pumps' motor bearings, seals and coolers. These valves have a required function to close on Reactor Building Isolation Actuation "A" or "B", coincident with a low surge tank level, thereby isolating a portion of the Nuclear Services Closed Cycle Cooling System which is not required for the safe shutdown of the Plant or for accident mitigation. These valves serve as containment isolation valves for their affected Reactor Building Penetrations.

CATEGORY: B CLASS: 2

DEFERRED TEST JUSTIFICATION:

During normal plant operations, these valves remain in the open position to ensure a continuous supply of cooling water to the Reactor Coolant Pump motor bearings, air cooler, and seal area coolers. Exercising these valves to the closed position during power operation is not considered practical. Valve failure to re-open during stroke testing could lead to pump damage or require that a Reactor Coolant Pump be tripped, thereby adversely affecting plant operation. There are no provisions for a partial stroke for these valves.

ALTERNATE TESTING:

These valves shall be full-stroke exercised, timed closed, and fail safe tested during cold shutdowns. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months. Although these valves are Containment Isolation Valves for their affected Reactor Building penetrations, the Nuclear Services Closed Cycle Cooling System is considered a closed system outside Containment and per the Crystal River Unit 3 Final Safety Analysis Report, local leakage rate testing of these valves is not required.

Second ten-year interval identified this justification as CS-282.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 25

COMPONENTS: SWV-109 and SWV-110

FUNCTION:

These valves are normally open for supplying Nuclear Services Closed Cycle Cooling to the Control Rod Drive Motor stators. These valves have a required function to close on Reactor Building Isolation Actuation "A" or "B" thereby isolating a portion of the Nuclear Services Closed Cycle Cooling System which is not required for the safe shutdown of the Plant or for accident mitigation. These valves serve as containment isolation valves for their affected Reactor Building Penetrations.

CATEGORY: B CLASS: 2

DEFERRED TEST JUSTIFICATION:

Quarterly stroking of these valves will temporarily isolate Control Rod Drive Motor stator cooling for all Control Rod Drive Motors. Exercising these valves to the closed position during power operation is not considered practical. Valve failure to re-open during stroke testing could lead to Control Rod Drive Motor stator and Nuclear Services Closed Cycle Cooling booster pump damage and require a plant shutdown due to excessive stator temperatures. There are no provisions for a partial stroke for these valves.

ALTERNATE TESTING:

These valves shall be full-stroke exercised, timed closed, and fail safe tested during cold shutdowns. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months. Although these valves are Containment Isolation Valves for their affected Reactor Building penetrations, the Nuclear Services Closed Cycle Cooling System is considered a closed system outside Containment and per the Crystal River Unit 3 Final Safety Analysis Report, local leakage rate testing of these valves is not required.

Second ten-year interval identified this justification as CS-283.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 26

COMPONENTS: DHV-93 and RCV-12

FUNCTION:

These valves are check valves in the Auxiliary Pressurizer Spray line. These valves have a required safety function in the open direction to provide a flowpath from the Decay Heat / Makeup system through the Reactor Coolant System for the mitigation of boron precipitation concerns post accident. These valves have an operational open function to establish Auxiliary Pressurizer Spray and provide Reactor Coolant System pressure control to achieve cold shutdown when normal pressurizer spray (via Reactor Coolant Pumps) is not available. Valve RCV-12 has a closure function for providing Reactor Coolant System pressure boundary. Valve DHV-93 has a closure function to provide containment isolation for Reactor Building Penetration # 329.

CATEGORY: C (RCV-12); AC (DHV-93) CLASS: 1 (RCV-12); 2 (DHV-93)

DEFERRED TEST JUSTIFICATION:

Valve RCV-12 is maintained in the closed position during power operations by Reactor Coolant System pressure on the downstream side of the disk. Since RCV-12 and DHV-93 are not equipped with remote position indication devices or mechanisms for manual stroking, the only practical method of verifying a full or partial stroke of these valves is to establish flow through the valves. This is considered impractical during normal operations since this would require cross connecting the Makeup system and the Decay Heat system and using Makeup seal injection flow for overcoming Reactor Coolant System backpressure on RCV-12. Due to the location of the Decay Heat / Makeup crosstie connection on this line, only single valve isolation would exist between the high pressure Makeup and low pressure Decay Heat systems. Additionally, this would require adjustment of normal seal injection flow and result in the injection of relatively cold water into the pressurizer. This could result in unnecessary thermal stresses on the associated spray nozzles and would affect both pressurizer pressure and level. Quarterly exercising of these valves is therefore, impractical and does not provide a commensurate increase in the level of plant safety considering the possible adverse affects.

ALTERNATE TESTING:

These check valves shall be full-stroke exercised to the open position with flow during cold shutdown outages. In case of frequent cold shutdowns these valves need not be exercised more often than once every three (3) months. Closure and leak testing for DHV-93 will be performed in accordance with the 10CFR50 Appendix J Option B Containment Leakage Rate Testing Program. Due to Inservice Testing closure verification requirements, the frequency for this 10CFR50 Appendix J Option B testing will be each refueling outage.

Second ten-year interval did not identify this justification

## COLD SHUTDOWN JUSTIFICATION - CSJ - 27

COMPONENTS: RCV-53

FUNCTION:

This valve is the normally closed motor operated block valve in the Auxiliary Pressurizer Spray line. This valve has a required safety function in the open direction to provide a flowpath from the Decay Heat / Makeup system through the Reactor Coolant System for the mitigation of boron precipitation concerns post accident. This valve has an operational open function to establish Auxiliary Pressurizer Spray and provide Reactor Coolant System pressure control to achieve cold shutdown when normal pressurizer spray (via Reactor Coolant Pumps) is not available. RCV-53 also has a closure function for providing Reactor Coolant System pressure boundary.

CATEGORY B CLASS: 1

DEFERRED TEST JUSTIFICATION:

Valve RCV-53 is maintained in the closed position during power operations. This valve provides the class break from Class 1 to Class 3 and serves with check valve RCV-12 as the required double isolation valves for Reactor Coolant System pressure boundary integrity. Failure of this valve to close, if opened during testing, would degrade the double valve isolation requirements for Reactor Coolant System pressure boundary (leaving only check valve RCV-12) and would increase the potential for Reactor Coolant System leakage. Quarterly exercising of this valve is therefore, impractical and does not provide a commensurate increase in the level of plant safety considering the possible adverse affects.

ALTERNATE TESTING:

This valve shall be full-stroke exercised and timed during cold shutdowns. In cases of frequent cold shutdowns this valve need not be exercised more often than once every three (3) months.

Second ten-year interval did not identify this justification.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 28

COMPONENTS: MUV-65

FUNCTION:

This normally open makeup storage tank outlet check valve is required to close to isolate the makeup tank from the common suction header. This prevents backflow from the Decay Heat System and Borated Water Storage Tank. It is normally open to provide the suction flowpath for normal makeup, which is not a safety function.

CATEGORY: C CLASS: 2

DEFERRED TEST JUSTIFICATION:

Closing this valve during normal operation would involve providing an alternate suction source for the running makeup pump. This alternate source would be from the Borated Water Storage Tank which would cause Reactor Coolant boron concentration fluctuations. Quarterly exercising is therefore impractical and does not provide a commensurate increase in the level of plant safety considering the possible adverse affects.

ALTERNATE TESTING:

This valve shall be verified closed during cold shutdowns. In case of frequent cold shutdowns this valve need not be exercised more often than once every three (3)months.

