REVISION 5
01/6/95

FLORIDA POWER and LIGHT COMPANY
NUCLEAR ENERGY SERVICES
700 Universe Boulevard
Juno Beach, Florida 33408

SECOND TEN-YEAR INSERVICE INSPECTION INTERVAL INSERVICE TESTING PROGRAM

FOR

PUMPS AND VALVES

ST. LUCIE NUCLEAR POWER PLANT
UNIT NO. 1

NRC DOCKET NUMBER: 50-335

DOCUMENT NUMBER: JNS-PSL-203 REVISION 5

ST. LUCIE PLANT REVIEWS AND APPROVALS:

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PSL PLANT IST ENGINEER

APPROVED BY: [signature] DATE: 1/6/95
PSL TEST & CODE SUPERVISOR

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RECORD OF REVISIONS

REVISION NUMBER	DESCRIPTION OF REVISION REASON FOR THE CHANGE	DATE REVISED
0	Initial Issue	3/21/85
1	Second 10-year Program	8/11/87
2	Revised Program per NRC Generic Letter 89-04	12/12/89
3	Revised Program in response to NRC Letter dtd October 17, 1990	9/1/91
4	Revised Program to include the latest updates and to clarify several relief requests	1/14/94
5	Revised Program in response to NRC Letters dtd August 5, 1994, and September 27, 1994, and to revise VR-12 and VR-13.	1/6/95

REVISION 5
01/6/95

INSERVICE TESTING (IST) PROGRAM PLAN
ST. LUCIE UNIT 1

1.0 INTRODUCTION

Revision 5 of the St. Lucie Unit 1 ASME Inservice Inspection (IST) Program will be in effect through the end of the second 120-month (10-year) interval unless revised and reissued for reasons other than the routine update required at the start of the third interval per 10 CFR 50.55a(g). The second inspection interval is defined as follows:

Begins	Ends
February 11, 1988	February 10, 1998

This document outlines the IST Program for St. Lucie Plant, Unit 1, based on the requirements of the ASME Boiler and Pressure Vessel Code (the Code), Section XI, 1983 Edition through summer 1983 Addenda. References in this document to "IWP" or "IWV" correspond to Subsections IWP and IWV, respectively, of the ASME Section XI, 1983 Edition, unless otherwise noted.

The IST program incorporates the requirements of ASME/ANSI OM-1987, Part 1, "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices" for the testing of safety and relief valves. The use of ASME/ANSI OM-1987, Part 1 requirements as an alternative to ASME Section XI, 1983 Edition, Subsection IWV-3510 requirements was approved by the NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 27, 1994.

The inservice testing requirements identified in this Plan were prepared to verify the operational readiness of pumps and valves which have a specific function in mitigating the consequences of an accident or in bringing the reactor to a safe shutdown.

In this regard, the general requirements of Paragraphs IWP-1100 and IWV-1100 form the following basic scope document as it applies to ISI Class 1, 2, and 3. Specifically components to be included are:

Centrifugal and positive displacement pumps that are required to perform a specific function in shutting down the reactor or in mitigating the consequences of an accident and that are provided with an emergency power source, and

Valves (and their actuating and position indicating systems) which are required to perform a specific function in shutting down the reactor to the cold shutdown condition or in mitigating the consequences of an accident.

The general Code requirements were applied to St. Lucie Unit 1 using a systematic approach by first reviewing the function of each of the plant systems as they relate to a limited number of bounding accident scenarios. This review eliminated systems (and associated components) that clearly do not fit the basic Code definitions including that of ISI boundary classification. Next, a series of rules or guidelines were developed that established the criteria to be used during the review of the remaining systems and components. These rules establish the policies and assumptions that were applied to the foregoing analysis to ensure consistency. Each of these are outlined below. From this point, in a series of steps, each of the individual components in each of the remaining significant safety systems (and supporting systems) were evaluated with respect to the function of each component and the need for its operability as it relates to the scope of Section XI. These steps included:

1. A review of flow diagrams of each system and identification of any components (pumps or valves) that "could" potentially be included in the IST Program scope. Based on the reviewer's experience, valves used for maintenance isolation, vents, drains, etc. were excluded. Typically, all pumps, power-operated valves, check valves, and safety valves remained in the population designated for further evaluation.

2. Each system was broken down by component and, based on general system operational requirements, a narrative description of each component's safety function(s) during the proposed scenarios was drafted.

3. Sequentially, plant documents that refer or discuss safety-related component or system functions were reviewed in detail and information from these documents was compared to the drafts developed in the above step 2. Where appropriate, corrections and references were applied to the individual narratives. Documents reviewed included the following:

   a. Updated Final Safety Analysis Report
   b. Technical Specifications
   c. Plant System Descriptions (Training) Documents
   d. Special analyses
   e. Commitment correspondence
   f. Plant Operating Procedures
   g. Emergency Operating Procedures
   h. Appendix J Leakrate Test Program

4. Based on the finalized component safety function evaluation derived from the document review and the corrected narratives, the IST Program testing requirements were then established by applying the guidelines listed in Section 1.1 to each one.

5. The functional description of the system components were subjected to a comprehensive review by knowledgeable plant personnel to confirm the accuracy on the document.

1.1 IST PROGRAM TESTING REQUIREMENT GUIDELINES

The following guidelines are set forth for evaluation of system components (pumps and valves) with respect to their inclusion in the St. Lucie Unit 1 IST Program and to what extent testing will be performed.

1. Where multiple components are capable of performing the same equivalent and redundant specified function (eg. multiple valves closing in series) and where the components are not supplied by alternate and redundant power supplies, only one need be included in the program. The component must be relied upon to perform and not simply have the capability of performance. This exemption only applies where licensing documents do not take credit for the designed redundancy. Components performing redundant function shall be included in the testing program if, in the process of analysis or licensing justification, they are relied upon to be operable.

2. The St. Lucie Unit 1 FUSAR and related design basis documents shall be the primary references for determining which components are required to perform specified functions related to the spectrum of predicated accidents. Although several other plant source documents (Tech. Specs. and EOP's) identify various components that may be important to plant safety or are to be operated in conjunction with recovery from an accident, unless specific credit is taken in the plant safety analysis (or is implied in the analysis) for a pump or valve, the component need not be included in the IST program. The exceptions to this are those cases where the NRC imposes test requirements at their discretion.

3. Valves installed primarily for the purpose of providing convenient operational flexibility (eg. system cross-connects) and are not required to operate assuming that the designated first-line systems and components operate satisfactorily, need not be included in the IST Program. This does not exclude active valves that could be called upon as a result of optional system lineups existing prior to the initiation of an accident.

4. Valves that are actuated as a result of a safety system automatic response shall be included in the IST Program to the extent that the testing shall verify valve operation required as a result of the safety system input. This applies only if valve movement is required to support those functions required as specified by the Code. This requirement extends only to testing defined by the Code and is not intended to imply the need for verifying a valve's response to automatic logic system output.

5. Valves whose sole function is to provide system or component redundancy related to failure of passive components need not be included if a set of all of the active components (pumps and valves) needed to fulfill the specified system (train) function are tested - double or unrelated simultaneous failures need not be assumed. In some cases where protection of critical systems from passive failures is a commitment, then components are included in the testing program.

6. System safety/relief valves shall be included where the function of the valve is to provide overpressure protection.

7. All valves included in the St. Lucie Unit 1 leakrate testing program complying with 10CFR50, Appendix J shall be included in the IST Program as Category A valves.

8. All valves designated as high-low pressure interface valves (pressure isolation valves) shall be included in the IST Program as Category A valves.

9. Any active Category A valve shall be designated for testing (exercising) to the closed direction.

10. When a valve's normal position during operation is its position required to perform its designated safety function and valve movement may be required due to plant evolutions or possible repositioning during accident response or recovery operations, then periodic exercising per the Code is required (ie. the valve cannot be considered passive).

11. Where an air-operated valve is provided with a simple air-pilot valve, the pilot valve need not be specifically included in the IST Program provided that the testing performed on the main valve verifies the proper operation of the pilot valve.

12. Control valves are specifically excluded from testing per IWV-1200(a); however, if a control valve must change position to support a safety-related function and it has a fail-safe position, then it must be included in the IST Program and tested to the extent practical. Steam turbine governor valves are considered to be an integral part of the turbine and, as such, are not included in the IST Program.

13. Check valves are included where a valve serves as the only effective boundary between piping associated with a necessary safety function and non-safety grade (non-seismic) piping. Failure of passive system components is assumed only for non-safety grade systems.

14. Where a valve performs a safety function in both directions (open and closed) exercising in both directions is required. For these power-operated valves, stroke time measurements in both directions would be required.

15. Pumps and valves whose only safety function is predicated on plant shutdown and recovery from a fire per commitment made as a result on 10CFR50, Appendix R are not included in the IST Program.

16. Pumps and valves that are not categorized as ISI Class 1, 2, or 3 need not be included in the IST Program.

17. Check valves that have a safety function to close should be evaluated with respect to categorization as Category A/C versus C with respect to the following issues:

a. Whether the flow requirements for connected systems can be achieved with the maximum possible leakage through the check valve.

b. The effect on the performance of other components and systems due to the reduced flow resulting from the leakage.

c. The consequences of loss of fluid from the system.

d. The effect that backflow through a valve may have on piping and components, such as the effect of high temperature and thermal stresses.

e. The radiological exposure to plant personnel and the public caused by the leak.

2.0 APPLICABLE DOCUMENTS

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

2.1 Title 10, Code of Federal Regulations, Part 50
2.2 NRC Regulatory Guides - Division 1
2.3 Standard Review Plan 3.9.6, "Inservice Testing of Pumps and Valves
2.4 Final Safety Analysis Report, St. Lucie Unit 1
2.5 St. Lucie Plant Unit 1 Technical Specification.
2.6 ASME Boiler and Pressure Vessel Code, Section XI, 1983 Edition and Addenda through Summer, 1983.
2.7 NRC Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"
2.8 Minutes of the Public Meetings on Generic Letter 89-04
2.9 St. Lucie Unit 1 - Interim Relief From the Inservice Testing Program for Pumps and Valves
2.10 Supplement to Minutes of the Public Meetings on Generic Letter 89-04 by J. G. Partlow, 26 September 1991
2.11 Request for Industry/NRC-Accepted Interpretation on "Practical" as Applied by ASME Code Section XI, IWV-3412(a) by Martin J. Virgilio, Assistant Director for Regions IV and V.
2.12 NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.
2.13 ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition.
2.14 ASME/ANSI OM-1987, Part 1, "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices".
2.15 NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated January 29, 1993.
2.16 NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 17, 1993.
2.17 ASME/ANSI OM-1987, Part 6, "Inservice Testing of Pumps in Light-Water Reactor Power Plants".
2.18 ASME/ANSI OM-1987, Part 10, "Inservice Testing of Valves in Light-Water Reactor Power Plants".
2.19 NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated August 12, 1994.
2.20 NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 27, 1994.

3.0 INSERVICE TESTING PROGRAM FOR PUMPS

3.1 Code Compliance

This IST Program for pumps meets the requirements of Subsection IWP of the Code and any interpretations or additional requirements imposed by Generic Letter 89-04. Where these requirements have been determined to be impractical, conformance would cause unreasonable hardship without any compensating increase in safety, or an alternative test provides an acceptable level of quality and safety, relief from Code requirements is requested pursuant to the requirements of 10 CFR 50.55a(g)(iii) and Generic Letter 89-04.

3.2 Allowable Ranges of Test Quantities

The allowable ranges for test parameters as specified in Table IWP-3100-2 will be used for all measurements of pressure, flow, and vibration except as provided for in specific relief requests. In some cases the performance of a pump may be adequate to fulfill its safety function even though there may be a value of an operating parameter that falls outside the allowable ranges as set forth in Table IWP-3100-2. Should such a situation arise, an expanded allowable may be determined, on a case-by-case basis, in accordance with IWP-3210 and ASME Code Interpretation XI-1-79-19.

3.3 Testing Intervals

The test frequency for pumps included in the Program will be as set forth in IWP-3400 and related relief requests. A band of +25 percent of the test interval may be applied to a test schedule as allowed by the St. Lucie Unit 1 Technical Specifications to provide for operational flexibility.

3.4 Pump Program Table

Appendix A lists those pumps included in the IST Program with references to parameters to be measured and applicable requests for relief.

3.5 Relief Requests for Pump Testing

Appendix B includes all relief requests related to pump testing.

4.0 INSERVICE TESTING PROGRAM FOR VALVES

4.1 Code Compliance

This IST Program for valves meets the requirements of Subsection IWV of the Code and any interpretations or additional requirements imposed by Generic Letter 89-04. Where these requirements have been determined to be impractical, conformance would cause unreasonable hardship without any compensating increase in safety, or an alternative test provides an acceptable level of quality and safety, relief from Code requirements is requested pursuant to the requirements of 10 CFR 50.55a(g)(iii) and Generic Letter 89-04.

4.2 Testing Intervals

The test frequency for valves included in the Program will be as set forth in IWV-3400 and related relief requests. A band of +25 percent of the test interval may be applied to a test schedule as allowed by the St. Lucie Unit 1 Technical Specifications to provide for operational flexibility. Where quarterly testing of valves is impractical or otherwise undesirable, testing may be performed during cold shutdown periods as permitted by IWV-3412(a). Justifications for this deferred testing are provided in Appendix E.

4.3 Stroke Time Acceptance Criteria

When required, the acceptance criteria for the stroke times of power-operated valves will be as set forth in Generic Letter 89-04.

4.4 Check Valve Testing

Full-stroke exercising of check valves to the open position using system flow requires that a test be performed whereby the predicted full accident condition flowrate through the valve be verified and measured. Any deviation to this requirement must satisfy the requirements of Generic Letter 89-04, Position 1.

4.5 Valve Program Table

Appendix C lists those valves included in the IST Program with references to required testing, respective test intervals, and applicable requests for relief.

4.6 Relief Requests for Valve Testing

Appendix D includes all relief requests related to valve testing.

Appendix A

Pump Program Tables

PUMP NUMBER		DESCRIPTION	CL	COORD	SPEED	INLET PRES.	DIFF. PRES.	FLOW RATE	VIBRA.	BEARING TEMP.
AFW	1A	AUXILIARY FEEDWATER PUMP	3	M-5	NA	Y	Y	Y:PR-4	Y	N:PR-1
AFW	1B	AUXILIARY FEEDWATER PUMP	3	K-5	NA	Y	Y	Y:PR-4	Y	N:PR-1
AFW	1C	AUXILIARY FEEDWATER PUMP	3	H-5	Y	Y	Y	Y:PR-4	Y	N:PR-1
BAM	1A	BORIC ACID MAKEUP PUMP	2	B-5	NA	Y:PR-8	Y	Y:PR-5	Y	N:PR-1
BAM	1B	BORIC ACID MAKEUP PUMP	2	B-5	NA	Y:PR-8	Y	Y:PR-5	Y	N:PR-1
CCW	1A	COMPONENT COOLING WATER PUMP	3	F-16	NA	Y	Y	Y	Y	N:PR-1
CCW	1B	COMPONENT COOLING WATER PUMP	3	F-17	NA	Y	Y	Y	Y	N:PR-1
CCW	1C	COMPONENT COOLING WATER PUMP	3	F-16	NA	Y	Y	Y	Y	N:PR-1
CHG	1A	CHARGING PUMP	2	G-2	NA	Y	Y	Y	Y:PR-12	N:PR-1
CHG	1B	CHARGING PUMP	2	G-2	NA	Y	Y	Y	Y:PR-12	N:PR-1
CHG	1C	CHARGING PUMP	2	E-2	NA	Y	Y	Y	Y:PR-12	N:PR-1
CS	1A	CONTAINMENT SPRAY PUMP	2	G-4	NA	Y	Y	Y:PR-6	Y	N:PR-1
CS	1B	CONTAINMENT SPRAY PUMP	2	E-2	NA	Y	Y	Y:PR-6	Y	N:PR-1
HPSI	1A	HIGH PRESSURE SAFETY INJECTION	2	C-6	NA	Y	Y	Y:PR-9	Y	N:PR-1
HPSI	1B	HIGH PRESSURE SAFETY INJECTION	2	B-6	NA	Y	Y	Y:PR-9	Y	N:PR-1
ICW	1A	INTAKE COOLING WATER PUMP	3	H-4	NA	Y:PR-11	Y	Y	Y	N:PR-1
ICW	1B	INTAKE COOLING WATER PUMP	3	H-7	NA	Y:PR-11	Y	Y	Y	N:PR-1
ICW	1C	INTAKE COOLING WATER PUMP	3	H-5	NA	Y:PR-11	Y	Y	Y	N:PR-1
LPSI	1A	LOW PRESSURE SAFETY INJECTION	2	F-6	NA	Y	Y	Y:PR-10	Y	N:PR-1
LPSI	1B	LOW PRESSURE SAFETY INJECTION	2	E-6	NA	Y	Y	Y:PR-10	Y	N:PR-1

LEGEND

PUMP NUMBER	Numerical designator indicated on the respective flow diagram.
DESCRIPTION	Generic name/function of the pump.
CL	ISI Classification per the associated ISI boundary drawing(s)
COORD	Corresponds to the flow diagram coordinates of the pump.
Test Parameters	The table indicates by a "Y" (yes) or "N" (no) that the specific parameter is measured, evaluated, and recorded per the applicable Code requirement. If a "N" is indicated, the associated relief request number is also noted in the same column.
PR-XX	Where indicated this refers to the specific relief request (See Appendix B) related to any deviation regarding the measurement or analysis of a parameter.