Second ten-year interval identified this justification as CS-225.

## COLD SHUTDOWN JUSTIFICATION - CSJ - 29

COMPONENTS: MUV-579

FUNCTION:

This check valve is located in the Instrument Air supply line to safety-related air operated valve MUV-49 accumulator. This valve has a safety function in the open direction to allow recharging of the accumulator subsequent to valve operation. This valve also has a closure safety function to maintain pressure boundary integrity of the accumulator upon loss of the normal actuating air supply.

CATEGORY: C CLASS: 3

DEFERRED TEST JUSTIFICATION:

During normal plant operation, this check valve is normally closed except during the associated power operated valve operation. When the associated process valve is manipulated, accumulator pressure falls below supply header pressure and a pressure differential exists across the accumulator check valve. The check valve will open enough to reestablish the required pressure in the accumulator. During normal plant operation or cold shutdowns, this valve will be partially stroked when the main process valve is tested for Inservice Testing purposes or exercised for system operation.

Exercising this valve to the closed position requires securing the associated instrument air supply header and then venting between the isolation and check valve to perform an accumulator pressure decay test. Exercising to the open position would then require restoring instrument air supply to the accumulator and verifying the accumulator recharges to assure the power operated valve can meet its intended safety function. This test is not practical during normal power operation due to the extended period that motive air would be interrupted to the safety related power operated valves thereby rendering them inoperable.

ALTERNATE TESTING:

This valve will be exercised to the closed position on a cold shutdown frequency by performance of an accumulator pressure decay test while the instrument air header is isolated and vented. Exercising open will be performed by restoring instrument air to the accumulator and verifying it recharges to ensure the associated power operated valve can fulfill its required safety function.

Second ten-year interval did not identify this justification (added by modification).

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## REFUEL OUTAGE JUSTIFICATION - ROJ - 01

COMPONENTS: BSV-26 and BSV-27

FUNCTION:

These are normally closed check valves that have an open safety function to provide flow from Reactor Building Spray Pumps to the Reactor Building Spray nozzles during the post-Loss of Coolant Accident injection and recirculation modes for Reactor Building Cooling. These check valves also have a closed safety function to provide containment isolation in the event that the Building Spray system is not in operation, however, per the Crystal River Unit 3 Final Safety Analysis Report and Containment Leakage Rate Testing Program, local leakage rate testing is not required for these valves.

CATEGORY: C CLASS: 2

DEFERRED TEST JUSTIFICATION:

These check valves cannot be partial or full-stroke exercised on a quarterly or cold shutdown basis. Since these valves are located inside the Reactor Building and alternate flow paths for flow testing or adequate spray header isolation capability does not exist, the stroke of these valves, either full or partial, would require initiation of the Reactor Building spray system and would entail spraying the Reactor Building with potentially radioactive-contaminated borated water. This obviously is not desirable from an equipment protection and reliability perspective. There is no downstream isolation to allow pressurization to perform a Differential Pressure closure test. Provisions for exercising the valve obturator with a mechanical exerciser do not exist and these valves are not equipped with position indication devices.

ALTERNATE TESTING:

Where system design or operation prevents full-stroke exercising, Nuclear Regulatory Commission Generic Letter 89-04 allows the valve to be disassembled and manually exercised on a refueling outage frequency as an alternative. Disassembly and inspection of check valves is also provided as an alternate to exercising requirements as specified in paragraph 4.3.2.4(c) of OM Part 10. Crystal River Unit 3 will employ the sample disassembly and inspection provision as allowed by Generic Letter 89-04 for BSV-26 and BSV-27.

Position 2 of Generic Letter 89-04 requires that check valves be partial stroke tested upon re-assembly if practical. For reasons as stated previously, partial stroke testing of these check valves after re-assembly is considered not to be practical. Additionally, at a frequency of every ten-years, Surveillance Procedure SP-183 performs an air test of the Building Spray ring nozzles which will partially stroke these valves. This surveillance is a major testing evolution and is not practical as a partial stroke test for each disassembly and inspection. Containment Type A Integrated Leak Rate Test also verifies closure function of these valves at frequency of once every 10 years.

Second ten-year interval identified this alternate testing as Relief Request V-030 (Open function only)

## REFUEL OUTAGE JUSTIFICATION - ROJ - 02

COMPONENTS: CFV-1 and CFV-3

FUNCTION:

These check valves are in the flow path from the Core Flood tanks to the Reactor Coolant System. They provide isolation from the high pressure Reactor Coolant System to the low pressure Core Flood Tanks and Decay Heat Removal System. They are required to open to allow the core flood tanks to discharge to the Reactor Coolant System or when initiating Decay Heat System flow to the Reactor Coolant System.

CATEGORY: AC CLASS: 1

DEFERRED TEST JUSTIFICATION:

Full or partial stroke exercising of these valves during operation is not possible because the operating pressure of the Reactor Coolant System would not allow stroking of these valves either by use of the Core Flood Tanks or the Decay Heat Removal Pumps. The pressure available from these two sources is not capable of overcoming Reactor Coolant System pressure. Also, any flow from these sources would affect Reactor Coolant System boron concentration and reactivity.

Exercising these valves to the full open position during cold shutdown is not always possible because Reactor Coolant System Pressure may still be at a level that prevents exercising the valves. Additionally, the Core Flood Tanks are required to be discharged to the Reactor Coolant System to achieve the flow rates for verifying these valves full open position and sufficient differential pressure must be established between the Reactor Coolant System and the Core Flood Tanks to achieve the required flow rates. There is also limited pressurizer volume for collecting Core Flood Tank discharge into the Reactor Coolant System which would restrict test performance. During short cold shutdown outages, the Reactor Coolant System temperature may be high and dumping relatively cold Core Flood Tank contents could thermally shock the system. Because of the pressure differential requirements, limited Pressurizer volume available for discharging the Core Flood Tank contents into the Reactor Coolant System, and the attendant Low Temperature Overpressure Protections and thermal shock concerns, full-stroke exercising these valves at cold shutdown conditions is not practicable.

ALTERNATE TESTING:

A partial stroke for CFV-1 and CFV-3 in the Open direction will be performed during cold shutdown outages. CFV-1 and CFV-3 shall also be leak rate tested per Improved Technical Specification 3.4.13 surveillance requirements. This Technical Specification frequency is prior to entering mode 2 whenever in mode 5 for 7 days or more; if not performed in the previous 9 months. This Pressure Isolation Valve leak rate test satisfies closure test requirements.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 02 (CONTINUED)

During refueling outages when the Reactor Vessel Head is removed and flow can be established to the Fuel Transfer Canal, CFV-1 and CFV-3 will be tested by establishing substantial flow through the valves and use of non-intrusive techniques to verify full open stroke. As discussed in NUREG-1482, Section 4.1.2, non-intrusive techniques are considered acceptable for verifying check valve's capability to open. As a backup to the non-intrusive techniques, data will be collected during the period of substantial flow through the valves to calculate the Core Flood line to the Reactor Coolant System flow coefficient. This calculated value will be compared to the design analysis required flow coefficient to verify CFV-1 and CFV-3 are capable of passing required accident flow rates. NUREG-1482, Section 4.1.2 also indicates that evaluation of the flow coefficient is an acceptable method of verifying check valve full open stroke.