Appendix B

Pump Program
Relief Requests

RELIEF REQUEST NO. PR-1

COMPONENTS:

All pumps in the Program

SECTION XI REQUIREMENT:

The temperature of all centrifugal pump bearings outside the main flowpath and of the main shaft bearings of reciprocating pumps shall be measured at points selected to be responsive to changes in the temperature of the bearings. (IWP-3300, 4310)

BASIS FOR RELIEF:

The data associated with bearing temperatures taken at one-year intervals provides little statistical basis for determining the incremental degradation of a bearing or any meaningful trending information or correlation.

In many cases the pump bearings are water-cooled and thus, bearing temperature is a function of the temperature of the cooling medium, which can vary considerably.

Vibration measurements are a significantly more reliable indication of pump bearing degradation than are temperature measurements. All pumps in the program are subjected to vibration measurements in accordance with IWP-4500.

Although excessive bearing temperature is an indication of an imminent or existing bearing failure, it is highly unlikely that such a condition would go unnoticed during routine surveillance testing since it would manifest itself in other obvious indications such as audible noise, unusual vibration, increased motor current, etc.

Any potential gain from taking bearing measurements, which in most cases would be done locally using portable instrumentation, cannot offset the cost in terms of dilution of operator effort, distraction of operators from other primary duties, excessive operating periods for standby pumps especially under minimum flow conditions, and unnecessary personnel radiation exposure.

Based on the reasons similar to those set forth above, the ASME deleted the requirement for bearing temperature measurements in ASME OM Code, Subsection ISTB, the revised version of the Code for pump testing.

RELIEF REQUEST NO. PR-1 (cont.)

ALTERNATE TESTING:

None

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated January 1, 1993.

RELIEF REQUEST NO. PR-2

COMPONENTS:

Various

SECTION XI REQUIREMENT:

The full-scale range of each instrument shall be three times the reference value or less. (IWP-4120)

BASIS FOR RELIEF:

Table IWP-4110-1 requires the accuracy of instruments used to measure speed to be equal to or better than ±2 percent for speed, based on the full scale reading of the instrument. This means that the accuracy of the measurement can vary as much as ±6 percent, assuming the range of the instruments extended to the allowed maximum.

These IST pump parameters are often measured with portable test instruments where commercially available instruments do not necessarily conform to the Code requirements for range. In these cases, high quality calibrated instruments will be used where the "reading" accuracy is at least equal to the Code-requirement for full-scale accuracy. This will ensure that the measurements are always more accurate than the accuracy as determined by combining the requirements of Table IWP-4110-1 and Paragraph IWP-4120.

ALTERNATE TESTING:

Whenever portable instruments are used for measuring pump speed, the instruments will be such that the "reading" accuracy is ±2 percent.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. PR-3

WITHDRAWN
by
Revision #4

RELIEF REQUEST NO. PR-4

COMPONENTS:

Auxiliary Feedwater (AFW) Pumps 1A thru 1C
(8770-G-080, Sh 3)

SECTION XI REQUIREMENT:

Each inservice test shall include the measurement and observation of all quantities in Table IWP-3100-1. (IWP-3300)

Pump flowrate shall be measured during the test. (Table IWP-3100-1)

BASIS FOR RELIEF:

There are only two practical flowpaths available for performing inservice testing of the AFW Pumps. These include the primary flowpath into the main feed supply lines and thence to the steam generator and the minimum-flow recirculation (mini-recirc and bypass test loop) which returns to the condensate storage tank. The former is provided with flowrate measuring instrumentation however the mini-recirc line is a fixed resistance circuit with no flow instrumentation.

Pumping from the auxiliary feedwater system into the steam generators during plant hot operation is impractical and undesirable for the following reasons:

* During auxiliary feedwater injection via the main feedwater lines while the plant is operating at power, a large temperature differential (approximately 375 deg-F) could exist that would result in significant thermal shock and fatigue cycling of the feedwater piping and steam generator nozzles.

* Based on the expected duration of the testing and the flowrate of the pumps (150-200 gpm), it is expected that the cooldown of the steam generator would induce cooldown and contraction of the reactor coolant system resulting in undesirable reactivity variations and power fluctuations.

RELIEF REQUEST NO. PR-4 (cont.)

ALTERNATE TESTING:

During quarterly testing of the AFW pumps while the pumps are operating through the fixed-resistance mini-recirc line, pump differential pressure and vibration will be measured and evaluated per IWP-3200 and IWP-6000.

During testing performed at cold shutdown, pump differential pressure, flowrate, and vibration will be recorded per IWP-3200 and IWP-6000. Testing during cold shutdowns will be on a frequency determined by intervals between shutdowns as follows:

For intervals of 3 months or longer - each shutdown.

For intervals of less than 3 months - testing is not required unless 3 months have passed since the last shutdown test.

APPROVAL:

This alternate testing agrees with the requirements of NRC Generic Letter 89-04, Position 9 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. PR-5

COMPONENTS:

Boric Acid Makeup (BAM) Pumps 1A and 1B
(8770-G-078, Sh 121)

SECTION XI REQUIREMENT:

Each inservice test shall include the measurement and observation of all quantities in Table IWP-3100-1. (IWP-3300)

Pump flow rate shall be measured during the test. (Table IWP-3100-1)

BASIS FOR RELIEF:

There are three practical flow paths available for performing inservice testing of the BAM Pumps. These include the primary flow path into the charging pump suction header, a recirculation line leading back to the refueling water tank, and the minimum-flow recirculation (mini-recirc and bypass test loop) which returns to the BAM Tanks. None of these flow paths is totally satisfactory for the following reasons:

* Operating the BAM Pumps discharging into the charging pump suction header requires the introduction of highly concentrated boric acid solution from the boric acid makeup tanks to the suction of the charging pumps. This would result in the addition of excess boron to the RCS. This rapid insertion of negative reactivity would result in a rapid RCS cooldown and de-pressurization. A large enough boron addition would result in an unscheduled plant trip and a possible initiation of Safety Injection Systems.

* During cold shutdown, the introduction of excess quantities of boric acid into the RCS is undesirable from the aspect of maintaining proper plant chemistry and the inherent difficulties that may be encountered during the subsequent startup due to over-boration of the RCS. The waste management system would be overburdened by the large amounts of RCS coolant that would require processing to decrease its boron concentration.

RELIEF REQUEST NO. PR-5 (cont.)

* The second circuit recirculates water to the Refueling Water Tank (RWT) or the Volume Control Tank (VCT). During normal plant operation at power it is undesirable to pump to the RWT and deplete the BAM Tank inventory. One of the two BAM Tanks is maintained at Tech. Spec. level while the other is used as required for plant operation. The Tech. Spec. BAM Tank cannot be pumped from because it must be maintained at a level near the top of the tank. The other BAM Tank's level will vary from test to test by as much as 15 to 20 feet. This variance in pump suction pressure will have a direct affect on pump head and flow such that test repeatability would be questionable.

* The minimum-flow recirculation flow path is a fixed resistance circuit of one inch pipe containing a flow limiting orifice. No flow rate measuring instrumentation is installed in this line. Pumping boric acid from tank to tank would be possible but the flow rates would be small, limiting pump operation to the high head section of the pump curve. In addition, one of the two BAM Tanks is maintained at Tech. Spec. level while the other is used as required for normal plant operation. The Tech. Spec. BAM Tank cannot be pumped from because it must be maintained at a level near the top of the tank. This narrow band limits the amount that can be pumped to it or from it to only a few hundred gallons. The other BAM Tank's level will vary from test to test by as much as 15 to 20 feet. This variance in pump suction pressure will have a direct affect on pump head and flow such that test repeatability would be questionable.

RELIEF REQUEST NO. PR-5 (cont.)

ALTERNATE TESTING:

During quarterly testing of the BAM pumps, while the pumps are operating through the fixed-resistance mini-recirc line, pump differential pressure and vibration will be measured and evaluated per IWP-3200 and IWP-6000.

During testing performed at each reactor refueling outage, pump differential pressure, flow rate, and vibration will be recorded per IWP-3200 and IWP-6000.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 9 and was approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 27, 1994.

RELIEF REQUEST NO. PR-6

COMPONENTS:

Containment Spray (CS) Pumps 1A and 1B (8770-G-088)

SECTION XI REQUIREMENT:

Each inservice test shall include the measurement and observation of all quantities in Table IWP-3100-1. (IWP-3300)

Pump flowrate shall be measured during the test. (Table IWP-3100-1)

BASIS FOR RELIEF:

There are two practical flowpaths available for performing inservice testing of the CS Pumps. These include one that pumps borated water from the RWT to the RCS via the low-pressure injection header. The other is minimum-flow recirculation (mini-recirc and bypass test loop) which returns to the RWT

The first would require modifying the shutdown cooling lineup while in cold shutdown; however, the shutdown cooling system cannot provide sufficient letdown flow to the RWT to accommodate full design flow from the RWT while maintaining the necessary core cooling function. Thus, the only practical time for testing these pumps via this flowpath is during refueling outages when water from the RWT is used to fill the refueling cavity.

The minimum-flow recirculation flowpath is a fixed resistance circuit containing a flow limiting orifice with no flowrate measuring instrumentation installed.

ALTERNATE TESTING:

During quarterly testing of the CS pumps while the pumps are operating through the fixed-resistance mini-recirc line, pump differential pressure and vibration will be measured and evaluated per IWP-3200 and IWP-6000.

RELIEF REQUEST NO. PR-6 (cont.)

ALTERNATE TESTING:

During testing performed during each reactor refueling, pump differential pressure, flowrate, and vibration will be recorded per IWP-3200 and IWP-6000.

APPROVAL:

This alternate testing agrees with the requirements of NRC Generic Letter 89-04, Position 9 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. PR-7

WITHDRAWN
by
Revision #4

RELIEF REQUEST NO. PR-8

COMPONENTS:

Boric Acid Makeup Pumps 1A and 1B (8770-G-078, Sh 121

SECTION XI REQUIREMENTS:

Each inservice test shall include the measurement and observation of all quantities in Table IWP-3100-1 except bearing temperatures, which shall be measured during at least one inservice test each year. (IWP-3300)

BASIS FOR RELIEF:

The system installations do not provide any mechanism for directly measuring pump suction pressures by using a suction gage. A measure of pump suction pressure can, however, be determined by calculation using the height of liquid in the boric acid tanks (BAM tanks). Since there is essentially a fixed resistances between the tanks and the pumps this will provide a consistent value for suction pressures.

The BAM tank levels are not expected to vary during the BAM pump tests. The BAM pump discharge is directed back to its storage tank using the mini-flow recirculation lines. What boric acid is taken out through the suction line is immediately replaced through the mini-flow recirculation line discharge into the same BAM tank. The tank levels and associated calculations will only be taken once during each test instead of prior to pump operation and during operation as required by Table WP-3100-1.

ALTERNATE TESTING:

The Boric Acid Makeup Pump suction pressures will be calculated based on the height of liquid in the associated tank once during each inservice test. Subsequently, these calculated values will be used to determine pump differential pressures for evaluation of pump parameters.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. PR-9

COMPONENTS:

High Pressure Safety Injection (HPSI) Pumps 1A and 1B (8770-G-078, Sh 130)

SECTION XI REQUIREMENT:

Each inservice test shall include the measurement and observation of all quantities in Table IWP-3100-1. (IWP-3300)

BASIS FOR RELIEF:

During quarterly testing of the HPSI Pumps, the pumps cannot develop sufficient discharge pressure to overcome RCS pressure and allow flow through the safety injection line flow measuring instruments. Flow is routed through a minimum flow test line leading to the RWT. This line has no installed flowrate measuring instrumentation and measuring flowrate during quarterly testing is not practical.

During cold shutdown conditions, full flow operation of the HPSI pumps to the RCS is restricted to preclude RCS system pressure transients that could result in exceeding the pressure-temperature limits specified in the Technical Specifications, Section 3.4.9.

NRC Generic Letter 89-04, Position 9, allows elimination of minimum flow test line flowrate measurements providing inservice tests are performed during cold shutdowns or refueling under full or substantial flow conditions where pump flowrate is recorded and evaluated.

RELIEF REQUEST NO. PR-9 (cont.)

ALTERNATE TESTING:

During quarterly testing of the HPSI Pumps, pump differential pressure and vibration will be recorded per IWP-3200 and IWP-6000.

During testing performed at each reactor refueling, pump differential pressure, flowrate, and vibration will be recorded per IWP-3200 and IWP-6000.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 9 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. PR-10

COMPONENTS:

Low Pressure Safety Injection (LPSI) Pumps 1A and 1B (8770-G-078, Sh 130)

SECTION XI REQUIREMENT:

Each inservice test shall include the measurement and observation of all quantities in Table IWP-3100-1. (IWP-3300)

BASIS FOR RELIEF:

During quarterly testing of the LPSI Pumps, the pumps cannot develop sufficient discharge pressure to overcome RCS pressure. Flow is routed through a minimum flow test line leading to the RWT. This line has no installed flow rate measuring instrumentation and measuring flow rate during quarterly testing is not practical.

NRC Generic Letter 89-04, Position 9, allows elimination of minimum flow test line flowrate measurements providing inservice tests are performed during cold shutdowns or refueling under full or substantial flow conditions where pump flowrate is recorded and evaluated.

ALTERNATE TESTING:

During quarterly testing of the LPSI Pumps, pump differential pressure and vibration will be recorded per IWP-3200 and IWP-6000.

RELIEF REQUEST NO PR-10 (cont.)

During testing performed at cold shutdown, pump differential pressure, flowrate, and vibration will be recorded per IWP-3200 and IWP-6000. Testing during cold shutdowns will be on a frequency determined by intervals between shutdowns as follows:

For intervals of 3 months or longer - each shutdown.

For intervals of less than 3 months - testing is not required unless 3 months have passed since the last shutdown test.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 9 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. PR-11

COMPONENTS:

Intake Cooling Water Pumps 1A, 1B and 1C

SECTION XI REQUIREMENT:

Each inservice test shall include the measurement and observation of all quantities in Table IWP-3100-1. (IWP-3300)

Pump inlet pressure shall be measured before starting a pump and during the test. (Table IWP-3100-1)

BASIS FOR RELIEF:

The pumps listed above are vertical line shaft pumps submerged in the intake structure with no practical means of measuring the inlet pressure of the pump. The inlet pressure, however, can be determined by calculation using, as input, the measured height of water above the pump's inlet as measured at the intake structure.

During each inservice test, the water level in the intake pit remains relatively constant, thus only one measurement of level and the associated suction pressure calculation need be performed.

ALTERNATE TESTING:

During testing of these pumps, one value of inlet pressure will be calculated based upon the intake water level at the intake structure.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. PR-12

COMPONENTS:

Reactor Coolant Charging Pumps 1A, 1B, and 1C

SECTION XI REQUIREMENT:

The frequency response range of the readout system (for instrument used to measure vibration amplitude) shall be from one-half minimum speed to at least maximum pump shaft rotational speed. (IWP-4520(b))

BASIS FOR RELIEF:

The reactor coolant charging pumps operate at approximately 210-215 rpm which equates to a rotational frequency of 3.50 Hz. The one-half minimum speed frequency response required for the vibration instrumentation correlates to 1.75 Hz (105 cpm).

The vibration instrumentation presently in use at St. Lucie is the Bently Nevada model TK-81 with 270 cpm probes. The TK-81 integrator frequency response is essentially flat down to 120 cpm (cycles per minute) where the displayed output of the instrument slightly increases to approximately +1dB at 100 cpm. The -3dB frequency response is reached at approximately 54 cpm. The velocity probes used with the TK-81 are a special low frequency probe nominally rated down to 270 cpm (-3 dB). This is only slightly higher than the expected rotational (1X) speed of the charging pump (205 - 210 cpm). The 1X (205 cpm.) vibration frequency components will be somewhat attenuated by the probes, but not cut off. Overall vibration levels would still show an increasing value if some problem developed whose characteristic frequency was 1X running speed.

There are virtually no mechanical degradations where only a sub-synchronous vibration component would develop on the charging pumps. For example:

a. Oil whirl (0.38X - 0.48X) is not applicable to a horizontal, triplex, reciprocating pump.

b. A light rub / impact could generate 0.5X (102.5 cpm) vibration components, but would also usually generate a sequence of integer and half integer running speed components. A heavy rub generates increased integer values of multiple running speed components, as

well as precessing the 1X phase measurement. In either case the overall vibration level would still show an increase from both the attenuated sub-synchronous and 1X vibration components as well as the higher harmonic vibration components.

c. Looseness in the power train would likely be indicated by increasing 1X and 2X vibration components. These signals would be slightly attenuated but again not completely cut off.

Based on the above information, it is our evaluation that the present use of the Bently Nevada 270 cpm probes with the portable TK-81 instrument is capable of collecting sufficiently reliable data to identify changes from baseline readings to indicate possible problems with the pumps.

ALTERNATE TESTING:

During testing of these pumps, the vibration instrumentation used will be the Bently Nevada model TK-81 with 270 cpm probes or equivalent.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated August 5, 1994.

RELIEF REQUEST NO. PR-13

WITHDRAWN
by
Revision #4

Appendix C

Valve Program Tables

LEGEND

VALVE NUMBER	The plant alpha-numerical designator for the subject valve
COORD	The coordinate location of the valve on the designated drawing
CL	The ISI Classification of the valve as per the respective ISI boundary drawings
CAT	The valve category per Paragraph IWV-2200
SIZE	The valve's nominal size in inches
TYPE	The valve type
A/P	The active (A) or passive (P) determination for the valve per IWV-2100.
ACT. TYPE	The valve actuator type as follows: AO Air-operated DO Diaphragm-operated MO Electric motor-operated MAN Manual valve PO Piston-operated S/A Self-actuated SO Solenoid-operated
NORM POS.	Designates the normal position of the valve during plant operation at power
REM IND	Notes if a valve has remote position indication
FAIL MODE	Identifies the failure mode (open or closed) for a valve. FAI indicates the valve fails "as is".

LEGEND (Cont.)

EXAM — Identifies the test requirements for a valve as follows:

CV/C	Check valve exercise to closed position.
CV/O	Check valve full-stroke exercise to open position.
CV/PO	Check valve partial-stroke exercise to open position.
EC	Exercise to closed position. For all category A or B power-operated valves stroke times will be measured unless excluded by an associated relief request.
EE	Exercise valve to verify proper operation and stroking with no stroke time measurements. Requires observation of system parameters or local observation of valve operation.
EO	Exercise to open position. For all category A or B power-operated valves stroke times will be measured unless excluded by an associated relief request.
FS	Fail safe test
INSP	Disassembly and inspection of check valves
PEC	Partial closure exercise for power-operated valves
PI	Position indication verification
SLT-1	Seat leakrate test per 10 CFR 50, App J
SLT-2	Seat leakrate test for pressure isolation valves.
SRV	Set point check for safety/relief valves

LEGEND (Cont.)

TEST FREQ — The required test interval as follows:

- QR — Quarterly (during plant operation)
- CS — Cold shutdown as defined by Technical Specification
- 2Y — Every 2 years
- RF — Each reactor refueling outage (cycle). In the case where this is designated for safety/relief valves refer, to Table WV-3510-1.
- SA — Semi-annually
- SP — Other (See applicable Request for Relief)

RELIEF REQ — Refers to the specific relief request associated with the adjacent test requirement. (See Appendix D)

P & ID: 3509-G-115 SH 1 SYSTEM: STEAM GENERATOR BLOWDOWN

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FCV-23-3	E-2	2	B	2.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
FCV-23-5	E-3	2	B	2.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
FCV-23-7	E-5	2	B	0.500	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
FCV-23-9	E-6	2	B	0.500	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		

P & ID: 8770-G-078 SH 110 SYSTEM: REACTOR COOLANT SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
PCV-1100E	E-3	1	B	3.000	ANGLE	A	DO	C	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
PCV-1100F	E-3	1	B	3.000	ANGLE	A	DO	C	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
V-1200	G-6	1	C	3.000	SAFETY	A	S/A	C	NO		SRV	RF		
V-1201	G-6	1	C	3.000	SAFETY	A	S/A	C	NO		SRV	RF		
V-1202	G-6	1	C	3.000	SAFETY	A	S/A	C	NO		SRV	RF		
V-1402	G-8	1	B	2.500	GLOBE	A	SO	C	YES	FC	EO	CS		
											PI	2Y		
V-1403	G-8	1	B	2.500	GATE	A	MO	O	YES	FAI	EC	QR		
											PI	2Y		
V-1404	H-8	1	B	2.500	GLOBE	A	SO	C	YES	FC	EO	CS		
											PI	2Y		
V-1405	H-8	1	B	2.500	GATE	A	MO	O	YES	FAI	EC	QR		
											PI	2Y		
V-1441	D-4	2	B	1.000	GLOBE	A	SO	LC	YES	FC	EO	CS		
											PI	2Y		
V-1442	D-4	2	B	1.000	GLOBE	A	SO	LC	YES	FC	EO	CS		
											PI	2Y		
V-1443	H-6	2	B	1.000	GLOBE	A	SO	LC	YES	FC	EO	CS		
											PI	2Y		
V-1444	H-6	2	B	1.000	GLOBE	A	SO	LC	YES	FC	EO	CS		
											PI	2Y		
V-1445	F-8	2	B	1.000	GLOBE	A	SO	LC	YES	FC	EO	CS		
											PI	2Y		
V-1446	F-8	2	B	1.000	GLOBE	A	SO	LC	YES	FC	EO	CS		
											PI	2Y		

P & ID: 8770-G-078 SH 110 (cont) SYSTEM: REACTOR COOLANT SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-1449	F-8	2	B	1.000	GLOBE	A	SO	LC	YES	FC	EO PI	CS 2Y		

P & ID: 8770-G-078 SH 120 SYSTEM: CHEMICAL AND VOLUME CONTROL SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
SE-02-01	B-8	1	B	2.000	GLOBE	A	SO	O	YES	FO	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
SE-02-02	B-8	1	B	2.000	GLOBE	A	SO	O	YES	FO	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
SE-02-03	C-8	1	B	2.000	GLOBE	A	SO	LC	YES	FC	EC	CS		
											EO	CS		
											FS	CS		
											PI	2Y		
SE-02-04	C-8	1	B	2.000	GLOBE	A	SO	LC	YES	FC	EC	CS		
											EO	CS		
											FS	CS		
											PI	2Y		
V-2345	F-8	3	C	2.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-2354	G-5	3	C	3.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-2430	B-5	2	C	2.000	CHECK	A	S/A	O	NO		CV/O	QR		
V-2431	C-8	1	C	2.000	CHECK	A	S/A	C	NO		CV/O	CS		
V-2432	B-8	1	C	2.000	CHECK	A	S/A	O	NO		CV/O	QR		
V-2433	A-8	1	C	2.000	CHECK	A	S/A	O	NO		CV/O	QR		
V-2515	D-8	1	A	2.000	GLOBE	A	DO	O	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y		
V-2516	D-7	1	A	2.000	GLOBE	A	DO	O	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y		

P & ID: 8770-G-078 SH 121 SYSTEM: CHEMICAL AND VOLUME CONTROL SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FCV-2161	B-4	2	B	1.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
SE-01-01	H-6	2	A	0.750	GLOBE	A	SO	O	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y		
V-02132	G-2	2	C	2.000	CHECK	A	S/A	C	NO		CV/C	QR		
											CV/O	QR		
V-02133	G-2	2	C	2.000	CHECK	A	S/A	C	NO		CV/C	QR		
											CV/O	QR		
V-02134	E-2	2	C	2.000	CHECK	A	S/A	C	NO		CV/C	QR		
											CV/O	QR		
V-2115	F-7	3	C	4.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-2118	F-7	2	C	4.000	CHECK	A	S/A	O	S/A		CV/O	QR		
V-2177	C-4	2	C	3.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-6	
											CV/PO	CS	VR-6	
V-2190	D-6	2	C	3.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-6	
											CV/PO	CS	VR-6	
V-2191	E-6	2	C	3.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-6	
											CV/PO	CS	VR-6	
V-2311	F-4	2	C	0.500	RELIEF	A	S/A	C	NO		SRV	RF		
V-2315	H-3	2	C	0.500	RELIEF	A	S/A	C	NO		SRV	RF		
V-2318	G-3	2	C	0.500	RELIEF	A	S/A	C	NO		SRV	RF		
V-2321	F-3	2	C	0.500	RELIEF	A	S/A	C	NO		SRV	RF		
V-2324	F-2	2	C	1.500	RELIEF	A	S/A	C	NO		SRV	RF		
V-2325	G-2	2	C	1.500	RELIEF	A	S/A	C	NO		SRV	RF		
V-2326	H-2	2	C	1.500	RELIEF	A	S/A	C	NO		SRV	RF		

P & ID: 8770-G-078 SH 121 (cont) SYSTEM: CHEMICAL AND VOLUME CONTROL

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-2340	H-2	2	B	2.000	GATE	A	MAN	C	NO	FAI	EE	QR		
V-2443	B-4	2	C	3.000	CHECK	A	S/A	C	NO		CV/C	QR		
											CV/O	RF	VR-28	
											CV/PO	QR	VR-28	
V-2444	B-4	2	C	3.000	CHECK	A	S/A	C	NO		CV/C	QR		
											CV/O	RF	VR-28	
											CV/PO	QR	VR-28	
V-2446	F-6	3	C	0.750	RELIEF	A	S/A	C	NO		SRV	RF		
V-2447	E-4	3	C	0.750	RELIEF	A	S/A	C	NO		SRV	RF		
V-2501	E-7	2	B	4.000	GATE	A	MO	O	YES	FAI	EC	CS		
											EO	CS		
											PI	2Y		
V-2504	E-5	3	B	3.000	GATE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
V-2505	H-6	2	A	0.750	GLOBE	A	DO	O	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y		
V-2507	G-6	2	B	0.750	GLOBE	A	SO	LO	YES	FO	EC	QR		
											FS	QR		
											PI	2Y		
V-2508	B-6	2	B	3.000	GATE	A	MO	C	YES	FAI	EO	QR		
											PI	2Y		
V-2509	B-7	2	B	3.000	GATE	A	MO	C	YES	FAI	EO	QR		
											PI	2Y		
V-2510	B-6	2	B	1.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
V-2511	D-5	2	B	1.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		

P & ID: 8770-G-078 SH 121 (cont) SYSTEM: CHEMICAL AND VOLUME CONTROL SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-2514	C-4	2	B	3.000	GATE	A	MO	C	YES	FAI	EO PI	QR 2Y		
V-2525	E-7	3	B	4.000	GATE	A	MO	C	YES	FAI	EC PI	QR 2Y		
V-2526	F-7	3	C	4.000	CHECK	A	S/A	O	NO		CV/O	QR		

P & ID: 8770-G-078 SH 130 SYSTEM: SAFETY INJECTION SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FCV-3306	E-4	2	B	10.000	GLOBE	A	PO	LO	YES	FO	EC	QR		
											PI	2Y		
HCV-3657	F-4	2	B	10.000	GLOBE	A	DO	LC	YES	FC	EO	QR		
											PI	2Y		
MV-03-2	E-4	2	B	10.000	GLOBE	A	MO	LO	YES	FAI	EC	QR		
											PI	2Y		
SR-07-1A	F-8	2	C	1.500	RELIEF	A	S/A	C	NO		SRV	RF		
SR-07-1B	E-8	2	C	1.500	RELIEF	A	S/A	C	NO		SRV	RF		
V-03920	H-3	3	B	2.000	GLOBE	A	MAN	C	NO	FAI	EE	QR		
V-07000	F-7	2	C	14.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-7	
											CV/PO	QR	VR-7	
V-07001	E-7	2	C	14.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-7	
											CV/PO	QR	VR-7	
V-07009	H-2	2	A	2.000	GLOBE	A	MAN	LC	NO		EE	CS		
											SLT-1	2Y	VR-5	
V-3101	D-5	2	C	2.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-29	
											CV/PO	QR	VR-29	
V-3103	D-5	2	C	2.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-29	
											CV/PO	QR	VR-29	
V-3104	E-5	2	C	2.000	CHECK	A	S/A	C	NO		CV/C	QR		
											CV/O	RF	VR-30	
											CV/PO	QR	VR-30	
V-3105	E-5	2	C	2.000	CHECK	A	S/A	C	NO		CV/C	QR		
											CV/O	RF	VR-30	
											CV/PO	QR	VR-30	
V-3106	F-5	2	C	10.000	CHECK	A	S/A	C	NO		CV/C	QR		
											CV/O	CS		
V-3107	E-5	2	C	10.000	CHECK	A	S/A	C	NO		CV/C	QR		
											CV/O	CS		

P & ID: 8770-G-078 SH 130 (cont) SYSTEM: SAFETY INJECTION SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-3206	F-4	2	B	10.000	GATE	A	MO	LO	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
V-3207	E-4	2	B	10.000	GATE	A	MO	LO	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
V-3401	D-7	2	C	6.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-8	
											CV/PO	QR	VR-8	
V-3407	H-3	3	C	0.500	RELIEF	A	S/A	C	NO		SRV	RF		
V-3410	B-7	2	C	8.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-8	
											CV/PO	QR	VR-8	
V-3412	B-3	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3414	B-5	2	C	3.000	STP-CK	A	S/A	C	NO		CV/C	QR		
											CV/O	RF	VR-9	
											CV/PO	CS	VR-9	
V-3417	C-3	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3427	C-5	2	C	3.000	STP-CK	A	S/A	C	NO		CV/C	QR		
											CV/O	RF	VR-9	
											CV/PO	CS	VR-9	
V-3430	D-7	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3431	D-6	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3432	E-8	2	B	14.000	GATE	A	MO	LO	YES	FAI	EC	QR		
											PI	2Y		
V-3439	D-3	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3444	F-8	2	B	14.000	GATE	A	MO	LO	YES	FAI	EC	QR		
											PI	2Y		
V-3452	G-8	2	B	12.000	GATE	A	MO	LC	YES	FAI	EO	QR		
											PI	2Y		
V-3453	G-8	2	B	12.000	GATE	A	MO	LC	YES	FAI	EO	QR		
											PI	2Y		

P & ID: 8770-G-078 SH 130 (cont) SYSTEM: SAFETY INJECTION SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-3456	G-3	2	B	10.000	GATE	A	MO	LC	YES	FAI	EO	QR		
											PI	2Y		
V-3457	G-3	2	B	10.000	GATE	A	MO	LC	YES	FAI	EO	QR		
											PI	2Y		
V-3463	H-2	2	A	2.000	GLOBE	P	MAN	LC	NO		EE	CS		
											SLT-1	2Y	VR-5	
V-3466	H-1	3	C	2.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3654	B-4	2	B	6.000	GATE	P	MO	LO	YES	FAI	PI	2Y		
V-3655	C-4	2	B	4.000	GATE	A	MO	LC	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
V-3656	C-4	2	B	6.000	GATE	A	MO	LO	YES	FAI	EC	QR		
											PI	2Y		
V-3659	H-5	2	B	3.000	GATE	A	MO	LO	YES	FAI	EC	CS		
											PI	2Y		
V-3660	G-5	2	B	3.000	GATE	A	MO	LO	YES	FAI	EC	CS		
											PI	2Y		
V-3662	D-7	2	B	4.000	GATE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
V-3663	D-7	2	B	4.000	GATE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		

P & ID: 8770-G-078 SH 131 SYSTEM: SAFETY INJECTION SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FCV-03-1E	B-6	2	A	0.375	NEEDLE	A	SO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FCV-03-1F	B-7	2	A	0.375	NEEDLE	A	SO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
HCV-3615	H-7	2	B	6.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
HCV-3616	G-7	2	B	2.000	GLOBE	A	MO	C	YES	FAI	EO	QR		
											PI	2Y		
HCV-3617	G-7	2	B	2.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
HCV-3618	F-6	1	B	1.000	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
HCV-3625	F-7	2	B	6.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
HCV-3626	E-7	2	B	2.000	GLOBE	A	MO	C	YES	FAI	EO	QR		
											PI	2Y		
HCV-3627	E-7	2	B	2.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
HCV-3628	F-3	1	B	1.000	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
HCV-3635	D-7	2	B	6.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		

P & ID: 8770-G-078 SH 131 (cont) SYSTEM: SAFETY INJECTION SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
HCV-3636	C-7	2	B	2.000	GLOBE	A	MO	C	YES	FAI	EO	QR		
											PI	2Y		
HCV-3637	C-7	2	B	2.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
HCV-3638	B-5	1	B	1.000	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
HCV-3645	B-7	2	B	6.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
HCV-3646	A-7	2	B	2.000	GLOBE	A	MO	C	YES	FAI	EO	QR		
											PI	2Y		
HCV-3647	A-7	2	B	2.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
HCV-3648	B-3	1	B	1.000	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
MV-03-1A	E-7	2	B	2.000	GLOBE	A	MO	LC	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
MV-03-1B	D-7	2	B	2.000	GLOBE	A	MO	LC	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
V-3113	G-7	1	AC	2.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-10	
											CV/O	RF	VR-10	
											CV/PO	CS	VR-10	
											SLT-2	2Y	VR-2	
V-3114	H-7	1	AC	6.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-11	
											CV/O	CS	VR-11	
											SLT-2	2Y	VR-2	

P & ID: 8770-G-078 SH 131 (cont) SYSTEM: SAFETY INJECTION SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-3123	E-7	1	AC	2.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-10	
											CV/O	RF	VR-10	
											CV/PO	CS	VR-10	
											SLT-2	2Y	VR-2	
V-3124	F-7	1	AC	6.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-11	
											CV/O	CS	VR-11	
											SLT-2	2Y	VR-2	
V-3133	C-7	1	AC	2.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-10	
											CV/O	RF	VR-10	
											CV/PO	CSVR-10		
											SLT-2	2Y	VR-2	
V-3134	D-7	1	AC	6.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-11	
											CV/O	CS	VR-11	
											SLT-2	2Y	VR-2	
V-3143	B-7	1	AC	2.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-10	
											CV/O	RF	VR-10	
											CV/PO	CS		
											SLT-2	2Y	VR-2	
V-3144	B-7	1	AC	6.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-11	
											CV/O	CS	VR-11	
											SLT-2	2Y	VR-2	
V-3211	H-5	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3215	F-5	2	AC	12.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-12	
											CV/O	RF	VR-12	
											SLT-2	2Y	VR-2	
V-3217	F-4	1	AC	12.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-13	
											CV/PO	CS	VR-13	
											CV/O	RF	VR-13	
											SLT-2	2Y	VR-2	
V-3221	H-2	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3225	F-2	2	AC	12.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-12	
											CV/O	RF	VR-12	
											SLT-2	2Y	VR-2	