Second ten-year interval identified this justification as ROJ-96-001-CF.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 03

COMPONENTS: CFV-17 and CFV-20

FUNCTION:

These check valves have an operational function to admit nitrogen to Core Flood Tanks to maintain required pressure during normal plant operation. These valves have a required safety function to serve as Containment Isolation Valves for their respective Reactor Building penetrations and to maintain pressure in the Core Flood Tank in the event of an upstream component failure.

CATEGORY: AC CLASS: 2

DEFERRED TEST JUSTIFICATION:

Exercise testing to the closed position for these valves during operation is not practical because there are no system provisions for establishing reversed flow. The only method of verifying closure during normal plant operation would be to perform a leakage test using Core Flood Tank pressure as the test source. These Containment Isolation Valves are located inside containment and do not have position indication devices. To perform this test would require breaching the outside containment isolation barrier for these penetrations and setting up test equipment. If CFV-17 or CFV-20 leaked significantly during the test, it could result in Core Flood Tank pressure dropping below Technical Specification requirements thus seriously degrading a core protection safety system.

To perform closure testing during cold shutdown outages would also involve setting up test equipment and providing an alternate pressure source in the event the Core Flood Tanks were depressurized. The Nuclear Regulatory Commission has determined that the need to setup test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage. NUREG 1482, Section 4.1.4 states that if no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak rate testing, such as local leak rate testing in accord with Appendix J to 10CFR50, at each reactor refueling outage.

ALTERNATE TESTING:

These valves are subject to the 10CFR50 Appendix J-Option B, Type C leak rate test program. Due to Inservice Testing frequency requirements, these valves will be 10CFR50 Appendix J-Option B leak tested during each refueling outage, which will verify proper valve closure.

Second ten-year interval identified this alternate testing as Relief Request V-160.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 04

COMPONENTS: CHV-95

FUNCTION:

This check valve separates safety-related Chilled Water System from non-safety-related 10CFR50 Appendix R Chilled Water System and maintains safety-related inventory in the event of a failure in the 10CFR50 Appendix R System.

CATEGORY: C CLASS: 3

DEFERRED TEST JUSTIFICATION:

Closure verification is not practical during normal operation or cold shutdown, as system provisions are not available for performing a reverse flow test. CHV-95 design does not incorporate position indication devices. The valve is not equipped with a mechanical exerciser for verifying obturator movement. OM-Part 10, Paragraph 4.3.2.4 (c) states that disassembly every refueling may be used to verify the operability of check valves as an alternative to exercising requirements using changes in flow, pressure, temperature, level, or other positive means. This provision of OM Part 10 is being implemented for testing of CHV-95.

ALTERNATE TESTING:

In accordance with Paragraph 4.3.2.4 (c) of OM Part 10, this valve will be disassembled and inspected each refueling outage to verify proper closure capability. The inspection shall assure that the valve disk has freedom of movement and is capable of full-stroke. Additionally, the general condition of the valve internals shall be checked for structural degradation including the presence of loose parts, debris and abnormal or excessive corrosion products, wear and erosion. Following re-assembly, the valve will be partial stroke tested with flow to verify proper operation.

Second ten-year interval identified this alternate testing as Relief Request V-080.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 05

COMPONENTS: CFV-2 and CFV-4

FUNCTION:

These check valves are in the flow path from the Core Flood tanks to the Reactor Coolant System. They are required to open to admit water from the Core Flood Tanks to the Reactor Coolant System in order to provide Core protection in the event of a sudden depressurization of the Reactor Coolant System below 600 psig. These valves have a function to close to prevent diversion of Decay Heat System flow required for post accident low pressure injection and for normal cool down.

CATEGORY: C CLASS: 1

DEFERRED TEST JUSTIFICATION:

Full or partial stroke exercising of these valves during operation is not possible because the operating pressure of the Reactor Coolant System would not allow stroking of these valves by use of the Core Flood Tanks. The pressure available from the Core Flood Tanks (approximately 600 psig) is not capable of overcoming Reactor Coolant System pressure (approximately 2150 psig). Also, any flow from this source would affect Reactor Coolant System boron concentration and reactivity.

Exercising these valves to the full open position during cold shutdown is not always possible because Reactor Coolant System Pressure may still be at a level that prevents exercising the valves. Additionally, the Core Flood Tanks are required to be discharged to the Reactor Coolant System to achieve the flow rates for verifying these valves full open position and sufficient differential pressure must be established between the Reactor Coolant System and the Core Flood Tanks to achieve the required flow rates. There is also limited pressurizer volume for collecting Core Flood Tank discharge into the Reactor Coolant System which would restrict test performance. During short cold shutdown outages, the Reactor Coolant System temperature may be high and dumping relatively cold Core Flood Tank contents could thermally shock the system. Because of the pressure differential requirements, limited Pressurizer volume available for discharging the Core Flood Tank contents into the Reactor Coolant System, and the attendant Low Temperature Overpressure Protection System and thermal shock concerns, full-stroke exercising these valves at cold shutdown conditions is not practicable.

Performing individual closure tests of CFV-2 and CFV-4 would require depressurizing the Core Flood Tanks and establishing a flow path to monitor for level changes in the tanks. During limited duration cold shutdown outages, the required conditions may not be available for performing this testing.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 05 (CONTINUED)

ALTERNATE TESTING:

CFV-2 and CFV-4 are partial stroke exercised in conjunction with series check valves CFV-1 and CFV-3 during cold shutdown outages. This test monitors changes in Core Flood Tank Levels to verify the check valve pair opens and closes.

During refueling outages when the Reactor Vessel Head is removed and flow can be established to the Fuel Transfer Canal, CFV-2 and CFV-4 will be tested by establishing substantial flow through the valves and use of non-intrusive techniques to verify full open stroke. Closure of these valves is also verified during this testing by non-intrusive techniques when flow is terminated. As discussed in NUREG-1482, Section 4.1.2, non-intrusive techniques are considered acceptable for verifying check valve's capability to close or open. As a backup to the non-intrusive techniques, data will be collected during the period of substantial flow through the valves to calculate the Core Flood line to the Reactor Coolant System flow coefficient. This calculated value will be compared to the design analysis required flow coefficient to verify CFV-2 and CFV-4 are capable of passing required accident flow rates. NUREG-1482, Section 4.1.2 also indicates that evaluation of the flow coefficient is an acceptable method of verifying check valve full open stroke.
As a backup to the closure verification of CFV-2 and CFV-4, test steps are provided to establish Decay heat System flow to the Reactor Coolant System and monitor Core Flood Tank levels for indication of bypass flow through CFV-2 or CFV-4.

Second ten-year interval identified this justification as ROJ-96-001-CF.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 06

COMPONENTS: DHV-33 and DHV-36

FUNCTION:

These check valves are required to open to provide suction from the Borated Water Storage Tank to the Decay Heat Pumps and Reactor Building Spray Pumps during the post-Loss of Coolant Accident injection phase. The valves have a closure function to prevent backflow of Reactor Coolant into the Borated Water Storage Tank during normal cooldown and to prevent backflow from the Reactor Building Sump when in the recirculation mode following a Loss of Coolant Accident.

CATEGORY: C CLASS: 2

DEFERRED TEST JUSTIFICATION:

Closure verification is not practical during normal operation or cold shutdown, as system provisions are not available for performing the required reverse flow testing. These valves are not equipped with position indicating devices or provisions for mechanical exercising. Therefore, the only practical closure test would be a leakage type test. Normal system flow paths or pressurization sources are not available for providing the requisite reverse flow. In addition, attempting to test these valves during normal operation using a temporary pressurization source is not practical since the affected Building Spray and Decay Heat trains would be placed in an inoperable status for an extended duration. During cold shutdown outages or refueling outages, the lines required for testing these valves may be in service for providing core decay heat removal and the valve would not be available for testing.

These check valves are full-stroke tested to the open position quarterly by aligning required accident flow rates through the valves.

ALTERNATE TESTING:

Where system design or operation prevents required check valve exercising, Nuclear Regulatory Commission Generic Letter 89-04 allows the valve to be disassembled and manually exercised on a refueling outage frequency as an alternative. Disassembly and inspection of check valves is also provided as an alternate to exercising requirements as specified in paragraph 4.3.2.4(c) of OM Part 10. Due to limited refueling outage schedule windows for performing these inspections (when the affected Decay Heat train can be taken out of service), Crystal River Unit 3 will employ the sample disassembly and inspection provision as allowed by Generic Letter 89-04 for DHV-33 and DHV-36. Following re-assembly, the valve will be stroke tested to verify proper operation.

Second ten-year interval did not identify this justification.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 07

COMPONENTS: DWV-162

FUNCTION:

This check valve has an operational function to admit demineralized water to the Reactor Building during normal and shutdown operations. During normal plant operation, this valve is partially open to allow a small quantity of demineralized water to flow to the Reactor Coolant pumps standpipes for flushing. This valve has a required safety function to serve as a Containment Isolation Valve for Reactor Building Penetration 117.

CATEGORY: AC CLASS: 2

DEFERRED TEST JUSTIFICATION:

Exercise testing to the closed position for this valve during operation is not practical because there are no system provisions for establishing reversed flow. This Containment Isolation Valve is located inside containment and does not have position indication devices. The only method of verifying closure during normal plant operation would be to perform a leakage test and would involve setting up test equipment and use of a temporary pressurization source. Personnel would also be required to enter the Containment to perform this testing.

To perform closure testing during cold shutdown outages would also involve setting up test equipment and providing an alternate pressurization source. The Nuclear Regulatory Commission has determined that the need to setup test equipment is adequate justification to defer backflow testing of check valves until a refueling outage. NUREG 1482, Section 4.1.4 states that if no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak rate testing, such as local leak rate testing in accord with Appendix J to 10 CFR 50, at each reactor refueling outage.

ALTERNATE TESTING:

This valve is subject to the 10CFR50 Appendix J-Option B , Type C leak rate test program. Due to Inservice Testing frequency requirements, this valve will be 10CFR50 Appendix J-Option B leak tested during each refueling outage, which will verify proper valve closure.

Second ten-year interval identified this alternate testing as Relief Request V-150.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 08

COMPONENTS: FWV-45 and FWV-46

FUNCTION:

These check valves have an operational function to open to provide feedwater to the Steam Generators for process steam production. The required safety function for these valves is to close, if required, to provide containment isolation for their associated penetrations. Since the inboard containment isolation function is provided by a qualified closed loop inside containment, the Crystal River Unit 3 Final Safety Analysis Report and Containment Leakage Rate Testing Program do not require that 10CFR50 Appendix J local leakage rate testing be performed for these valves.

CATEGORY: C CLASS: 2

DEFERRED TEST JUSTIFICATION:

Closure verification is not practical for these valves during normal operation or cold shutdowns, as normal system flow paths are not available for performing the required reverse flow testing. These valves are not equipped with position indicating devices or provisions for mechanical exercising. Therefore, the only practical closure test would be a leakage type test. This type of test is not possible during normal operations since this type of test would result in loss of feedwater supply to a steam generator and present serious personnel and plant safety concerns. Additionally, adequate steam generator isolation provisions are not incorporated in the system design to provide required leakage test boundary without interfering with secondary side steam generator activities during cold shutdown and refueling outages.

ALTERNATE TESTING:

Where system design or operation prevents required check valve exercising, Nuclear Regulatory Commission Generic Letter 89-04 allows the valve to be disassembled and manually exercised on a refueling outage frequency as an alternative. Disassembly and inspection of check valves is also provided as an alternate to exercising requirements as specified in paragraph 4.3.2.4(c) of OM Part 10. Due to limited refueling outage schedule windows for performing these inspections, Crystal River Unit 3 will employ the sample disassembly and inspection provision as allowed by Generic Letter 89-04 for FWV-45 and FWV-46. Following re-assembly, the valve will be stroked to verify proper operation.

Second ten-year interval did not identify this justification.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 09

COMPONENTS: IAV-569, IAV-570, IAV-571, IAV-572, IAV-573, and IAV-574

FUNCTION:

These check valves are located in the Instrument Air supply lines to safety-related air operated valve accumulators. These valves have a safety function in the open direction to allow recharging of the accumulator subsequent to valve operation. These valves also have a closure safety function to maintain pressure boundary integrity of the accumulator upon loss of the normal actuating air supply.

CATEGORY: C CLASS: 3

DEFERRED TEST JUSTIFICATION:

During normal plant operation, these check valves are normally closed except during the associated power operated valve operation. When the associated process valve is manipulated, accumulator pressure falls below supply header pressure and a pressure differential exists across the accumulator check valve. The check valve will open enough to reestablish the required pressure in the accumulator. During normal plant operation or cold shutdowns, these valves will be partially stroked when the main process valve is tested for Inservice Testing purposes or exercised for system operation.

Exercising these valves to the closed position requires securing the associated instrument air supply header and then venting between the isolation and check valve to perform an accumulator pressure decay test. Exercising these check valves to the open position would then require restoring instrument air supply to the accumulator and verifying the accumulator recharges to assure the power operated valve can meet its intended safety function. This test is not practical during normal power operation due to the extended period that motive air would be interrupted to the safety related power operated valves thereby rendering them inoperable. This test is also not considered practical during cold shutdown outages due to the abnormal instrument air header alignments and potential plant instrument air and process system interference during shutdown operations which could have an adverse affect on the restart schedule.

ALTERNATE TESTING:

These valves will be exercised to the closed position on a refueling outage frequency by performance of an accumulator pressure decay test while the instrument air header is isolated and vented. Exercising open will be performed by restoring instrument air to the accumulator and verifying it recharges to ensure the associated power operated valve can fulfill its required safety function.

Second ten-year interval did not identify this justification.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 10

COMPONENTS: MSV-9, MSV-10, MSV-11 and MSV-14

FUNCTION:

These valves are Turbine Bypass Valves and provide a flow path for diverting Main Steam from the turbine to the condenser. The Steam Generator Tube Rupture analysis takes credit for Turbine Bypass Valves operating to help cool the Reactor Coolant System to a pressure below that of the degraded Once Through Steam Generator and to divert a portion of the leaked primary coolant to the condenser, reducing offsite doses.

CATEGORY: AUGMENTED CLASS: 4

DEFERRED TEST JUSTIFICATION:

These valves are non-Code Class 1, 2, or 3 valves that are included in the Inservice Testing program as an augmented test requirement. These valves cannot be exercised during normal operation since a plant transient would result from diversion of main process steam from the turbine generator. It is also not practical to exercise these valves during cold shutdowns since test equipment must be installed for stroke timing these valves. The Nuclear Regulatory Commission has determined that the need to setup test equipment is adequate justification to defer testing of a valve until a refueling outage.