P & ID: 8770-G-078 SH 131 (cont) SYSTEM: SAFETY INJECTION SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-3227	F-2	1	AC	12.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-13	
											CV/PO	CS	VR-13	
											CV/O	RF	VR-13	
											SLT-2	2Y	VR-2	
V-3231	D-5	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3235	B-5	2	AC	12.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-12	
											CV/O	RF	VR-12	
											SLT-2	2Y	VR-2	
V-3237	B-4	1	AC	12.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-13	
											CV/PO	CS	VR-13	
											CV/O	RF	VR-13	
											SLT-2	2Y	VR-2	
V-3241	D-2	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3245	C-2	2	AC	12.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-12	
											CV/O	RF	VR-12	
											SLT-2	2Y	VR-2	
V-3247	B-1	1	AC	12.000	CHECK	A	S/A	C	NO		CV/C	CS	VR-13	
											CV/PO	CS	VR-13	
											CV/O	RF	VR-13	
											SLT-2	2Y	VR-2	
V-3468	D-7	2	C	2.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3469	E-4	1	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3480	E-5	1	A	10.000	GATE	A	MO	LC	YES	FAI	EO	CS		
											PI	2Y		
											SLT-2	2Y	VR-39	
V-3481	E-5	1	A	10.000	GATE	A	MO	LC	YES	FAI	EO	CS		
											PI	2Y		
											SLT-2	2Y	VR-39	
V-3482	E-5	1	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-3483	E-6	2	C	2.000	RELIEF	A	S/A	C	NO		SRV	RF		

P & ID: 8770-G-078 SH 131 (cont) SYSTEM: SAFETY INJECTION SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-3611	G-6	2	B	1.000	GATE	A	DO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
V-3614	F-5	1	B	12.000	GATE	A	MO	LO	YES	FAI	EC	CS		
											PI	2Y		
V-3621	G-3	2	B	1.000	GATE	A	DO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
V-3624	F-2	1	B	12.000	GATE	A	MO	LO	YES	FAI	EC	CS		
											PI	2Y		
V-3631	B-6	2	B	1.000	GATE	A	DO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
V-3634	B-5	1	B	12.000	GATE	A	MO	LO	YES	FAI	EC	CS		
											PI	2Y		
V-3641	B-3	2	B	1.000	GATE	A	DO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
V-3644	B-2	1	B	12.000	GATE	A	MO	LO	YES	FAI	EC	CS		
											PI	2Y		
V-3651	D-4	1	A	10.000	GATE	A	MO	LC	YES	FAI	EO	CS		
											PI	2Y		
											SLT-2	2Y	VR-39	
V-3652	D-4	1	A	10.000	GATE	A	MO	LC	YES	FAI	EO	CS		
											PI	2Y		
											SLT-2	2Y	VR-39	

P & ID: 8770-G-078 SH 150 SYSTEM: SAMPLING SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-5200	G-7	2	A	0.375	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-5201	F-7	2	A	0.375	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-5202	E-7	2	A	0.375	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-5203	G-7	2	A	0.375	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-5204	F-7	2	A	0.375	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-5205	E-7	2	A	0.375	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		

P & ID: 8770-G-078 SH 160 SYSTEM: WASTE MANAGEMENT SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-6301	F-6	2	A	3.000	DIAPH	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-6302	F-6	2	A	3.000	DIAPH	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		

P & ID: 8770-G-078 SH 163 SYSTEM: WASTE MANAGEMENT SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-6554	F-7	2	A	1.000	DIAPH	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-6555	F-7	2	A	1.000	DIAPH	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-6741	D-7	2	A	1.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-6779	D-7	2	AC	1.000	CHECK	A	S/A	C	NO		CV/C	CS		
											SLT-1	2Y		

P & ID: 8770-G-079 SH 1 SYSTEM: MAIN STEAM SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
HCV-08-1A	K-12	2	BC	34.000	STPCK	A	AO	O	YES		EC	CS		
											PEC	QR		
											PI	2Y		
HCV-08-1B	C-12	2	BC	34.000	STPCK	A	AO	O	YES		EC	CS		
											PEC	QR		
											PI	2Y		
HCV-08-2A	J-10	2	B	6.000	ANGLE	A	DO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
HCV-08-2B	C-10	2	B	6.000	ANGLE	A	DO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
MV-08-13	H-9	2	B	3.000	GATE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
MV-08-14	E-9	2	B	3.000	GATE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
MV-08-1A	K-12	2	B	3.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											PI	2Y		
MV-08-1B	D-11	2	B	3.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											PI	2Y		
MV-08-3	M-10	2	B	4.000	GATE	A	MO	C	YES	FAI	EO	QR		
											PI	2Y		
V-08117	K-12	2	C	34.000	CHECK	A	S/A	O	NO		CV/PO	RF	VR-14	
											INSP	RF	VR-14	
V-08130	G-9	2	C	4.000	CHECK	A	S/A	O	NO		CV/O	CS	VR-40	
											CV/PO	QR	VR-40	
											INSP	RF	VR-40	
V-08148	C-12	2	C	34.000	CHECK	A	S/A	O	NO		CV/PO	RF	VR-14	
											INSP	RF	VR-14	

P & ID: 8770-G-079 SH 1 (cont) SYSTEM: MAIN STEAM SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-08163	E-9	2	C	4.000	CHECK	A	S/A	C	NO		CV/O	CS	VR-40	
											CV/PO	QR	VR-40	
											INSP	RF	VR-40	
V-08372	E-8	2	C	0.750	CHECK	A	S/A	O	NO		INSP	RF	VR-41	
V-08373	H-9	2	C	0.750	CHECK	A	S/A	O	NO		INSP	RF	VR-41	
V-08384	F-8	2	B	0.750	GLOBE	A	MAN	LO	NO		EE	QR		
V-08387	G-9	2	B	0.750	GLOBE	A	MAN	LO	NO		EE	QR		
V-8201	K-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8202	K-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8203	K-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8204	K-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8205	C-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8206	C-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8207	C-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8208	C-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8209	K-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8210	K-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8211	K-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8212	K-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8213	C-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8214	C-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8215	C-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-8216	C-11	2	C	6.000	RELIEF	A	S/A	C	NO		SRV	RF		

P & ID: 8770-G-080 SH 3 SYSTEM: FEEDWATER SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
MV-09-10	E-16	3	B	4.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
MV-09-11	E-4	3	B	4.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
MV-09-12	E-13	3	B	4.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
MV-09-7	E-6	2	B	20.000	GATE	A	MO	O	YES	FAI	EC	CS		
											PI	2Y		
MV-09-8	E-11	2	B	20.000	GATE	A	MO	O	YES	FAI	EC	CS		
											PI	2Y		
MV-09-9	E-1	3	B	4.000	GLOBE	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
V-09107	M-4	3	C	4.000	CHECK	A	S/A	C	NO		CV/O	CS		
V-09119	D-1	2	C	4.000	CHECK	A	S/A	C	NO		CV/O	CS		
V-09120	C-1	2	B	4.000	GATE	A	MAN	LO	NO		EE	QR		
V-09123	K-4	3	C	4.000	CHECK	A	S/A	C	NO		CV/O	CS		
V-09135	D-16	2	C	4.000	CHECK	A	S/A	C	NO		CV/O	CS		
V-09136	C-16	2	B	4.000	GATE	A	MAN	LO	NO		EE	QR		
V-09139	H-4	3	C	6.000	CHECK	A	S/A	C	NO		CV/O	CS		
V-09151	E-4	2	C	4.000	CHECK	A	S/A	C	NO		CV/O	CS		
V-09152	D-4	2	B	4.000	GATE	A	MAN	LO	NO		EE	QR		
V-09157	E-13	2	C	4.000	CHECK	A	S/A	C	NO		CV/O	CS		
V-09158	D-13	2	B	4.000	GATE	A	MAN	LO	NO		EE	QR		
V-09248	E-6	2	C	20.000	CHECK	A	S/A	O	NO		INSP	RF	VR-38	

P & ID: 8770-G-080 SH 3 (cont) SYSTEM: FEEDWATER SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-09252	A-6	2	C	18.000	CHECK	A	S/A	O	NO		CV/O	QR		
V-09280	E-11	2	C	20.000	CHECK	A	S/A	O	NO		INSP	RF	VR-38	
V-09294	A-11	2	C	18.000	CHECK	A	S/A	O	NO		CV/O	QR		
V-09303	I-4	3	C	2.000	CHECK	A	S/A	C	NO		CV/PO	QR	VR-31	
											INSP	RF	VR-31	
V-09304	L-4	3	C	2.000	CHECK	A	S/A	C	NO		CV/PO	QR	VR-31	
											INSP	RF	VR-31	
V-09305	N-4	3	C	2.000	CHECK	A	S/A	C	NO		CV/PO	QR	VR-31	
											INSP	RF	VR-31	
V-12174	K-11	3	C	8.000	CHECK	A	S/A	C	NO		CV/O	CS		
											CV/PO	QR		
V-12176	K-11	3	C	8.000	CHECK	A	S/A	C	NO		CV/O	CS		
											CV/PO	QR		
V-12507	M-9	3	C	0.750	CHECK	A	S/A	C	NO		CV/PO	QR	VR-31	
											INSP	RF	VR-31	

P & ID: 8770-G-082 SH 1 SYSTEM: INTAKE COOLING WATER SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
MV-21-2	E-5	3	B	24.000	BUTFLY	A	MO	O	YES	FAI	EC PI	QR 2Y		
MV-21-3	F-4	3	B	24.000	BUTFLY	A	MO	O	YES	FAI	EC PI	QR 2Y		
SR-21-1A	C-3	3	C	2.000	RELIEF	A	S/A	C	NO		SRV	RF		
SR-21-1B	C-5	3	C	2.000	RELIEF	A	S/A	C	NO		SRV	RF		
TCV-14-4A	B-3	3	B	30.000	BUTFLY	A	PO	O	NO	FO	EO FS	QR QR	VR-35	
TCV-14-4B	B-3	3	B	30.000	BUTFLY	A	PO	O	NO	FO	EO FS	QR QR	VR-35	
V-21162	H-4	3	C	30.000	CHECK	A	S/A	O	NO		CV/C CV/O	QR QR		
V-21205	H-5	3	C	30.000	CHECK	A	S/A	O	NO		CV/C CV/O	QR QR		
V-21208	H-7	3	C	30.000	CHECK	A	S/A	O	NO		CV/C CV/O	QR QR		

P & ID: 8770-G-083 SH 1 SYSTEM: COMPONENT COOLING SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
HCV-14-1	D-6	2	A	8.000	BUTFLY	A	PO	O	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y	VR-5	& VR-34
HCV-14-10	H-15	3	B	16.000	BUTFLY	A	PO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
HCV-14-2	D-2	2	A	8.000	BUTFLY	A	PO	O	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y	VR-5	& VR-34
HCV-14-3A	L-2	3	B	14.000	BUTFLY	A	PO	C	YES	FO	EO	CS		
											FS	CS		
											PI	2Y		
HCV-14-3B	N-3	3	B	14.000	BUTFLY	A	PO	C	YES	FO	EO	CS		
											FS	CS		
											PI	2Y		
HCV-14-6	D-1	2	A	8.000	BUTFLY	A	PO	O	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y	VR-5	& VR-34
HCV-14-7	D-5	2	A	8.000	BUTFLY	A	PO	O	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y	VR-5	& VR-34
HCV-14-8A	F-14	3	B	16.000	BUTFLY	A	PO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
HCV-14-8B	F-15	3	B	16.000	BUTFLY	A	PO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
HCV-14-9	G-15	3	B	16.000	BUTFLY	A	PO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
SR-14-7A	L-1	3	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		

P & ID: 8770-G-083 SH 1 (cont) SYSTEM: COMPONENT COOLING SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
SR-14-7B	M-1	3	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
SR-14-8A	B-9	3	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
SR-14-8B	B-10	3	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
SR-14-8C	B-8	3	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
SR-14-8D	B-8	3	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-14143	E-16	3	C	20.000	CHECK	A	S/A	O	NO		CV/C CV/O	QR QR		
V-14147	E-16	3	C	20.000	CHECK	A	S/A	O	NO		CV/C CV/O	QR QR		
V-14151	E-17	3	C	20.000	CHECK	A	S/A	O	NO		CV/C CV/O	QR QR		

P & ID: 8770-G-084 SH 1 SYSTEM: MAKE-UP WATER SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
MV-15-1	H-16	2	A	2.000	GATE	A	MO	C	YES	FAI	EC	QR		
											PI	2Y		
											SLT-1	2Y		
V-15328	I-16	2	AC	2.000	CHECK	A	S/A	C	NO		CV/C	RF	VR-15	
											SLT-1	2Y		

P & ID: 8770-G-085 SH 1 SYSTEM: SERVICE AIR SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
SH-18797	G-6	2	A	1.000	BALL	P	MAN	LC	NO		SLT-1	2Y		
SH-18798	G-6	2	A	1.000	BALL	P	MAN	LC	NO		SLT-1	2Y		
V-18794	G-6	2	A	2.000	GLOBE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-18796	G-6	2	A	2.000	GLOBE	P	MAN	LC	NO		SLT-1	2Y	VR-5	

P & ID: 8770-G-085 SH 2 SYSTEM: INSTRUMENT AIR SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
MV-18-1	F-6	2	A	2.000	GATE	A	MO	O	YES	FAI	EC	QR		
											PI	2Y		
											SLT-1	2Y		
V-18195	E-5	2	AC	2.000	CHECK	A	S/A	C	NO		CV/C	RF	VR-16	
											SLT-1	2Y		

P & ID: 8770-G-088 SYSTEM: CONTAINMENT SPRAY SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FCV-07-1A	G-12	2	B	12.000	GATE	A	DO	C	YES	FO	EO	QR		
											FS	QR		
											PI	2Y		
FCV-07-1B	H-12	2	B	12.000	GATE	A	DO	C	YES	FO	EO	QR		
											FS	QR		
											PI	2Y		
LCV-07-11A	J-11	2	A	2.000	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y	VR-5	
LCV-07-11B	J-12	2	A	2.000	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y	VR-5	
MV-07-1A	E-3	2	B	24.000	BUTFLY	A	MO	O	YES	FAI	EC	QR		
											PI	2Y		
MV-07-1B	E-2	2	B	24.000	BUTFLY	A	MO	O	YES	FAI	EC	QR		
											PI	2Y		
MV-07-2A	K-12	2	B	24.000	BUTFLY	A	MO	C	YES	FAI	EO	QR		
											PI	2Y		
MV-07-2B	K-12	2	B	24.000	BUTFLY	A	MO	C	YES	FAI	EO	QR		
											PI	2Y		
MV-07-3A	G-13	2	B	12.000	GATE	A	MO	LO	YES	FAI	EC	QR		
											PI	2Y		
MV-07-3B	H-13	2	B	12.000	GATE.	A	MO	LO	YES	FAI	EC	QR		
											PI	2Y		
SE-07-1A	N-4	2	B	2.000	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
SE-07-1B	N-5	2	B	2.000	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		

P & ID: 8770-G-088 (cont) SYSTEM: CONTAINMENT SPRAY SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
SE-07-2A	N-4	2	B	2.000	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
SE-07-2B	N-5	2	B	2.000	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
SR-07-2	K-3	2	C	1.000	RELIEF	A	S/A	C	NO		SRV	RF		
V-07119	J-7	2	C	24.000	CHECK	A	S/A	C	NO		CV/PO	RF	VR-17	
											CV/PO	QR	VR-17	
											INSP	RF	VR-17	
V-07120	J-7	2	C	24.000	CHECK	A	S/A	C	NO		CV/PO	QR	VR-17	
											CV/PO	RF	VR-17	
											INSP	RF	VR-17	
V-07129	H-5	2	C	12.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-18	
											CV/PO	QR	VR-18	
V-07130	H-6	2	B	12.000	GATE	A	MAN	O	NO		EE	QR		
V-07143	G-5	2	C	12.000	CHECK	A	S/A	C	NO		CV/O	RF	VR-18	
											CV/PO	QR	VR-18	
V-07145	G-6	2	B	12.000	GATE	A	MAN	O	NO		EE	QR		
V-07170	J-12	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-07172	K-12	2	C	24.000	CHECK	A	S/A	C	NO		INSP	RF	VR-19	
V-07174	K-12	2	C	24.000	CHECK	A	S/A	C	NO		INSP	RF	VR-19	
V-07188	I-14	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-07189	I-14	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-07192	G-14	2	C	10.000	CHECK	A	S/A	C	NO		INSP	RF	VR-20	
V-07193	F-14	2	C	10.000	CHECK	A	S/A	C	NO		INSP	RF	VR-20	
V-07206	I-12	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	

P & ID: 8770-G-088 (cont) SYSTEM: CONTAINMENT SPRAY SYSTEM

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-07231	K-5	2	C	2.000	CHECK	A	S/A	C	NO		CV/O	QR		
V-07232	K-4	2	C	2.000	CHECK	A	S/A	C	NO		CV/O	QR		
V-07256	J-1	2	C	2.000	CHECK	A	S/A	C	NO		CV/C	RF	VR-21	
											CV/O	RF	VR-21	
V-07258	J-2	2	C	2.000	CHECK	A	S/A	C	NO		CV/C	RF	VR-21	
											CV/O	RF	VR-21	
V-07269	J-2	2	C	3.000	CHECK	A	S/A	C	NO		CV/PO	QR		
											INSP	RF	VR-22	
V-07270	K-2	2	C	3.000	CHECK	A	S/A	C	NO		CV/PO	QR		
											INSP	RF	VR-22	