ALTERNATE TESTING:

These valves will be stroke timed to the open and closed positions and fail safe tested on a refueling outage frequency. This testing is being performed as an augmented non-Code requirement.

Second ten-year interval did not identify this justification.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 11

COMPONENTS: MSV-55 and MSV-56

FUNCTION:

These valves are motor operated stop check valves that have an open safety function to provide steam to the turbine of Emergency Feedwater Pump EFP-2 to ensure it is capable of performing its required function. The motor operators for these valves receive an open demand signal from Emergency Feedwater Initiation and Control System. These valves also have a safety function in the closed direction to prevent backflow resulting in loss of driving steam to the turbine of EFP-2 in the event of a main steam line break. This closure function is accomplished by the simple check function since the valve motor operators are normally in the open position. The electric motor operators provide the operational capability of isolation of the respective steam line, when necessary.

CATEGORY: C CLASS: 2

DEFERRED TEST JUSTIFICATION:

These valves cannot be stroked closed with flow during normal power operation because the operating pressure of the Main Steam lines is such that required differential pressures are not normally available. Creating the required conditions for verifying closure could cause a plant transient or result in testing methods involving use of live steam which is unacceptable from a personnel safety perspective. Closure testing with flow or other similar methods during cold shutdowns is also impractical since adequate instrumentation, flow path or flow source do not exist with current plant configuration.

ALTERNATE TESTING:

These valves are presently part-stroke exercised in the open direction quarterly during plant operation, and full-stroke exercised in the open direction during cold shutdown outages by the injection of water into the Steam Generators. Additionally, the motor operator is time stroked open on a quarterly basis . Closure verification of these valves will be by disassembly and inspection during refueling outages. Due to limited refueling outage schedule windows for performing these inspections, required system alignments and personnel requirements, Crystal River Unit 3 will employ the sample disassembly and inspection provision as allowed by Generic Letter 89-04 for MSV-55 and MSV-56. Following re-assembly, the valve will be stroke tested to verify proper operation. It should be noted that these valves are stop-check valves and are exercised closed on a quarterly basis using the motor operator in preparation for stroke timing in the open direction. This would provide indication of valve sticking or binding during periods between disassembly.

Second ten-year interval identified this alternate testing as Relief Request V-220.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 12

COMPONENTS: MSV-186 and MSV-187

FUNCTION:

These are check valves that have an open safety function to provide steam to the turbine of Emergency Feedwater Pump EFP-2 to ensure it is capable of performing its required function. These valves also have a safety function in the closed direction to prevent backflow resulting in loss of driving steam to the turbine of EFP-2 in the event of a main steam line break. For the closure function, these check valves provide redundancy to stop check valves MSV-55 and MSV-56.

CATEGORY: C CLASS: 3

DEFERRED TEST JUSTIFICATION:

These valves cannot be stroked closed with flow during normal power operation because the operating pressure of the Main Steam lines is such that required differential pressures are not normally available. Creating the required conditions for verifying closure could cause a plant transient or result in testing methods involving use of live steam which is unacceptable from a personnel safety perspective. These valves are redundant check valves with MSV-55 and MSV-56 and test connections are not provided between the valve pairs for individual testing. Closure testing with flow or other similar method during cold shutdowns is also impractical since adequate instrumentation, flow path or flow source do not exist with current plant configuration.

ALTERNATE TESTING:

These valves are presently part-stroke exercised in the open direction quarterly during plant operation, and full-stroke exercised in the open direction during cold shutdown outages by the injection of water into the Steam Generators. Closure verification of these valves will be by disassembly and inspection during refueling outages. Due to limited refueling outage schedule windows for performing these inspections, required system alignments and personnel requirements, Crystal River Unit 3 will employ the sample disassembly and inspection provision as allowed by Generic Letter 89-04 for MSV-186 and MSV-187. Following re-assembly, the valve will be stroke tested to verify proper operation

SECOND TEN-YEAR INTERVAL IDENTIFIED THIS ALTERNATE TESTING AS RELIEF REQUEST V-221.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 13

COMPONENTS: MUV-1, MUV-2, MUV-6, MUV-7, MUV-10 , and MUV-11

FUNCTION:

These valves are the Makeup pump discharge check valves. MUV-1, MUV-7, and MUV-11 are simple swing check valves and are paired with valves MUV-2, MUV-6, and MUV-10 which are stop check valves. The stop checks are normally throttled open and therefore also function as swing check valves. These valves have a required safety function in the open position to permit High Pressure Injection flow for post-accident injection and recirculation phases. The valves also have a safety function in the closed position to prevent backflow through the associated Makeup Pump if it is idle or in the event of component failure during post accident injection or recirculation.

CATEGORY: C CLASS: 2

DEFERRED TEST JUSTIFICATION:

These valves are located on the discharge of the makeup pumps. During normal operation flow through these valves is limited by Reactor Coolant System letdown capacity, and seal injection flow requirements. The combination of normal makeup flow rate and seal injection flow rate is approximately 80 gpm. To verify a full-stroke of these valves in the open direction would require that design basis accident required flow rates be established. This flow rate (approximately 500 gpm) is in excess of what can be achieved with required system configuration during normal plant operations.

These valves cannot be full-stroke tested during cold shutdowns because adequate flow paths for achieving the required flow do not exist. Low temperature over-pressure concerns prohibit establishing the required flow rates to the Reactor Coolant System with the Reactor Vessel head installed during cold shutdown conditions.

ALTERNATE TESTING:

Partial stroke testing in the open direction will be performed for these valves on a quarterly basis during the associated Makeup Pump surveillance. Closure testing will also be performed quarterly for the stop check valves, MUV-2, 6, and 10.

These valves will be full-stroked to the open position during refueling outages by establishing design basis accident flow rates through the valves. This testing will be performed when the RV head is removed and the Fuel Transfer Canal is available to accommodate the flow to the Reactor Coolant System.

SECOND TEN-YEAR INTERVAL IDENTIFIED THIS ALTERNATE TESTING AS RELIEF REQUESTS V-191 AND V-192.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 14

COMPONENTS: MUV-36, MUV-37, MUV-42, MUV-43, MUV-160 , MUV-161, MUV-163, and MUV-164.

FUNCTION:

These valves are in the Makeup System High Pressure Injection lines to the Reactor Coolant System. These valves are installed in pairs and are required to open to permit High Pressure Injection flow for post-accident injection and recirculation phases. Valves MUV-160, 161, 163 and 164 have safety functions in the closed position to provide containment isolation in the event high pressure injection flow is terminated through the valves associated penetrations. however, per the Crystal River Unit 3 Containment Leakage Rate Testing Program, local leakage rate testing is not required. These valves are reactor coolant system boundary valves and must close in the event of a line break. Valve MUV-43 also has a closed safety function for mitigation of High Energy Line Break concerns with the normal makeup line.

CATEGORY: C CLASS: 1

DEFERRED TEST JUSTIFICATION:

These valves are check valves which are located in the high pressure injection lines. With the exception of MUV-43 and MUV-161, which are part of the normal makeup flow path, these valves cannot be exercised to the open position during plant operation without causing thermal cycling at the high pressure injection nozzles. Valves MUV-43 and MUV-161 are partial stroke exercised during normal operation by virtue of the fact that they comprise part of the normal makeup path and must respond to makeup flow conditions.

These valves cannot be full-stroke tested during cold shutdowns because adequate flow paths for achieving the required flow do not exist. Low temperature over-pressure concerns prohibit establishing the required flow rates to the Reactor Coolant System with the Reactor Vessel head installed during cold shutdown conditions.