P & ID: 8770-G-092 SH 1 SYSTEM: MISCELLANEOUS SAMPLING SYSTEMS

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FCV-26-1	G-2	2	A	1.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FCV-26-2	G-4	2	A	1.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FCV-26-3	H-2	2	A	1.000	GLOBE	A	DO	C	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FCV-26-4	H-4	2	A	1.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FCV-26-5	I-2	2	A	1.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FCV-26-6	I-4	2	A	1.000	GLOBE	A	DO	O	YES	FC	EC	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FSE-27-1	A-12	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FSE-27-10	C-13	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		

P & ID: 8770-G-092 SH 1 (cont) SYSTEM: MISCELLANEOUS SAMPLING SYSTEMS

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FSE-27-11	C-13	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FSE-27-2	B-12	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FSE-27-3	B-12	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FSE-27-4	B-12	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FSE-27-5	C-14	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FSE-27-6	B-14	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FSE-27-7	B-14	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		

P & ID: 8770-G-092 SH 1 (cont) SYSTEM: MISCELLANEOUS SAMPLING SYSTEMS

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FSE-27-8	C-11	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
FSE-27-9	C-14	2	A	0.375	GLOBE	A	SO	C	YES	FC	EC	QR		
											EO	QR		
											FS	QR		
											PI	2Y		
											SLT-1	2Y		
V-27101	B-13	2	AC	0.375	CHECK	A	S/A	C	NO		CV/C	CS		
											CV/O	QR		
											SLT-1	2Y		
V-27102	B-13	2	AC	0.375	CHECK	A	S/A	C	NO		CV/C	CS		
											CV/O	QR		
											SLT-1	2Y		
V-27105	E-13	2	C	0.375	CHECK	A	S/A	C	NO		CV/O	QR		
V-27110	E-13	2	C	0.375	CHECK	A	S/A	C	NO		CV/O	QR		

P & ID: 8770-G-093 SYSTEM: MISCELLANEOUS SYSTEMS

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
SB-37-1	J-11	3	B	54.000	BUTFLY	A	AO	C	YES	FO	EO	SP	VR-25	
											FS	SP	VR-25	
											PI	2Y		
SB-37-2	J-12	3	B	54.000	BUTFLY	A	AO	C	YES	FO	EO	SP	VR-25	
											FS	SP	VR-25	
											PI	2Y		
V-00101	F-11	2	A	8.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-34	
V-00139	I-1	2	A	0.500	GLOBE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-00140	I-1	2	A	1.000	GLOBE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-00143	I-2	2	A	1.000	GLOBE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-00144	I-2	2	A	0.500	GLOBE	P	MAN	LC	NO		SLT-1	2Y	VR-5	

P & ID: 8770-G-878 SYSTEM: HEATING, VENT., & AIR CONDITIONING

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FCV-25-1	C-2	2	B	48.000	BUTFLY	A	PO	C	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
FCV-25-2	C-3	2	A	48.000	BUTFLY	A	PO	C	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y	VR-5	& VR-34
FCV-25-3	C-3	2	A	48.000	BUTFLY	A	PO	C	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y	VR-5	& VR-34
FCV-25-4	C-6	2	A	48.000	BUTFLY	A	PO	C	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y	VR-5	& VR-34
FCV-25-5	C-7	2	A	48.000	BUTFLY	A	PO	C	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
											SLT-1	2Y	VR-5	& VR-34
FCV-25-6	C-8	2	B	48.000	BUTFLY	A	PO	C	YES	FC	EC	CS		
											FS	CS		
											PI	2Y		
FCV-25-7	C-15	2	AC	24.000	BUTFLY	A	DO	C	YES	FC	EC	SA		
											EO	SA		
											FS	SA		
											PI	2Y		
											SLT-1	2Y	VR-34	
FCV-25-8	C-15	2	AC	24.000	BUTFLY	A	DO	C	YES	FC	EC	SA		
											EO	SA		
											FS	SA		
											PI	2Y		
											SLT-1	2Y	VR-34	
V-25-12	N-8	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-25-14	K-8	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-25-16	M-8	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	

P & ID: 8770-G-878 (cont) SYSTEM: HEATING, VENT., & AIR CONDITIONING

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
V-25-20	C-14	2	AC	24.000	CHECK	A	S/A	C	NO		CV/C	CS		
											CV/O	CS		
											SLT-1	2Y	VR-34	
V-25-21	C-14	2	AC	24.000	CHECK	A	S/A	C	NO		CV/C	CS		
											CV/O	CS		
											SLT-1	2Y	VR-34	
V-25011	N-7	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-25013	K-7	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	
V-25015	N-7	2	A	3.000	GATE	P	MAN	LC	NO		SLT-1	2Y	VR-5	

P & ID: 8770-G-879 SYSTEM: HEATING, VENT., AND AIR CONDITIONING

VALVE NUMBER	COORD.	CL	CAT.	SIZE	TYPE	A/P	ACT. TYPE	NORM POS.	REM IND	FAIL MODE	EXAM	TEST FREQ	RELIEF REQ.	REMARKS
FCV-25-11	H-14	2	B	16.000	BUTFLY	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
FCV-25-12	J-14	2	B	16.000	BUTFLY	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
FCV-25-13	I-16	2	B	12.000	BUTFLY	A	MO	O	YES	FAI	EO	QR		
											PI	2Y		
FCV-25-14	E-11	3	B	12.000	BUTFLY	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
FCV-25-15	E-11	3	B	12.000	BUTFLY	A	MO	O	YES	FAI	EC	QC		
											EO	QR		
											PI	2Y		
FCV-25-16	E-10	3	B	12.000	BUTFLY	A	MO	O	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
FCV-25-17	E-11	3	B	12.000	BUTFLY	A	MO	C	YES	FAI	EC	QR		
											EO	QR		
											PI	2Y		
FCV-25-18	A-10	3	B	6.000	BUTFLY	A	MO	O	YES	FAI	EC	QR		
											PI	2Y		
FCV-25-19	A-11	3	B	6.000	BUTFLY	A	MO	O	YES	FAI	EC	QR		
											PI	2Y		
FCV-25-24	B-10	3	B	8.000	BUTFLY	A	MO	O	YES	FAI	EC	QR		
											PI	2Y		
FCV-25-25	B-11	3	B	8.000	BUTFLY	A	MO	O	YES	FAI	EC	QR		
											PI	2Y		
V-25-23	J-14	2	C	8.000	CHECK	A	S/A	C	NO		CV/O	QR		
V-25-24	H-14	2	C	8.000	CHECK	A	S/A	C	NO		CV/O	QR		

Appendix D

Valve Program
Requests for Relief

RELIEF REQUEST NO. VR-1

SYSTEM:

Various

COMPONENTS:

Any valves tested during cold shutdown conditions.

CATEGORY:

Various

FUNCTION:

Various

SECTION XI REQUIREMENT:

Valves shall be exercised ... unless such operation is not practical during plant operation. If only limited operation is practical during plant operation, the valve shall be part-stroke exercised during plant operation and full stroke exercised during cold shutdowns. Full stroke exercising during cold shutdowns for all valves not full-stroke exercised during plant operation shall be on a frequency determined by the intervals between shutdowns as follows:
For intervals of 3 months or longer - exercise during each shutdown. (IWV-3412, IWV-4315 and IWV-3522)

BASIS FOR RELIEF:

In many instances testing of all valves designated for testing during cold shutdown cannot be completed due to the brevity of an outage or the lack of plant conditions needed for testing specific valves. It has been the policy of the NRC that if testing commences in a reasonable time and reasonable efforts are made to test all valves, then outage extension or significant changes in plant conditions are not required when the only reason is to provide the opportunity for completion of valve testing.

ASME/ANSI OM-1987, Operation and Maintenance Of Nuclear Power Plants, Part 10 (Paragraphs 4.2.1.2 and 4.3.2.2) recognizes this issue and allows deferred testing as set forth below.

RELIEF REQUEST NO. VR-1 (cont.)

ALTERNATE TESTING:

For those valves designated to be exercised or tested during cold shutdown, exercising shall commence as soon as practical after the plant reaches a stable cold shutdown condition as defined by the applicable Technical Specification but no later than 48 hours after reaching cold shutdown. If an outage is sufficiently long enough to provide for testing of all valves required to be tested during the cold shutdown period, then the 48-hour requirement need not apply if all valves are tested during the outage.

Valve testing need not be performed more often than once every three (3) months except as provided for in IWV-3417(a). Completion of all valve testing during a cold shutdown outage is not required if the length of the shutdown period is insufficient to complete all testing. Testing not completed prior to startup may be rescheduled for the next shutdown in a sequence such that the test schedule does not omit nor favor certain valves or groups of valves.

For the purpose of this requirement, the term 'cold shutdown' refers to the respective condition as noted in the Technical Specifications. The program tables identify those valves to which cold shutdown testing applies. Refer to Appendix E for discussion of the reasons and justification for allowing cold shutdown vs. quarterly testing.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-2

SYSTEM:

Safety Injection/Residual Heat Removal (8770-G-078, Sh 131)

COMPONENTS:

V-3113	V-3134	V-3225	V-3247
V-3114	V-3143	V-3227	
V-3123	V-3144	V-3235	
V-3124	V-3215	V-3237	
V-3133	V-3217	V-3245	

CATEGORY:

A/C (Check Valves)

FUNCTION:

These check valves open to provide for high-pressure and low-pressure safety injection to the RCS. Each of these valves is designated as a pressure isolation valve (PIV) and provides isolation of safeguard systems from the RCS.

SECTION XI REQUIREMENT:

The leakage rate for valves 6-inches or greater shall be evaluated per Subsection IWV-3427(b). (IWV-3521)

BASIS FOR RELIEF:

Leaktesting of these valves is primarily for the purpose of confirming their capability of preventing over-pressurization and catastrophic failure of the safety injection piping and components. In this regard, special leakage acceptance criteria has been established and included in the St. Lucie 1 Technical Specifications (Table 3.4.6-1) that addresses the question of valve integrity in a more appropriate manner for these valves. Satisfying both the Technical Specification and the Code acceptance criteria is not warranted and implementation would be difficult and confusing.

RELIEF REQUEST NO. VR-2 (cont.)

ALTERNATE TESTING:

The leakage rate acceptance criteria for these valves will be established per the St. Lucie Unit 1 Technical Specifications, Table 3.4.6-1.

1. Leakage rates less than 1.0 gpm are acceptable.

2. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are acceptable if the latest measured rate has not exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

3. Leakage rates greater than 1.0 gpm, but less than or equal to 5.0 gpm, are unacceptable if the latest measured rate exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

4. Leakage rates greater than 5.0 gpm are unacceptable.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-3

SYSTEM:

Various

COMPONENTS:

Various

CATEGORY:

Various

FUNCTION:

This is a generic request for relief

SECTION XI REQUIREMENT:

If, for power-operated valves, an increase in stroke time of 50% or more for valves with full-stroke times less than or equal to 10 seconds is observed, the test frequency shall be increased to once each month until corrective action is taken, at which time the original test frequency shall be resumed (IWV-3417(a))

BASIS FOR RELIEF:

The stroke time measurements taken during testing of fast-acting valves (those less than 2 seconds) are subject to considerable variation due to conditions unrelated to the material condition of the valve (eg. test conditions, operator reaction time). In accordance with Reference 2.7, Position 6, an alternate method of evaluating stroke times is considered acceptable.

RELIEF REQUEST NO. VR-3 (cont.)

ALTERNATE TESTING:

The stroke time evaluation for those valves designated in the in the testing procedures as "fast-acting" will not account for successive increases of measured stroke time per IWV-3417(a) with the change in test frequency as required. In lieu of this, the assigned maximum limiting value of stroke time will be established at 2 seconds. Upon exceeding the 2-second limit, a valve will be declared inoperable and corrective action taken in accordance with IWV-3417(b).

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 6 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-4

WITHDRAWN
by
Revision #3

RELIEF REQUEST NO. VR-5

SYSTEM:

Primary Containment

COMPONENTS:

Containment Isolation Valves per Table VR-5-1

CATEGORY:

A or A/C

FUNCTION:

These valves are closed to provide containment isolation.

SECTION XI REQUIREMENT:

Category A valves shall be seat leak tested and a maximum permissible leakage rate shall be specified. Individual valve leakage rates shall be evaluated per IWV-3426 and IWV-3427. (IWV-3426, IWV-3427, NRC Generic Letter 89-04)

BASIS FOR RELIEF:

Individual leakage rate tests are impractical in 14 cases due to the configuration of the system piping and components. In these 14 cases, the leakage rate tests must be performed with the test volume located between the two valves while the combined leakage rate is measured. In each of the 14 valve pairs (see Table VR-5-1 below), the two valves are equal in size and type, and the leakage limit is in proportion to their size. The leakage limits are controlled by procedure and are conservative such that excessive leakage through any individual valve, even the smallest, would be detected and the appropriate corrective action taken.

At St. Lucie, the valve leakrate acceptance criteria for containment isolation valves is determined by applying a fraction of the aggregate allowable leakrate to each valve based on the ratio of its nominal diameter to the sum of the diameters of all containment isolation valves tested in the Program. In those instances where several valves are tested as a group, the valves' individual diameters are summed to arrive at an "effective" size for the penetration and that

RELIEF REQUEST NO. VR-5 (cont.)

BASIS FOR RELIEF (cont.):

number is used in the ratio to the total for all valves to arrive at an acceptance criteria for the "test."

ALTERNATE TESTING:

In those cases where individual valves testing is impractical, valves will be leaktested simultaneously in multiple valve arrangements and a maximum permissible leakage rate will be applied to each combination of valves. Test results from tests of multiple valves will be evaluated in accordance with IWV-3426 and IWV-3427.

TABLE VR-5-1

PENETRATION NO.	VALVES
8	V-18794 and V-18796
10	FCV-25-4 and FCV-25-5
11	FCV-25-2 and FCV-25-3
23	HCV-14-1 and HCV-14-7
24	HCV-14-2 and HCV-14-6
41	V-3463 and V-07009
42	LCV-07-11A and LCV-07-11B
46	V-07206 and V-07189
47	V-07170 and V-07188
52d	V-00140 and V-00143
52e	V-00139 and V-00144
56	V-25011 and V-25-12
57	V-25013 and V-25-14
58	V-25015 and V-25-16

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-6

SYSTEM:

Chemical and Volume Control (8770-G-078 Sh 121)

COMPONENTS:

V-2177
V-2190
V-2191

CATEGORY:

C

FUNCTION:

V-2177 opens to provide a flowpath for emergency boration from the boric acid makeup pumps to the suction of the charging pumps. Likewise, V-2190 opens to provide a flowpath for emergency boration via gravity drain from the boric acid makeup tanks to the suction of the charging pumps. Valve V-2191 opens to provide a flowpath from the refueling water tank (RWT) to the suction of the charging pumps as an alternate supply of borated water for boration.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Testing these valves in the open direction requires the introduction of highly concentrated boric acid solution from the boric acid makeup tanks to the suction of the charging pumps. This, in turn, would result in the addition of excess boron to the RCS. This rapid insertion of negative reactivity would result in a rapid RCS cooldown and depressurization. A large enough boron addition could result in an unscheduled plant trip and a possible initiation of the Safety Injection Systems.

RELIEF REQUEST NO. VR-6 (cont.)

BASIS FOR RELIEF (cont.):

During cold shutdown, the introduction of excess quantities of boric acid into the RCS is undesirable from the aspect of maintaining proper plant chemistry and the inherent difficulties that may be encountered during the subsequent startup due to over-boration of the RCS. The waste management system would also be overburdened by the large amounts of RCS coolant that would require processing to decrease the boron concentration. Since the boron concentration is normally increased to a limited extent for shutdown margin prior to reaching cold shutdown, a part stroke exercise of these valves could be performed at that time.

ALTERNATE TESTING:

All of the check valves will be part stroke exercised during each cold shutdown per VR-1 and full stroke exercised during each reactor refueling outage.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-7

SYSTEM:

Safety Injection (8770-G-078 Sh 130)

COMPONENTS:

V-07000
V-07001

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the RWT to the suction of the associated low-pressure safety injection pump.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Full stroke exercising these valves to the open position requires injection into the RCS via the LPSI pumps. During plant operation this is precluded because the LPSI pumps cannot develop sufficient discharge pressure to overcome primary system pressure. At cold shutdown, the shutdown cooling system cannot provide sufficient letdown flow to the RWT to accommodate full design flow from the RWT while maintaining the necessary core cooling function. Therefore, the only practical opportunity for testing these valves is during refueling outages when water from the RWT is used to fill the cavity.

RELIEF REQUEST NO. VR-7 (cont.)

ALTERNATE TESTING:

These valves will be partial-flow exercised during quarterly testing of the LPSI pumps via the minimum flow circuit and full-flow exercised during each reactor refueling outage.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 1 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-8

SYSTEM:

Safety Injection (8770-G-078 Sh 130)

COMPONENTS:

V-3401
V-3410

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the RWT and the containment sump to the suction of the associated high-pressure safety injection pump (HPSI).

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Full stroke exercising these valves to the open position requires injection via the HPSI pumps into the RCS. During plant operation this is precluded because the HPSI pumps cannot develop sufficient discharge pressure to overcome primary system pressure. During cold shutdown conditions, operation of the HPSI pumps is restricted to preclude RCS system pressure transients that could result in exceeding the pressure-temperature limits specified in the Technical Specifications, Section 3.4.9.

RELIEF REQUEST NO. VR-8 (cont.)

ALTERNATE TESTING:

These valves will be partial-flow exercised during quarterly testing of the HPSI pumps via the minimum flow circuit and full-flow exercised during each reactor refueling outage.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 1 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-9

SYSTEM:

Safety Injection (8770-G-078 Sh 130)

COMPONENTS:

V-3414
V-3427

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the respective HPSI pumps to the high-pressure safety injection headers. They close to prevent recirculation through an idle pump.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Full stroke exercising these valves to the open position requires injection into the RCS via the HPSI pumps. During plant operation this is precluded because the HPSI pumps cannot develop sufficient discharge pressure to overcome primary system pressure. During cold shutdown conditions, operation of the HPSI pumps is restricted to preclude RCS system pressure transients that could result in exceeding the pressure-temperature limits specified in the Technical Specifications, Section 3.4.9.

Partial flow exercising of these valves is performed when ever its associated HPSI pump is used to refill a SIT. The acceptable SIT level and pressure bands specified by the Technical Specifications are very narrow. The SITs are only refilled on an as needed basis; therefore, the partial flow test cannot readily be incorporated into a quarterly test. Alternate flow paths for partial flow tests are limited by the design pressure of the piping.

RELIEF REQUEST NO. VR-9 (cont.)

ALTERNATE TESTING:

These valves will be verified closed quarterly.

These valves check will be part stroke exercised to the open position during each cold shutdown per VR-1 and full stroke exercised to the open position during each reactor refueling outage.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-10

SYSTEM:

Safety Injection (8770-G-078 Sh 131)

COMPONENTS:

V-3113
V-3123
V-3133
V-3143

CATEGORY:

A/C

FUNCTION:

These valves open to provide flowpaths from the high-pressure safety injection headers to the RCS and close to isolate the headers from the high pressure of the reactor coolant system.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Full stroke exercising of these valves would require operating a high pressure safety injection (HPSI) pump at nominal accident flowrate and injecting into the reactor coolant system since no full flow recirculation path exists. During normal power operation this is not possible because the HPSI pumps do not develop sufficient discharge pressure to overcome reactor coolant system pressure. During cold shutdown conditions, operation of the HPSI pumps is restricted to preclude RCS system pressure transients that could result in exceeding the pressure-temperature limits specified in the Technical Specifications, Section 3.4.9.

Partial flow exercising of one of these check valves is performed whenever its associated SIT is refilled. The acceptable SIT level band specified by the Technical Specification is very narrow. The SITs are only refilled on an as needed basis; therefore, the partial flow test cannot readily be incorporated into a quarterly test.

RELIEF REQUEST NO. VR-10 (cont.)

BASIS FOR RELIEF (cont.):

These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. These check valves are required to be leak tested by the Technical Specifications (see VR-2). The leak test utilizes the volume of pressurized water (200 - 250 psig) in a safety injection tank (SIT) to pressurize the down stream side of one of the check valves. The motor operated valve (MOV) upstream of the check valve is closed and the drain line located between the MOV and check valve is opened. Once the initial volume of trapped water is drained, the check valve leakage is collected using plastic tubing and poly bottles. The leakage volume and collection times are used to calculate the check valve leakage rate.

The drain valves for these tests are located along the north and south walls of the west end of the pipe tunnel in the Unit 1 reactor auxiliary building (RAB). This area of the RAB is designated as a high radiation area. In the center of the piping tunnel hallway the general area radiation levels vary from 20 to 30 mRem/Hr. Along the walls of the pipe tunnel where the drain valves are located, the contact radiation levels range from 200 mRem/Hr. to 1,600 mRem/Hr. The test requires at least 3 test personnel for 1 to 2 hours to properly perform the procedure. In addition, the test personnel must handle up to several gallons of contaminated water per test, some of which could be under pressure when first vented. Performing this test procedure each quarter would result in unnecessary personnel radiation exposures and possible personnel contaminations.

The main reason for check valve closure tests is to prove that the check valve will return to the closed position once it has been cycled open. During normal power operation, the HPSI header check valves are cycled open only while its associated SIT is filled. Performing a reverse flow test on a check valve that has not been opened is not warranted. However, if these check valves are cycled open, a back flow test could be performed to verify closure. Since the SITs must be pressurized to perform the test, the test can only be performed during those operating modes which require the SITs to be operational.

RELIEF REQUEST NO. VR-10 (cont.)

ALTERNATE TESTING:

These valves will be part-stroke exercised open while refilling a SIT. The SIT tanks will only be refilled as required to maintain them within the Technical Specification limits. No SIT will be filled for the sole purpose of part-stroke exercising any one of these check valves.

While in modes 1, 2, and 3 (with pressurizer pressure > 1750 psia) a backflow test will be performed on each check valve cycled open while filling a SIT. The test will be performed within 24 hours after the filling of the SIT.

At least once during each reactor refueling outage these valves will be full-stroke exercised to the open position.

These valves will be verified to close in conjunction with PIV leaktesting (see VR-2).

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04 and, as such, is considered to be approved upon submittal.

This relief request has been updated to include the plant's response to Anomaly # 8 addressed by the St. Lucie Unit 1 Safety Evaluation issued by the NRC on 26 February 1992.

RELIEF REQUEST NO. VR-11

SYSTEM:

Safety Injection (8770-G-078 Sh 131)

COMPONENTS:

V-3114
V-3124
V-3134
V-3144

CATEGORY:

A/C

FUNCTION:

These valves open to provide flowpaths from the low-pressure safety injection headers to the RCS and close to isolate the headers from the high pressure of the reactor coolant system.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Since no full flow recirculation path exists, full stroke exercising of these valves would require operating a low pressure safety injection (LPSI) pump at nominal accident flowrate and injecting into the reactor coolant system. At power operation this is not possible because the LPSI pumps do not develop sufficient discharge pressure to overcome reactor coolant system pressure.

These are simple check valves with no external means of position indication. The only practical means of verifying closure is by performing a leaktest or backflow test. These check valves are required to be leak tested by the Technical Specifications (see VR-2). The leak test utilizes the volume of pressurized water (200 - 250 psig) in a safety injection tank (SIT) to pressurize the down stream side of one of the check valves. The motor operated valve (MOV) upstream of the check valve is closed and the drain line located between

RELIEF REQUEST NO. VR-11 (cont.)

BASIS FOR RELIEF (cont.):

the MOV and check valve is opened. Once the initial volume of trapped water is drained, the check valve leakage is collected using plastic tubing and poly bottles. The leakage volume and collection times are used to calculate the check valve leakage rate.

The drain valves for these tests are located along the north and south walls of the west end of the pipe tunnel in the Unit 1 reactor auxiliary building (RAB). This area of the RAB is designated as a high radiation area. In the center of the pipe tunnel hallway the general area radiation levels vary from 20 to 30 mRem/Hr. Along the walls of the pipe tunnel where the drain valves are located, the contact radiation levels range from 200 mRem/Hr. to 1,600 mRem/Hr. The test requires at least 3 test personnel for 1 to 2 hours to properly perform the procedure. In addition, the test personnel must handle up to several gallons of contaminated water per test, some of which could be under pressure when first vented. Performing this test procedure each quarter would result in unnecessary personnel radiation exposures and possible personnel contaminations.

ALTERNATE TESTING:

These valves will be full-stroke exercised to the open position during cold shutdown periods per Relief Request VR-1.

These valves will be verified to close in conjunction with PIV leaktesting (see VR-2).

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 17, 1993.

RELIEF REQUEST NO. VR-12

SYSTEM:

Safety Injection (8770-G-078 Sh 131)

COMPONENTS:

V-3215
V-3225
V-3235
V-3245

CATEGORY:

A/C

FUNCTION:

These valves open to provide flowpaths from the safety injection tanks (SITs) to the reactor coolant system (RCS) and close to isolate the tanks from the high pressure of the RCS and the safety injection headers.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

The only practical method for full stroke testing of the SIT discharge check valves is to discharge the contents of the SITs to the RCS. The flowrate attained during the SIT discharge tests is sufficient to fully stroke the check valve discs to the open position.

Full stroke exercising of the SIT discharge check valves cannot be performed in any plant mode other than refueling shutdown when the reactor vessel head is removed.

These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. Performing leaktests of these valves requires a considerable effort such that testing during operation would constitute an unreasonable burden on the plant staff.

RELIEF REQUEST NO. VR-12 (Cont.)

ALTERNATE TESTING:

Each SIT discharge check valve will be full-stroked in the open direction during refueling outages by discharging the SITs to the reactor vessel. Under a sampling program, non-intrusive testing of one of the check valves on a rotating schedule, will be performed to verify its disc strokes to its backstop. Should the sample valve be found to be inoperable, the remaining three valves must be tested using nonintrusive techniques during the same outage.

At least once every two (2) years these valves will be verified to close in conjunction with PIV leaktesting.

APPROVAL:

This relief request for verifying closure by PIV leak test every 2 years is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

The alternate technique for verifying valve full-stroke opening agrees with the guidelines of NRC Generic Letter 89-04, Position 1 as outlined below and, as such, is considered to be approved upon submittal.

1. Performing a full flow test of the SIT discharge check valves is impractical because the flowrate attained by discharging the contents of the SITs to the RCS or by recirculating normal shutdown cooling system flow do not meet the valves maximum required accident condition flow. Under large break LOCA accident conditions, the maximum (peak) flow rate through these valves would be approximately 20,000 gpm. The maximum flow rate achievable by the discharge test is restricted by the long stroke time of the SIT discharge isolation valve. The SIT discharge isolation valves are motor operated valves with a nominal stroke time of 52 seconds.

2. The full stroke test of the SIT discharge check valves is performed with the reactor vessel head removed and the reactor cavity flooded. The test consists of establishing a specified nitrogen pressure in the SIT to be used as a motive force to discharge a portion of the SIT inventory through the check valves. The initial SIT pressure and level are nominally set at 85 psig and 87.5%. These parameters were selected to ensure the flowrate developed

RELIEF REQUEST NO. VR-12 (Cont.)

APPROVAL (cont):

would be greater than the flowrate required to stroke the valve to the backstop without completely emptying the SIT and rapidly injecting a nitrogen bubble into the containment atmosphere, which is not acceptable from an airborne contamination standpoint.

The test is initiated by opening the SIT outlet isolation motor operated valve. The opening stroke of the SI header check valve under test is then verified by monitoring SIT level and pressure as the contents of the SIT discharge into the refueling cavity. Nonintrusive acoustic and eddy-current technology is used to provide positive indication that the flowrate achieved during the tests causes full valve disc travel to the backstop during the discharge test. Eddy current instrumentation is utilized to determine that the valve disc travels during the discharge test. Acoustic instrumentation is utilized to detect the acoustic impact caused by the valve disk striking the backstop.

3. Each of the SIT discharge check valves were full stroke tested during the Unit 1 1994 refueling outage. These SIT discharge tests were performed in accordance with plant approved procedural instructions. Each valve was monitored during the SIT discharge tests utilizing ITI MOVATS Checkmate^3 Acoustic/Eddy Current Check Valve Analysis System instrumentation with the assistance of ITI MOVATS Diagnostic and Engineering personnel. The flowrates, as determined by SIT level decrease over time, achieved during the tests were sufficient to cause full valve disc travel to the backstop. Eddy current and acoustic impact analysis determined that each of the valve discs traveled open and impacted the backseats during the tests. The nonintrusive techniques used to verify these check valves fully open are considered "other positive means" in accordance with Paragraph IWV-3522 of Section XI.

4. ITI MOVATS Checkmate^3 Acoustic/Eddy Current Check Valve Analysis System instrumentation used to perform this testing is owned and maintained by FPL. ITI MOVATS supplied the services to initially calibrate the instrumentation prior to the 1994 refueling outage in accordance with the ITI MOVATS Quality Assurance Manual.

APPROVAL (cont):

The services supplied were controlled in accordance with applicable program requirements of 10CFR 50 Appendix B and ANSI N45.2. FPL will verify the current calibration of this equipment or will recalibrate the instrumentation to ITI MOVATS Quality Assurance Manual requirements or to FPL Quality Assurance requirements prior to it being utilized for any future Section XI Code testing.

5. The SIT discharge check valves are the same size and model number. They are installed in identical orientation and exposed to the same operating conditions. Each of these valves has been disassembled and inspected during previous refueling outages. FP&L has additionally reviewed the operating and maintenance history of similar valves used throughout the industry under comparable conditions. Based on these reviews and inspections, there is no evidence of valve degradation with respect to their ability to open and satisfactorily pass the required flow. This along with the observation that the SIT flowrate and pressure drop traces obtained during the 1994 refueling outage testing are nearly identical, indicate that this baseline data was taken when each valve was in similar good working condition.

6. The acceptance criteria for the alternative testing outlined in the relief request is consistent with the requirements of NRC Generic Letter 89-04, Position 1, and NRC recommendations outlined in Draft NUREG-1482, 'Guidelines for Inservice Testing at Nuclear Power Plants'.

RELIEF REQUEST NO. VR-13

SYSTEM:

Safety Injection (8770-G-078 Sh 131)

COMPONENTS:

V-3217	V-3237
V-3227	V-3247

CATEGORY:

A/C

FUNCTION:

These valves open to provide flowpaths from the safety injection (SI) headers to the reactor coolant system (RCS) and close to isolate the headers from the high pressure of the RCS.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

The only practical method for full stroke testing of the SI header check valves is to discharge the contents of the safety injection tanks (SITs) to the RCS. The flowrate attained during the SIT discharge tests is sufficient to fully stroke the check valve discs to the open position.

Full stroke exercising of the SI header check valves cannot be performed in any plant mode other than refueling shutdown when the reactor vessel head is removed.

Part-stroke testing during power operation is not practical because a flow path does not exist due to higher RCS pressure.

It is practical to conduct a part-stroke test at each cold shutdown. During cold shutdown, the SI check valves can be part-stroked by the normal flow delivered to the RCS via the shutdown cooling system. Shutdown cooling flowrates do not meet the maximum required accident condition flow and do not fully stroke the valves open.

RELIEF REQUEST NO. VR-13 (Cont.)

BASIS FOR RELIEF (cont.):

These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. Performing leaktests of these valves requires a considerable effort such that testing during operation would constitute an unreasonable burden on the plant staff.

ALTERNATE TESTING:

Each SI header check valve will be full-stroked in the open direction during refueling outages by discharging the SITs to the reactor vessel. Under a sampling program, non-intrusive testing of one of the check valves on a rotating schedule, will be performed to verify its disc strokes to its backstop. Should the sample valve be found to be inoperable, the remaining three valves must be tested using nonintrusive techniques during the same outage.

During each cold shutdown these valves will be partial-stroke exercised using the LPSI pumps per Relief Request No. VR-1.

At least once every two (2) years these valves will be verified to close in conjunction with PIV leaktesting.

APPROVAL:

This relief request for verifying closure by PIV leak test every 2 years is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

The alternate technique for verifying valve full-stroke opening agrees with the guidelines of NRC Generic Letter 89-04, Position 1 as outlined below and, as such, is considered to be approved upon submittal.

1. Performing a full flow test of the SI header check valves is impractical because the flowrate attained by discharging the contents of the SITs to the RCS or by recirculating normal shutdown cooling system flow do not meet the valves maximum required accident condition flow. Under large break LOCA accident conditions, the maximum (peak) flow rate through these valves would be approximately 20,000 gpm. The maximum flow rate achievable by the discharge test is restricted by the long stroke time of the SIT discharge isolation valve. The SIT discharge isolation

RELIEF REQUEST NO. VR-13 (Cont.)

APPROVAL (cont):

valves are motor operated valves with a nominal stroke time of 52 seconds.

2. The full stroke test of the SI header check valves is performed with the reactor vessel head removed and the reactor cavity flooded. The test consists of establishing a specified nitrogen pressure in the SIT to be used as a motive force to discharge a portion of the SIT inventory through the check valves. The initial SIT pressure and level are nominally set at 85 psig and 87.5%. These parameters were selected to ensure the flowrate developed would be greater than the flowrate required to stroke the valve to the backstop without completely emptying the SIT and rapidly injecting a nitrogen bubble into the containment atmosphere, which is not acceptable from an airborne contamination standpoint.

   The test is initiated by opening the SIT outlet isolation motor operated valve. The opening stroke of the SI header check valve under test is then verified by monitoring SIT level and pressure as the contents of the SIT discharge into the refueling cavity. Nonintrusive acoustic and eddy-current technology is used to provide positive indication that the flowrate achieved during the tests causes full valve disc travel to the backstop during the discharge test. Eddy current instrumentation is utilized to determine that the valve disc travels during the discharge test. Acoustic instrumentation is utilized to detect the acoustic impact caused by the valve disk striking the backstop.

3. Each of the SI header check valves were full stroke tested during the Unit 1 1994 refueling outage. These SIT discharge tests were performed in accordance with plant approved procedural instructions. Each valve was monitored during the SIT discharge tests utilizing ITI MOVATS Checkmate[3] Acoustic/Eddy Current Check Valve Analysis System instrumentation with the assistance of ITI MOVATS Diagnostic and Engineering personnel. The flowrates, as determined by SIT level decrease over time, achieved during the tests were sufficient to cause full valve disc travel to the backstop. Eddy current and acoustic impact analysis determined that each of the valve discs traveled open and impacted the backseats during the tests. The nonintrusive techniques used to verify these

RELIEF REQUEST NO. VR-13 (Cont.)

APPROVAL (cont):

check valves fully open are considered "other positive means" in accordance with Paragraph IWV-3522 of Section XI.