ALTERNATE TESTING:

Partial stroke testing in the open direction of MUV-43 and MUV-161 will be performed quarterly during the associated Makeup Pump surveillance. Closure testing will also be performed on a refueling outage basis for valves MUV-43, MUV-160, MUV-161, MUV-163, and MUV-164 (See ROJ-16 and ROJ-17).

These valves will be full-stroked to the open position during refueling outages by establishing design basis accident flow rate through the valves. This testing will be performed when the Reactor Vessel head is removed and the Fuel Transfer Canal is available to accommodate the flow to the Reactor Coolant System.

Second ten-year interval identified this alternate testing as Relief Request V-190.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 15

COMPONENTS: MUV-60 and MUV-72

FUNCTION:

These valves are the Borated Water Storage Tank to Makeup Pumps Suction Header check valves. These valves are required to open to provide a suction source from the Borated Water Storage Tank to the Makeup Pumps and are required to close to prevent backflow to the Borated Water Storage Tank when High Pressure Injection / Low Pressure Injection are in the "piggyback" mode of operation.

CATEGORY: C CLASS: 2

DEFERRED TEST JUSTIFICATION:

These valves cannot be partially stroked during normal plant operation since this would require injection of water from the Borated Water Storage Tank into the reactor vessel which could upset Reactor Coolant Chemistry. These valves cannot be partially or full-stroke tested during cold shutdowns because adequate flow paths for achieving the required flows do not exist. Low temperature over-pressure concerns place restrictions on operation of the Makeup Pumps and prohibit establishing Makeup Pump flow to the Reactor Coolant System with the Reactor Vessel head installed during cold shutdown conditions.

The design of the plant prohibits the closure verification of these valves during any mode of operation since adequate flow paths or test instrumentation and connections do not exist.

ALTERNATE TESTING:

Closure verification of these valves will be by disassembly and inspection during refueling outages. Where system design or operation prevents required check valve exercising, Nuclear Regulatory Commission Generic Letter 89-04 allows the valve to be disassembled and manually exercised on a refueling outage frequency as an alternative. Due to limited refueling outage schedule windows for performing these inspections, required system alignments and personnel requirements, Crystal River Unit 3 will employ the sample disassembly and inspection provision as allowed by Generic Letter 89-04 for MUV-60 and MUV-72. Following re-assembly, the valve will be stroke tested to verify proper operation.

Additionally, on a refueling outage basis, these valves will be full-stroked to the open position by establishing design basis accident flow rate through the valves. This testing will be performed when the Reactor Vessel head is removed and the Fuel Transfer Canal is available to accommodate the flow to the Reactor Coolant System.

Second ten-year interval identified this alternate testing as Relief Request V-200.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 16

COMPONENTS: MUV-43

FUNCTION:

This valve is in the Makeup System High Pressure Injection line to the Reactor Coolant System that serves as the normal makeup path. This valve is required to open to permit High Pressure Injection flow for post-accident injection and recirculation phases. Valve MUV-43 also has a closed safety function for mitigation of High Energy Line Break concerns with the normal makeup line.

CATEGORY: C CLASS: 1

DEFERRED TEST JUSTIFICATION:

This valve is a check valve which is located in the high pressure injection line serving as the normal Reactor Coolant System makeup flow path during plant operation. MUV-43 is partial stroke exercised during normal operation since it comprises part of the normal makeup path and must respond to makeup flow conditions.

This check valve serves as part of the Reactor Coolant System boundary. This valve cannot be closure tested during normal operation since the only method for verifying closure is the use of Reactor Coolant System pressure to establish a pressure differential across the valve. Since the line is required to be in operation for normal makeup, test conditions cannot be established during power operations. The testing of this valve during cold shutdown outages is not practical. This test activity would be time consuming and would involve the installation of test equipment inside containment for performing the test. The Nuclear Regulatory Commission has determined that the need to setup test equipment is adequate justification to defer backflow testing of a check valves until a refueling outage.

ALTERNATE TESTING:

Partial stroke testing in the open direction of MUV-43 will be performed quarterly during the associated Makeup Pump surveillance. Exercise testing to the full open position will also be performed on a refueling outage basis. (See ROJ-14).

This valve will be closure tested during refueling outages. Reactor Coolant System pressure will be used to establish the required pressure differential across the valve and test equipment will be installed inside containment for verifying closure.

SECOND TEN-YEAR INTERVAL DID NOT IDENTIFY THIS TESTING.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 17

COMPONENTS: MUV-160 , MUV-161, MUV-163, and MUV-164.

FUNCTION:

These valves are in the Makeup System High Pressure Injection lines to the Reactor Coolant System. These valves are required to open to permit High Pressure Injection flow for post-accident injection and recirculation phases. Valves MUV-160, 161, 163 and 164 also have safety functions in the closed position to provide containment isolation in the event High Pressure Injection flow is terminated through the valves' associated penetrations, however, per the Crystal River Unit 3 Containment Leakage Rate Testing Program, local leakage rate testing is not required. These valves are reactor coolant system boundary valves and must close in the event of a line break.

CATEGORY: C CLASS: 1

DEFERRED TEST JUSTIFICATION:

These valves are check valves which are located in the high pressure injection lines inside containment. It is not practical to perform closure testing of these valves during normal plant operations or during cold shutdown outages. Due to system configuration, the only practical method of verifying closure of these valves is by use of an external source to pressurize between check valve pairs located in each High Pressure Injection line. Installation of test equipment, both inside and outside containment, would be required for measuring differential pressures across the valves. The Nuclear Regulatory Commission has determined that the need to setup test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage.

ALTERNATE TESTING:

Partial stroke testing in the open direction MUV-161 will be performed quarterly during Makeup Pump surveillances . Exercise testing to the full open position will also be performed for these valves on a refueling outage basis. (See ROJ- 14).

These valves will be closure tested during refueling outages. An external source will be used to establish the required pressure differential across the valves and test equipment will be installed inside and outside containment for verifying closure.

Second ten-year interval did not identify this testing.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 18

COMPONENTS: MUV-153, MUV-265, MUV-267

FUNCTION:

These check valves are in the Makeup Pump minimum flow recirculation lines. These valves have an operational equipment protection function in the open direction for providing a path to ensure minimum required flow for the associated Makeup Pump. These valves have a closed safety function to prevent bypass flow through an idle pump or failed line during High Pressure Injection and recirculation phases.

CATEGORY: C CLASS: 2

DEFERRED TEST JUSTIFICATION:

The three Makeup Pumps discharge into a common discharge header and also share a common recirculation header. During normal operations, one Makeup Pump is required to be in operation for normal Reactor Coolant System makeup and Reactor Coolant Pump seal injection supply. Since this normally operating pump discharges into a common header coupled with the lack of installed system instrumentation, isolation provisions, or test connections for measuring flow in the recirculation line or differential pressure across the individual pump recirculation line check valves, closure testing of these valves is not practical during normal operations. The relatively low flow rates established during normal operations also are not conducive to using the operating pump's performance curve for evaluating bypass flow. The same system configuration would make verifying closure of these valves impractical during cold shutdowns since Makeup Pump flow would be limited due to Low Temperature Overpressure Protection System concerns. To evaluate recirculation flow changes or establish differential pressure across the check valves for verifying closure during cold shutdowns would require the installation of temporary test equipment and system alignment changes that could impact startup. The Nuclear Regulatory Commission has determined that the need to setup test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 18 (CONTINUED)

ALTERNATE TESTING:

These valves will be closure tested during refueling outages. The testing method will use the Makeup Pump curves and data from the full flow testing of the makeup pumps to evaluate bypass flow through these check valves. The system alignment will be such that these check valves will be in the discharge flow path of the operating Makeup Pump, the common recirculation line isolation valves will be closed, and flow to the Reactor Coolant System and pump differential pressures measured. The Makeup Pump curve in the narrow region affected by the performance of this test (approximately 500 gpm) is very sensitive to flow changes. Any significant flow through these valves would be readily discernible. This method essentially duplicates the conditions for which these valves must close during accident conditions and is considered an adequate indicator of their performance.

Second ten-year interval did not identify this testing.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 19

COMPONENTS: MUV-162

FUNCTION:

This valve is in the Makeup System seal injection line to the Reactor Coolant Pumps. This valve has an operational function in the open direction to provide water for sealing and lubrication of the Reactor Coolant Pump seals. This valve has a safety function in the closed position to provide containment isolation in the event seal injection flow is terminated through the valve's associated penetration, however, per the Crystal River Unit 3 Final Safety Analysis Report and Containment Leakage Rate Testing Program, local leakage rate testing is not required.

CATEGORY: C CLASS: 2

DEFERRED TEST JUSTIFICATION:

This check valve is located in the Reactor Coolant Pump seal injection line inside containment. It is not practical to perform closure testing of this valve during normal plant operations or during cold shutdown outages. During normal operations, interruption of Reactor Coolant Pump seal injection flow would be required. Due to system configuration, the only practical method of verifying closure of these valves is by use of an external pressure source to establish a differential pressure across the valve. Installation of test equipment, both inside and outside containment, would be required for measuring the differential pressures. The Nuclear Regulatory Commission has determined that the need to setup test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage.

ALTERNATE TESTING:

This valve will be closure tested during refueling outages. An external source will be used to establish the required pressure differential across the valve and test equipment will be installed inside and outside containment for verifying closure.

Second ten-year interval did not identify this testing.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 20

COMPONENTS: RCV-168, RCV-169, RCV-170, RCV-171, RCV-172, RCV-173, RCV-174, and RCV-175

FUNCTION:

These valves are the Reactor Vessel Internal Vent Valves. These valves are located inside the reactor vessel and function in the open direction to relieve pressure resulting from steam generation in the Core following a Reactor Coolant System inlet pipe rupture so that the core will be rapidly re-covered by coolant. The valves must function in the closed direction to ensure Reactor Coolant System flow does not bypass the Core.

CATEGORY: C CLASS: 1

DEFERRED TEST JUSTIFICATION:

These valves are affixed to the Reactor Core Support Shield and are only accessible when the Reactor Vessel Head and Plenum are removed. There are no practical methods of establishing flows or measuring differential pressures across the valves or monitoring any other parameters during normal operations or cold shutdown outages to verify the full-stroke capability of these valves.

ALTERNATE TESTING:

Reactor vessel internal vent valves are e..ercised manually during refueling outages. They are demonstrated operable during each refueling outage by verifying through manual actuation that the valve is capable of fully opening with a force of less than or equal to 425 lbs (applied vertically upward). Video inspection of the valve body, disc and attachment mechanism is also performed to ensure no abnormal degradation and structural integrity.

Second ten-year interval did not identify this justification.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 21

COMPONENTS: RCV-10

FUNCTION:

This is the Reactor Coolant System Power Operated Relief Valve. This valve has an open function to provide Low Temperature Overpressure Protection when Reactor Coolant temperature is below the Low Temperature Overpressure Protection enable temperature and to support High Pressure Injection Core cooling (bleed and feed). The valve has a required closure function to serve as a Reactor Coolant System pressure boundary. This valve would be required to close, if actuated, to prevent pressurizer blowdown.

CATEGORY: B CLASS: 1

DEFERRED TEST JUSTIFICATION:

Power Operated Relief Valves have historically indicated a high probability of sticking open or leaking when exercised during power operations. This valve is not needed for overpressure protection during power operations. Exercising this valve is not practical during power operations. Exercising of the Power Operated Relief Valve will be performed during cold shutdowns. To accurately measure the stroke time of the Power Operated Relief Valve during cold shutdown outages would require the installation of test equipment. This test equipment would measure actuation of the pilot, but would not provide positive indication of the main valve stroke time. The Nuclear Regulatory Commission has previously determined that the need to setup test equipment is adequate justification to defer testing of a valve until a refueling outage.

ALTERNATE TESTING:

The Power Operated Relief Valve will be exercised and fail-safe tested during cold shutdown outages. Position indication and stroke timing will be performed at a refueling outage frequency. The Power Operated Relief Valve is replaced each refueling outage with a pretested spare. This replacement Power Operated Relief Valve has had relief setpoints and stroke timing performed and verified to be within acceptable limits at a vendor test facility. The above testing meets the requirements included in NUREG 1482, Section 4.4.1 and Generic Letter , GL 90-06, "Resolution of Generic Issue 70, 'Power Operated Relief Valve and Block Valve Reliability', and Generic Issue 94, 'Additional Low-Temperature Overpressure Protection for Light Water Reactors,' Pursuant to 10 CFR 50.54(f)". The contents of IN 89-32, "Surveillance Testing of Low-Temperature Overpressure-Protection Systems" have also been considered.

Second ten-year interval did not identify this justification.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 22

COMPONENTS: SWV-356

FUNCTION:

This is the Industrial Cooling Water Supply to Reactor Building Fan Assemblies check valve. During normal plant operations, this valve has an operational function in the open position for providing non-safety related Industrial Cooling Water to the Reactor Building Fan assemblies. This valve has a closed safety function to preserve Nuclear Services Closed Cycle Cooling inventory and maintain Nuclear Services Closed Cycle Cooling system pressure in the event of a single active failure of SWV-152.

CATEGORY: C CLASS: 3

DEFERRED TEST JUSTIFICATION:

Closure verification of this valve is not practical during normal operation or cold shutdown outages since the design of the system is not conducive to performing such a verification. Although a pressure gauge is installed in the system such that differential pressure across the valve could be measured, the small isolated test volume coupled with reliance on a 10 inch butterfly valve as a test boundary would make this type of testing difficult and would potentially provide an inaccurate indication of the closure capability of SWV-356. SWV-356 design does not incorporate position indication devices. The valve is not equipped with a mechanical exerciser for verifying obturator movement. OM-Part 10, Paragraph 4.3.2.4 (c) states that disassembly every refueling may be used to verify the operability of check valves as an alternative to exercising requirements using changes in flow, pressure, temperature, level, or other positive means. This provision of OM Part 10 shall be implemented for testing of SWV-356.

ALTERNATE TESTING:

In accordance with Paragraph 4.3.2.4 (c) of OM Part 10, this valve will be disassembled and inspected each refueling outage to verify proper closure capability. The inspection shall assure that the valve disk has freedom of movement and is capable of full-stroke. Additionally, the general condition of the valve internals shall be checked for structural degradation including the presence of loose parts, debris and abnormal or excessive corrosion products, wear and erosion. Following re-assembly, the valve will be partial stroke tested to verify proper operation.