4. ITI MOVATS Checkmate[3] Acoustic/Eddy Current Check Valve Analysis System instrumentation used to perform this testing is owned and maintained by FPL. ITI MOVATS supplied the services to initially calibrate the instrumentation prior to the 1994 refueling outage in accordance with the ITI MOVATS Quality Assurance Manual. The services supplied were controlled in accordance with applicable program requirements of 10CFR 50 Appendix B and ANSI N45.2. FPL will verify the current calibration of this equipment or will recalibrate the instrumentation to ITI MOVATS Quality Assurance Manual requirements or to FPL Quality Assurance requirements prior to it being utilized for any future Section XI Code testing.

5. The SI header check valves are the same size and model number. They are installed in identical orientation and exposed to the same operating conditions. Each of these valves has been disassembled and inspected during previous refueling outages. FP&L has additionally reviewed the operating and maintenance history of similar valves used throughout the industry under comparable conditions. Based on these reviews and inspections, there is no evidence of valve degradation with respect to their ability to open and satisfactorily pass the required flow. This along with the observation that the SIT flowrate and pressure drop traces obtained during the 1994 refueling outage testing are nearly identical, indicate that this baseline data was taken when each valve was in similar good working condition.

6. The acceptance criteria for the alternative testing outlined in the relief request is consistent with the requirements of NRC Generic Letter 89-04, Position 1, and NRC recommendations outlined in Draft NUREG-1482, 'Guidelines for Inservice Testing at Nuclear Power Plants'.

RELIEF REQUEST NO. VR-14

SYSTEM:

Main Steam (8770-G-079, Sh 1)

COMPONENTS:

V-08117
V-08148

CATEGORY:

C

FUNCTION:

These valves close to prevent unrestricted release of steam from an unaffected steam generator in the event of a steam line rupture upstream of an MSIV.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

There is no practical means or provision for pressurizing the piping downstream of these valves in order to verify closure of these valves.

ALTERNATE TESTING:

During each reactor refueling outage at least one of these valves will be disassembled, inspected, and manually stroked to verify operability. Should a valve under inspection be found to be inoperable, then the remaining other valve will be inspected during the same outage, after which the rotational inspection schedule will be reinitiated. Following valve reassembly forward flow operation of the valves will be observed during the ensuing startup. This satisfies the requirements of Generic Letter 89-04, Position 2 and, as such, is considered to be approved upon submittal.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-15

SYSTEM:

Makeup Water (8770-G-084, Sh 1)

COMPONENT:

V-15328

CATEGORY:

A/C

FUNCTION:

This valve closes to provide primary containment for the penetration related to the makeup water supply line to the containment building.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

This is a simple check valve with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require a considerable effort, including entry into the containment building, which is impractical during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown.

ALTERNATE TESTING:

At least once every two (2) years, this valve will be verified to close in conjunction with the Appendix J leak testing program.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-16

SYSTEM:

Instrument Air (8770-G-085, Sh 2)

COMPONENT:

V-18195

CATEGORY:

A/C

FUNCTION:

This valve closes to provide primary containment for the penetration related to the instrument air supply line to the containment building.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

This is a simple check valve with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require a considerable effort, including entry into the containment building and securing all instrument air to the containment. Due to access limitations and the undesirability of isolating the air supply for critical equipment, this is impractical during plant operation and would be an unreasonable burden on the plant staff to perform at cold shutdown.

ALTERNATE TESTING:

At least once every two (2) years, this valve will be verified to close in conjunction with the Appendix J leak testing program.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-17

SYSTEM:

Containment Spray (8770-G-088)

COMPONENTS:

V-07119
V-07120

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the refueling water tank (RWT) to the containment spray and safety injection suction headers.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Full stroke exercising of these valves would require simultaneous operation of two HPSI pumps, one LPSI pump, and one containment spray pump to verify that each valve could pass the maximum design accident flow. Such a test is not practical during any plant operational modes.

ALTERNATE TESTING:

During quarterly pump testing each of these valves will be partial-stroke exercised via recirculation through the minimum flow test circuits of the various Safety Injection systems.

RELIEF REQUEST NO. VR-17 (cont.)

ALTERNATE TESTING (cont.):

During each reactor refueling outage at least one of these valves will be disassembled, inspected, and manually stroked to verify operability. Should a valve under inspection be found to be inoperable, then the other valve will be inspected during the same outage, after which the rotational inspection schedule will be reinitiated.

Following reassembly, each valve will be partial-flow exercised to verify operability.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 2 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-18

SYSTEM:

Containment Spray (8770-G-088)

COMPONENTS:

V-07129
V-07143

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the respective containment spray pump to the containment spray headers.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Full stroke exercising of these valves would require operating each containment spray pump at nominal accident flowrate. Since exercising these valves through the normal containment spray flowpath would result in spraying down the containment, the only practical flowpath available for such a test requires pumping water from the RWT to the RCS via the shutdown cooling loops. At cold shutdown, the shutdown cooling system cannot provide sufficient letdown flow to the RWT to accommodate full design flow from the RWT while maintaining the necessary core cooling function.

RELIEF REQUEST NO. VR-18 (cont.)

ALTERNATE TESTING:

Each of these valves will be partial-stroke exercised quarterly in conjunction with testing of the containment spray pumps via the minimum flow test line.

During each refueling outage, each valve will be exercised at least once to demonstrate full stroke capability.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-19

SYSTEM:

Containment Spray (8770-G-088)

COMPONENTS:

V-07172
V-07174

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the containment sump to the containment spray and safety injection suction headers during recirculation.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Exercising these valves to any extent (full or partial flow) would require flooding the containment sump and pumping from the sump to the containment spray headers and the reactor coolant system. It is both undesirable and impractical to flood the containment sump and transfer that water to the RCS or to the spray headers as it would create significant contamination hazards and have an adverse effect on plant chemistry. There are no other provisions for exercising these valves. Furthermore, since flow cannot be passed through these valves, non-intrusive testing methods of verifying valve operation are not applicable.

RELIEF REQUEST NO. VR-19 (cont.)

ALTERNATE TESTING:

During each reactor refueling outage at least one of these valves will be disassembled, inspected, and manually stroked to verify operability. Should a valve under inspection be found to be inoperable, then the other valve will be inspected during the same outage, after which the rotational inspection schedule will be reinitiated. This satisfies the requirements of Generic Letter 89-04, Position 2 and, as such, is considered to be approved upon submittal.

Since, as discussed above, partial flow testing of these valves is not practical, exercising after reassembly will not be performed.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 2 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-20

SYSTEM:

Containment Spray (8770-G-088)

COMPONENTS:

V-07192
V-07193

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the respective containment spray headers to the containment spray rings.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Any exercising (full-stroke or partial flow testing) of these valves using system flow requires the operation of each containment spray pump through the normal containment spray flowpaths. Operating the system in this manner will result in spilling significant quantities of contaminated water throughout the containment building. This is obviously undesirable and is considered to be impractical. Because non-intrusive techniques in general require system flow, they are not under consideration for these valves. Also, leaktesting of these valves is not possible since, due to the system configuration, there is no practical means of closing the piping downstream of these valves.

Performing periodic inspections of both valves during refueling outages will satisfy the requirement of Generic Letter 89-04 Position 1.

RELIEF REQUEST NO. VR-20 (cont.)

ALTERNATE TESTING:

During each reactor refuel outages at least one of these valves will be disassembled, inspected, and manually stroked to verify operability.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 2 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-21

SYSTEM:

Containment Spray (8770-G-088)

COMPONENTS:

V-07256
V-07258

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the spray additive tank to the respective containment spray pump suction header. They close to prevent reverse flow and recirculation through the eductor leading to an idle containment spray pump.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Testing these valves during normal plant operation during testing of the containment spray pumps would contaminate the containment spray piping with sodium hydroxide. The only practical means of testing these valves requires connection of a source of demineralized water at the tank discharge then directing water into the containment spray piping. This places both containment spray trains out of service and would entail a somewhat complex procedure that is considered outside the scope of work that is typically performed during a routine cold shutdown period, thus, such a test is impractical during periods other than reactor refueling outages.

RELIEF REQUEST NO. VR-21 (cont.)

ALTERNATE TESTING:

During each reactor refueling outage both of these valves will be full-stroke exercised.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-22

SYSTEM:

Containment Spray (8770-G-088)

COMPONENTS:

V-07269
V-07270

CATEGORY:

C

FUNCTION:

These valves open to provide a flowpath from the respective containment spray header to the spray additive eductors. This flow through the eductors provides the motive force to inject a sodium hydroxide solution into the suction of the containment spray pumps. These check valves close upon the failure of one containment spray pump following an accident. The check valve in the failed train closes to prevent back flow from the operating header to the idle containment spray header.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

These check valves cannot be full flow exercised during normal operation. There is no flowrate instrumentation available to verify valve full-stroke exercising as required by the Generic Letter 89-04, position 1.

Reverse flow testing of these check valves cannot be performed during any Mode without undue burden. During normal operations, both trains of the containment spray system, including the sodium hydroxide system, must be operable. Attempting a back flow test of either of these valves would require a valve line-up which would place both trains of the sodium hydroxide systems out of service.

RELIEF REQUEST NO. VR-22 (cont.)

To back flow test the two check valves, a source of pressurized borated water must be connected downstream of the check valves. The upstream side of the check valves must be depressurized and drained in order to collect the back leakage through one of the check valves. The drain valves for these tests are located in the shutdown heat exchanger rooms in the Unit 1 reactor auxiliary building (RAB). The general area radiation levels around the drain valves vary from 50 mRem/Hr to greater than 100 mRem/Hr, the contact radiation levels range from 100 to 1200 mRem/Hr. Approximately 220 feet of 12 inch piping must be drained for each test. Performing these tests would result in unnecessary personnel radiation exposures, possible personnel contaminations, and generate over 2,600 gallons of borated, contaminated water that must be drained, treated, and finally replaced.

Another problem with performing the back flow test is the system line-up for the test. The test must rely upon two 10 inch gate valves to be relatively leak tight against the pressure of shutdown cooling operating in the alternate containment spray header. Leakage through these two 10 inch gate valves (not required to be leaktight), would result in an inaccurate leakage rate measurement for the valves in test. This could result in declaring the check valves inoperative and performing unnecessary maintenance.

ALTERNATE TESTING:

Each of these valves will be partial-stroke exercised quarterly in conjunction with testing of the containment spray pumps.

During each reactor refueling outage at least one of these valves will be disassembled, inspected, and manually stroked to verify both the open and close capabilities. Inspections shall be scheduled such that each valve is subject to inspection at least once every six years. Should a valve under inspection be found to be inoperable, then the other valve will be inspected during the same outage, after which the rotational inspection schedule will be reinitiated.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 17, 1993.

RELIEF REQUEST NO. VR-23

WITHDRAWN
by
Revision #3

RELIEF REQUEST NO. VR-24

WITHDRAWN
by
Revision #4

RELIEF REQUEST NO. VR-25

SYSTEM:

Ultimate Heat Sink (8770-G-093)

COMPONENTS:

SB-37-1
SB-37-2

CATEGORY:

B

FUNCTION:

These valves are opened to provide a second source of cooling water from Big Mud Creek.

SECTION XI REQUIREMENT:

Category A and B valves shall be exercised at least once every 3 months, except as provided by IWV-3412(a), IWV-3415, and IWV-3416. (IWV-3411)

BASIS FOR RELIEF:

The operation of these valves is limited for environmental concerns to minimize the quantity of water drawn from the Indian River and discharged to the ocean. For this reason the FUSAR (Section 9.2.7) specifies exercising these valves at six (6) month intervals.

ALTERNATE TESTING:

These valves will be exercised only once every six (6) months.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-26

WITHDRAWN
by
Revision #4

RELIEF REQUEST NO. VR-27

WITHDRAWN
by
Revision #4

RELIEF REQUEST NO. VR-28

SYSTEM:

Chemical and Volume Control System (8770-G-078, Sh 121)

COMPONENT:

V-2443
V-2444

CATEGORY:

C

FUNCTION:

These valves open to provide a flowpath from the boric acid makeup pumps to the emergency boration header.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Full-stroke testing these valves requires operating the boric acid makeup pumps at or near rated flow and verifying full accident flow through each valve. Operating of the BAM Pumps discharging into emergency boration line would cause the introduction of highly concentrated boric acid solution from the BAM Tanks to the suction of the charging pumps. This, in turn, would result in the addition of excess boron to the RCS. This rapid insertion of negative reactivity would result in a rapid RCS cooldown and de-pressurization. A large enough boron addition would result in an unscheduled plant trip and a possible initiation of Safety Injection Systems.

During cold shutdown, the introduction of excess quantities of boric acid into the RCS is undesirable from the aspect of maintaining proper plant chemistry and the inherent difficulties that may be encountered during the subsequent startup due to over-boration of the RCS. The waste management system would be overburdened by the large amounts of RCS coolant that would require processing to decrease its boron concentration. In addition to the above, there is no flowrate measurement instrumentation installed in this flowpath.

RELIEF REQUEST NO. VR-28 (cont.)

ALTERNATE TESTING:

A second circuit that recirculates water to the RWT has flowrate measuring instrumentation installed however it is limited to 30 gpm (BAM Pump design capacity is 142 gpm). Each of these valves will be partial stroke exercised quarterly.

During testing of the boric acid makeup pumps performed during each reactor refueling (See Relief Request PR-5), system flowrate will be measured to verify full stroke of these valves.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated February 26, 1992.

RELIEF REQUEST NO. VR-29

SYSTEM:

Safety Injection System (8770-G-078, Sh 130)

COMPONENTS:

V-3101
V-3103

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the high-pressure safety injection pumps to the refueling water tank to provide for minimum flow through the respective pumps in the event they are operating under low or no flow conditions.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

There is no flowrate instrumentation available to verify valve full-stroke exercising as required by the Generic Letter 89-04, Position 1.

RELIEF REQUEST NO. VR-29 (cont.)

ALTERNATE TESTING:

During quarterly pump testing each of these valves will be partial-stroke exercised via recirculation through the minimum flow test circuits with no flow measurements.

During each reactor refueling outage these two valves will be full-flow tested. On Unit 1 the HPSI pumps are capable of taking suction from the discharge of the shutdown cooling heat exchangers. The flowpath will be from the refueling cavity to the RWT, via the shutdown cooling system and HPSI pump mini-flow recirculation line. The flowrate will be calculated by measuring the increase in the RWT volume and dividing it by the HPSI pump run time. This test lineup reduces RCS inventory and can only be performed during refueling outages when the the head is off the reactor permitting refueling cavity inventory to be drained to the RWT.

APPROVAL:

Testing at each refueling outage is an allowable deferral of the required testing as allowed by OM-10. OM-10 specifies full-stroke exercising at each refueling outage if testing is impractical both quarterly while in operation and during cold shutdown outages. The use of the OM-10 paragraph 4.3.2 requirements applicable to this relief request were approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 27, 1994. This relief request is listed for documentation purposes only as required by the Code (IWV-3412, IWV-3522, and OM-10, paragraph 6.2).

RELIEF REQUEST NO. VR-30

SYSTEM:

Safety Injection System (8770-G-078, Sh 130)

COMPONENTS:

V-3104
V-3105

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths from the low-pressure safety injection pumps to the refueling water tank to provide for minimum flow through the respective pumps in the event they are operating under low or no flow conditions. They close during shutdown cooling and long-term recirculation to prevent recirculation through the idle pump(s).

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

There is no flowrate instrumentation available to verify valve full-stroke exercising as required by the Generic Letter 89-04, Position 1.

RELIEF REQUEST NO. VR-30 (cont.)

ALTERNATE TESTING:

During quarterly pump testing each of these valves will be partial-stroke exercised via recirculation through the minimum flow test circuits with no flow measurements.

During each reactor refueling outage these two valves will be full-flow tested. The flowpath will be from the refueling cavity to the RWT via the shutdown cooling system and the LPSI pump mini-flow recirculation line. The flowrate will be calculated by measuring the increase in the RWT volume and dividing it by the LPSI pump run time. This test lineup reduces RCS inventory and can only be performed during refueling outages when the the head is off the reactor permitting refueling cavity inventory to be drained to the RWT.

APPROVAL:

Testing at each refueling outage is an allowable deferral of the required testing as allowed by OM-10. OM-10 specifies full-stroke exercising at each refueling outage if testing is impractical both quarterly while in operation and during cold shutdown outages. The use of the OM-10 paragraph 4.3.2 requirements applicable to this relief request were approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 27, 1994. This relief request is listed for documentation purposes only as required by the Code (IWV-3412, IWV-3522, and OM-10, paragraph 6.2).

RELIEF REQUEST NO. VR-31

SYSTEM:

Feedwater System (8770-G-080, Sh 3)

COMPONENTS:

V-09303
V-09304
V-09305
V-12507

CATEGORY:

C

FUNCTION:

Valves V-09303 through V-09305 open to provide flowpaths from the auxiliary feedwater pump discharge to the condensate storage tank to ensure adequate pump cooling during low flow conditions. V-12507 opens to provide a discharge flowpath for bearing cooling water from the steam-driven auxiliary feedwater pump.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

There is no flowrate instrumentation available to verify valve full-stroke exercising of these valves as required by the Generic Letter 89-04, Position 1.

ALTERNATE TESTING:

During quarterly pump testing each of these valves will be partial-stroke exercised via recirculation through the minimum flow test circuits with no flow measurements.

RELIEF REQUEST NO. VR-31 (cont.)

ALTERNATE TESTING:

During each reactor refueling outage at least one of the three AFW pump minimum flow recirculation valves will be disassembled, inspected, and manually stroked to verify operability. Should a valve under inspection be found to be inoperable, then the other two valves will be inspected during the same outage, after which the rotational inspection schedule will be reinitiated.