Second ten-year interval identified this alternate testing as Relief Request V-390.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 23

COMPONENTS: DHV-93

This check valve has an operational function to provide a flow path for auxiliary Reactor Coolant System pressurizer spray. This flow path may assist in the mitigation of boron precipitation concerns post accident. This valve has a required safety function in the closed position to serve as a Containment Isolation Valve for Reactor Building Penetration 329.

CATEGORY: AC CLASS: 2

DEFERRED TEST JUSTIFICATION:

Exercise testing to the closed position for this valve during operation is not practical because there are no system provisions for establishing reversed flow. This Containment Isolation Valve is located inside containment and does not have position indication devices. The only method of verifying closure during normal plant operation would be to perform a leakage test and would involve setting up test equipment and use of a temporary pressurization source. Personnel would also be required to enter the Containment to perform this testing.

To perform closure testing during cold shutdown outages would also involve setting up test equipment and providing an alternate pressurization source. The Nuclear Regulatory Commission has determined that the need to setup test equipment is adequate justification to defer backflow testing of check valves until a refueling outage. NUREG 1482, Section 4.1.4 states that if no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak rate testing, such as local leak rate testing in accord with Appendix J to 10 CFR 50, at each reactor refueling outage.

ALTERNATE TESTING:

This valve is subject to the 10CFR50 Appendix J-Option B, Type C leak rate test program. Due to Inservice Testing frequency requirements, this valve will be 10CFR50 Appendix J-Option B leak testing during each refueling outage, which will verify proper valve closure.

Second ten-year interval did not identify this testing.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 24

COMPONENTS: CFV-18 and CFV-19

FUNCTION:

These check valves have an operational function to admit makeup water to Core Flood Tanks to maintain required level during normal plant operation. These valves have a required safety function to serve as Containment Isolation Valves for their respective Reactor Building penetrations and to maintain pressure and inventory in the Core Flood Tank in the event of an upstream component failure.

CATEGORY: AC CLASS: 2

DEFERRED TEST JUSTIFICATION:

Exercise testing to the closed position for these valves during operation is not practical because there are no system provisions for establishing reversed flow. The only method of verifying closure during normal plant operation would be to perform a leakage test using Core Flood Tank pressure and inventory as the test source. These Containment Isolation Valves are located inside containment and do not have position indication devices. To perform this test would require breaching the outside containment isolation barrier for these penetrations and setting up test equipment. If CFV-18 or CFV-19 leaked significantly during test, it could result in Core Flood Tank pressure dropping below Technical Specification requirements thus seriously degrading a core protection safety system.

To perform closure testing during cold shutdown outages would also involve setting up test equipment and providing an alternate pressure source in the event the Core Flood Tanks were depressurized. The Nuclear Regulatory Commission has determined that the need to setup test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage. NUREG 1482, Section 4.1.4 states that if no other practical means is available, it is acceptable to verify that check valves are capable of closing by performing leak rate testing, such as local leak rate testing in accord with Appendix J to 10CFR50, at each reactor refueling outage.

ALTERNATE TESTING:

These valves are subject to the 10CFR50 Appendix J-Option B , Type C leak rate test program. Due to Inservice Testing frequency requirements, these valves will be 10CFR50 Appendix J-Option B leak testing during each refueling outage, which will verify proper valve closure.

Second ten-year interval identified this alternate testing as Relief Request V-170.

## REFUEL OUTAGE JUSTIFICATION - ROJ - 25

COMPONENTS: MUV-559

FUNCTION:

This check valve is in the Makeup Pump post accident minimum flow line. This valve has a required function to open to provide a flow path from the Makeup pump discharge to the Reactor Building Sump. This will ensure the operating Makeup System Pump has a flow path available for establishing minimum required pump flow during accident conditions.

CATEGORY: A CLASS: 2

DEFERRED TEST JUSTIFICATION:

This check valve is not equipped with remote position indication and does not have mechanism installed for manually exercising the disc. The only practical method of verifying capability to open is with flow. The line is not equipped with permanent flow instrumentation and to measure flow rates will require the installation of temporary flow instrumentation. Additionally, to achieve the required flow rates for either a partial or full stroke, the Makeup System would have to be aligned to direct pump recirculation flow through this line which would divert normal makeup to the Makeup Tank thus affecting Makeup Tank level and pressure. Quarterly testing during normal plant operations is therefore not considered practical. Technical Specification 3.4.11 prevents running two Makeup pumps which is required to develop the required flow rate

ALTERNATE TESTING:

This valve shall be full-stroke exercised to the open direction on a refueling outage frequency.

Second ten-year interval did not identify this testing (valve added by modification).

## 9.0 Acronyms

| | |
|---|---|
| AH | Air Handling System |
| AI | Administrative Instruction |
| ANSI | American National Standards Institute |
| AS | Auxiliary Steam System |
| ASME | American Society of Mechanical Engineers |
| BS | Reactor Building Spray System |
| CA | Chemical Addition, Liquid Sampling, And Post Accident Sampling Systems |
| CD | Condensate System |
| CF | Core Flood System |
| CFR | Code of Federal Regulation |
| CH | Chilled Water System |
| CI | Industrial Cooling Water System |
| CP | Compliance Procedure |
| CSJ | Cold Shutdown Justification |
| CTC | Check Valve Closed Test |
| CTO | Check Valve Open Test |
| DC | Decay Heat Closed Cycle Cooling System |
| DF | Fuel Oil Transfer System |
| DH | Decay Heat Removal System |
| D/I | Disassembly and Inspection |
| DJ | Jacket Coolant/Air Cooler Coolant System |
| DL | Lube Oil Piping System |
| DO | Domestic Water System |
| DW | Condensate And Demineralized Water Supply System |
| ECCS | Emergency Core Cooling System |
| EF | Emergency Feedwater System |
| EFIC | Emergency Feedwater Initiation and Control System |
| EG | Compressed Starting Air And Engine Exhaust System |
| EGDG | Emergency Diesel Genertaor |
| EOP | Emergency Operating Procedure |
| EXC | Exercise Test Closed |
| EXO | Exercise Test Open |
| FD | Flow Diagram |
| FS | Fire Service Water System |
| FSTC | Failsafe Test Closed |
| FSTO | Failsafe Test Open |
| FW | Main Feedwater System |
| HPI | High Pressure injection |
| HVAC | Heating Ventilating and Air Conditioning |

| | |
|---|---|
| IA | Instrument Air |
| IST | Inservice Testing |
| IWA | I = inservice, W = light water, A = administrative |
| IWP | I = inservice, W = light water, P = pump |
| IWV | I = inservice, W = light water, V = valve |
| LR | Post Accident Venting System |
| LJ | 10CFR50 Appendix J Leak Test |
| LT | Category A Seat Leakage Test |
| MS | Main Steam System |
| MU | Make-Up & Purification System |
| NEP | Nuclear Engineering Procedure |
| NG | Nitrogen System |
| OM | Operation and Maintenance |
| RC | Reactor Coolant System |
| ROJ | Refuel Outage Justification |
| RR | Relief Request |
| RW | Nuclear Services And Decay Heat Sea Water System |
| SA | Service Air System |
| SF | Spent Fuel Cooling System |
| SP | Surveillance Procedure |
| SRSS | Square Root Sum of the Squares |
| STC | Stroke Time Closed |
| STO | Stroke Time Open |
| SW | Nuclear Services Closed Cycle Cooling System |
| WD | Liquid Waste Disposal, Gas Waste Disposal & Waste Gas Sampling Systems |
| WS | Containment Monitoring System |