During each reactor refueling outage V-12507 will be disassembled, inspected, and manually stroked to verify operability.

Following reassembly, each valve will be partial-flow exercised to verify operability.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 2 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-32

WITHDRAWN
by Rev. 4

RELIEF REQUEST NO. VR-33

WITHDRAWN
by Rev. 3

RELIEF REQUEST NO. VR-34

SYSTEM:

Primary Containment

COMPONENTS:

Valves 6-inches NPS and larger subject to leakage rate testing per 10CFR50, Appendix J.

CATEGORY:

A/C (Check Valves)
A (Motor-operated valves)

FUNCTION:

Each of these valves is designated as a containment isolation valve maintaining the leakrate integrity of the primary containment in the case of an accident.

SECTION XI REQUIREMENT:

The leakage rate for valves 6-inches or greater shall be evaluated per Subsection IWV-3427(b). (IWV-3521)

BASIS FOR RELIEF:

The usefulness of applying this requirement does not justify the burden of compliance. This position is supported by NRC Generic Letter, Position 10

ALTERNATE TESTING:

Leakrate test results for valves 6-inches or greater (NPS) will be evaluated per IWV-3426 and IWV-3427(a) however, the requirements of IWV-3427(b) will not be applied.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 10 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-35

SYSTEM:

Intake Cooling Water (8770-G-082, Sh 1)

COMPONENT:

TCV-14-4A
TCV-14-4B

CATEGORY:

B

FUNCTION:

These valves are temperature control valves that control the intake cooling water flow through the component cooling heat exchangers.

SECTION XI REQUIREMENT:

The stroke time of all power operated valves shall be measured to ....., whenever such a valve is full-stroke tested. (IWV-3413(b))

BASIS FOR RELIEF:

These valves are air operated, spring return valves that fail to the open position. They are each provided with an actuator that positions the valve in response to an air signal input from its temperature controller.

In order to stroke one of these valves and perform the fail safe test, the valve's instrument air isolation valve must be closed and the valve's actuator de-pressurized through the moisture separator vent. Once the instrument air isolation valve has been closed, the air pressure will begin to decrease. The vent path must be manually held open and is dependent upon the finger pressure of the operator. The rate that the actuator can be de-pressurized is dependent upon the time it takes to close the isolation valve and vent off the air pressure. As a result, the measurement of the valve stroke time would be simply an "estimate" and would vary dependent upon the operator performing the test. The varying stroke times could place these valves in alert needlessly and would not effectively reflect the condition of these control valves.

RELIEF REQUEST NO. VR-35 (cont.)

ALTERNATE TESTING:

These valves will be exercised and fail safe tested once each quarter. During valve exercising and fail safe testing, the valve's stroke time will be measured and compared against the maximum allowed stroke time. Should the measured stroke time exceed the maximum allowed the valve will be declared out of service and appropriate corrective actions taken. The valves' stroke times will not be subject to evaluation and corrective action (increased test frequency) per IWV-3417(a).

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated January 29, 1993.

REVISION 5
1/06/95

RELIEF REQUEST NO. VR-36

WITHDRAWN
by
Revision #4

RELIEF REQUEST NO. VR-37

WITHDRAWN
by
Revision #4

RELIEF REQUEST NO. VR-38

SYSTEM:

Feedwater (8770-G-080, Sh 3)

COMPONENT:

V-09248
V-09280

CATEGORY:

C

FUNCTION:

These valves open to provide the normal flowpaths for feedwater makeup to the steam generators (non-safety function). They close to isolate the main feedwater system from the AFW pump flowpath to the steam generators.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Verifying closure of these valves during plant operation at normal operating pressures would require isolating the associated steam generator. This is clearly not practical and would result in an unacceptable plant transient.

During shutdown periods, due to the plant configuration, there is no practical way to reverse flow (pressure) test these valves to verify closure.

RELIEF REQUEST NO. VR-38 (cont.)

ALTERNATE TESTING:

During each reactor refuel outages at least one of these valves will be disassembled, inspected, and manually stroked to verify operability.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 2 and, as such, is considered to be approved upon submittal.

RELIEF REQUEST NO. VR-39

SYSTEM:

Safety Injection (8770-G-078, Sh. 131)

COMPONENTS:

V-3480	V-3651
V-3481	V-3652

CATEGORY:

A (Motor-operated valves)

FUNCTION:

The motor-operated valves open for residual heat removal recirculation during shutdown. Each of these valves is designated as a pressure isolation valve (PIV) and provides isolation of safeguard systems from the RCS.

SECTION XI REQUIREMENT:

The leakage rate for valves 6-inches or greater shall be evaluated per Subsection IWV-3427(b). (IWV-3521)

BASIS FOR RELIEF:

Leaktesting of these valves is primarily for the purpose of confirming their capability of preventing over-pressurization and catastrophic failure of the safety injection piping and components. These four MOV's are not addressed in the St. Lucie Unit 1 Technical Specifications 3.4.6.2 as a PIV but they are tested as though they were. The Technical Specifications addresses the question of valve integrity in a more appropriate manner for these valves. Satisfying both the Technical Specification and the Code acceptance criteria is not warranted and implementation would be difficult and confusing.

RELIEF REQUEST NO. VR-39 (cont.)

ALTERNATE TESTING:

The leakage rate acceptance criteria for these valves will be established per the St. Lucie Unit 1 Technical Specifications, Table 3.4.6-1.

1. Leakage rates less than 1.0 gpm are acceptable.

2. Leakage rates greater than 1.0 gpm but less than or equal to 5.0 gpm are acceptable if the latest measured rate has not exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

3. Leakage rates greater than 1.0 gpm, but less than or equal to 5.0 gpm, are unacceptable if the latest measured rate exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

4. Leakage rates greater than 5.0 gpm are unacceptable.

APPROVAL:

This relief request is approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 27, 1994.

RELIEF REQUEST NO. VR-40

SYSTEM:

Main Steam (8770-G-079, Sh 1)

COMPONENT:

V-08130
V-08163

CATEGORY:

C

FUNCTION:

These valves open to provide flowpaths for steam from the steam generators to the AFW pump turbine. They close during an accident to isolate the non-affected steam generator and prevent the uncontrolled blowdown of both steam generators.

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Verifying closure of these valves during plant operation at normal operating pressures would required isolating the associated steam generator from the steam supply lines and venting the piping between the closed isolation valve and the check valve. It is considered to be imprudent to isolate the steam supply to the AFW pumps during operation and, in addition, it is undesirable to subject plant personnel to the hazards associated with venting any steam line at these operating conditions.

Likewise, reverse flow (closure) testing of these valves would necessitate pressurizing the downstream side with steam from the other steam generator and opening an upstream vent. From the aspect of personnel safety it is undesirable to subject plant personnel to the potential hazards associated with venting live steam at these operating conditions.

RELIEF REQUEST NO. VR-40 (cont.)

ALTERNATE TESTING:

These two check valves are partial flow exercised each quarter and full flow exercised each cold shutdown.

During each reactor refuel outages at least one of these valves will be disassembled, inspected, and manually stroked to verify operability. Following reassembly, each valve will be exercised (full or partial-stroke) to verify operability.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 2 and was approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 27, 1994.

RELIEF REQUEST NO. VR-41

SYSTEM:

Main Steam (8770-G-079, Sh 1)

COMPONENT:

V-08372
V-08373

CATEGORY:

C

FUNCTION:

These check valves close during an accident to isolate the non-affected steam generator and prevent the uncontrolled blowdown of both steam generators

SECTION XI REQUIREMENT:

Check valves shall be exercised at least once every 3 months, except as provided by IWV-3522. (IWV-3521)

BASIS FOR RELIEF:

Verifying closure of these valves during plant operation at normal operating pressures would required isolating the associated steam generator from the steam supply lines and venting the piping between the closed isolation valve and the check valve. It is considered to be imprudent to isolate the steam supply to the AFW pumps during operation and, in addition, it is undesirable to subject plant personnel to the hazards associated with venting any steam line at these operating conditions.

Likewise, reverse flow (closure) testing of these valves would necessitate pressurizing the downstream side with steam from the other steam generator and opening an upstream vent. From the aspect of personnel safety it is undesirable to subject plant personnel to the potential hazards associated with venting live steam at these operating conditions.

RELIEF REQUEST NO. VR-41 (cont.)

ALTERNATE TESTING:

During each reactor refuel outages at least one of these valves will be disassembled, inspected, and manually stroked to verify operability. Following reassembly, each valve will be exercised (full or partial-stroke) to verify operability.

APPROVAL:

This alternate testing agrees with the guidelines of NRC Generic Letter 89-04, Position 2 and was approved by NRC Safety Evaluation of St. Lucie Unit 1 Inservice Testing Program Relief Requests dated September 27, 1994.

Appendix E

Valve Program
Cold Shutdown Justification

Appendix E: COLD SHUTDOWN JUSTIFICATIONS

This appendix is intended to provide the justification for performing valve exercising only at cold shutdown conditions as permitted by IWV-3412(a), 3415 and 5322. Specifically included in this category are the following:

* A valve whose failure in a position other than its normal position could jeopardize the immediate safety of the plant or system components;

* A valve whose failure in a position other than its normal position could cause all trains of a safeguard system to be inoperable;

* A valve whose failure in a position other than its normal position that might cause a transient that could lead to a plant trip; or

* When test requirements or conditions are precluded by system operation or access.

Cold shutdown testing is performed under conditions outlined in Relief Request VR-1.

<u>Reactor Coolant (8770-G-078, Sh 110)</u>

PCV-1100E and PCV-1100F
Pressurizer Spray Control Valves

During normal power operations, these two valves are used to control RCS pressure by automatically throttling the spray flow going into the pressurizer. Fully opening these valves, in preparation for timing the stroke closed test, would have an immediate and negative affect on RCS pressure. The greatly increased spray flow would condense part of the steam bubble inside the pressurizer, causing the pressurizer's pressure, and therefore the RCS pressure, to drop rapidly. The only possible time to exercise these valves would be while the unit is in Modes 5 or 6 when there is no steam bubble in the pressurizer.

V-1402 and V-1404
Power-Operated Relief Valves

Due to the potential impact of the resulting transient should one of these valves open prematurely or stick in the open position, it is considered imprudent to cycle them during plant operation with the reactor coolant system pressurized.

V-1441 thru V-1446 and V-1449
Reactor Coolant System Vents

These valves are administratively controlled in the key-locked closed position with the power supply disconnected to prevent inadvertent operation. Since these are Class 1 isolation valves for the reactor coolant system, failure of a valve to close or significant leakage following closure could result in a loss of coolant in excess of the limits imposed by Technical Specification 3.1.3 leading to a plant shutdown.

Furthermore, if a valve were to fail open or valve indication fail to show the valve returned to the fully closed position following exercising, prudent plant operation would probably likely result in a plant shutdown.

Chemical & Volume Control (8770-G-078 Sh. 120)

SE-02-03 and SE-02-04
Auxiliary Pressurizer Spray Valves

Opening either of these valves (or failure in the open position) during plant operation would cause an RCS pressure transient that could potentially adversely affect plant safety and lead to a plant trip. In addition, the pressurizer spray piping would be subjected to undesirable thermal shock.

V-2431
Auxiliary Pressurizer Spray Check Valve

In order to test this valve, either SE-02-03 or SE-02-04 must be opened. Opening either of these valves (or failure in the open position) during plant operation would cause an RCS pressure transient that could potentially adversely affect plant safety and lead to a plant trip. In addition, the pressurizer spray piping would be subjected to undesirable thermal shock.

V-2515 and V-2516
Letdown Line Isolation Valves

Closing either of these valves during operation isolates the letdown line from the RCS and would result in undesirable pressurizer level transients with the potential for a plant trip. If a valve failed to reopen, then a expedited plant shutdown would be required.

V-2505 and SE-01-01
RCP Control Bleedoff Isolation Valves

Exercising either of these valves to the closed position when any of the reactor coolant pumps (RCP's) are in operation would interrupt flow from the RCP seals and result in damage to the pump(s).

V-2501
Volume Control Tank Outlet Valve

Closing this valve during operation of a charging pump would isolate the VCT from the charging pump suction header damaging any operating charging pumps and interrupting the flow of charging water flow to the RCS with the potential of RCS transients and plant trip.

Safety Injection / Residual Heat Removal (8770-G-078 Sh 130)

V-3106 and V-3107
LPSI Pump Discharge Check Valves

During normal plant operation, the LPSI Pumps cannot develop sufficient discharge pressure to pump through these valves to the RCS and exercise them in the open direction. The only other test flowpath available is through the shutdown cooling line recirculating to the RWT. This would require opening valves HCV-3657, V-3460 and V-3459. With these valves open, both trains of the LPSI subsystem would be inoperable, thus, this testing scheme is unacceptable.

V-3659 and V-3660
Minimum Flow/Recirculation Line Isolation Valves

Failure of either of these valves in the closed position during testing will render all unit safety injection pumps inoperable due to the high probability of damage should these pumps be started and operated without sufficient flow for cooling of pump internal components.

V-07009 and V-3463
SI Tank Drain/Test Line to RWT

Cycling these manual valves would constitute a breach of containment integrity, as defined in Technical Specifications 3.6.1.1, and therefore opening these valves is precluded in Modes 1, 2, 3, and 4.

Safety Injection / Residual Heat Removal (8770-G-078 Sh 131)

V-3480, 3481, 3651, and 3652
Shutdown Cooling RCS Isolation Valves

These valves are provided with electrical interlocks that prevent opening whenever Reactor Coolant System pressure exceeds 268 psia. This precludes exercising these valves in any other plant condition than cold shutdown.

V-3614, V-3624, V-3634 and V-3644
SI Tank Discharge Isolation Valves

During normal plant operation, these valves are administratively controlled to be locked open with their breakers racked out to ensure they remain in the open position with no chance of misalignment. These valves are also interlocked such that they will automatically go open if RCS pressure is greater than 350 psia. Therefore, the valves can only be cycled during Modes 4 (< 350 psia), 5, and 6.

Waste Management System (8770-G-078 SH 163)

V-6779
Nitrogen Header Containment Isolation Check

Backflow testing of V-6779 requires that the downstream side of the valve is pressurized and the upstream side is vented. To vent the upstream side of the valve, a blank flange must be removed and the drain valve, V-6340, opened. With the drain valve open, V-6779 becomes the only containment isolation valve for this penetration causing containment integrity to be breached. Therefore, the backflow test can only be performed when containment integrity is not required (Modes 5 or 6).

Main Steam (8770-G-079 Sh 1)

HCV-08-1 A&B
Main Steam Isolation Valves

During plant operation at power, closure of either of these valves is not practical as it would require isolating a steam generator which would result in a severe transient on the steam and reactor systems and a possible plant trip.

Feedwater (8770-G-080 Sh 3)

MV-09-07 and 08
Main Feedwater Isolation Valves

During plant operation at power, closure of either of these valves is not practical as it would require isolating a steam generator which would result in a severe transient on the steam and reactor systems and a plant trip.

V-12174 and V-12176
Auxiliary Feedwater Pump Suction Check Valves

Full-stroke exercising of these valves would require operation of a related auxiliary feedwater pump and injection of cold water (85 deg-F) into the hot (450 deg-F) feedwater supply piping. This, in turn, would result in unacceptable thermal stress on the feedwater system piping components. These valves will be partial stroke tested during quarterly testing via the minimum flow recirculation lines.

V-09107,09123, and 09139
Auxiliary Feedwater Pump Discharge Check Valves

Full-stroke exercising of these valves would require operation of the related auxiliary feedwater pump and injection of cold water (85 deg-F) into the hot (450 deg-F) feedwater supply piping. This, in turn, would result in unacceptable thermal stress on the feedwater system piping components.

V-09119, 09135, 09151, and 09157
Auxiliary Feedwater Supply Check Valves

Full-stroke exercising of these valves would require operation of a related auxiliary feedwater pump and injection of cold water (85 deg-F) into the hot (450 deg-F) feedwater supply piping. This, in turn, would result in unacceptable thermal stress on the feedwater system piping components.

Component Cooling Water (8770-G-083 SH 1)

HCV-14-1,2,6 & 7
RCP Cooling Water Supply/Return Isolation Valves

These valves are required to be open to ensure continued cooling of reactor coolant pump auxiliary components and the control rod drives. Closing any of these valves during plant operation would result in severe RCP and CRD damage leading to plant operation in a potentially unsafe mode and a subsequent plant shutdown.

HCV-14-3 A&B
Shutdown Heat Exchanger Return Valves

Testing either of these valves during plant operation would result in an unbalanced flow condition in the affected CCW train and decreased flow to essential equipment. This could result in component damage or an undesirable plant transient.

Miscellaneous Sampling Systems (8770-G-092 SH 1)

V-27101 and V-27102

These are simple check valves with no external means of position indication, thus the only practical means of verifying closure is by performing a leaktest or backflow test. This would require a considerable effort, including entry into the containment building, which is impractical during plant operation.

Heating, Air Conditioning, And Ventilation, & Air Conditioning (8770-G-878)

FCV-25-1 thru FCV-25-6
Primary Containment Purge and Vent Valves

These valves are administratively maintained in the closed position at all times when the plant is operating in Modes 1,2 or 3 thus they are not required to operate (close) during operational periods. Due to the large size of these valves and the potential for damage as a result of frequent cycling, it is not prudent to operate them more than is absolutely necessary.

V-25-20 and V-25-21
Containment Vacuum Breakers

These valves can only be exercised manually requiring direct access to each valve. Since these valves are located within the containment building, access is limited and not routinely practical.