JAMES A. FITZPATRICK

NUCLEAR POWER PLANT

INSERVICE TESTING PROGRAM FOR

PUMPS AND VALVES

INFORMATION COPY

THIRD INTERVAL PLAN

Revision 2

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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

1.0 INTRODUCTION

Revision 2 of the James A. FitzPatrick ASME Inservice Testing (IST) Program will be in effect through the end of the third interval unless changed and re-issued for reasons other than the routine update required at the start of the fourth interval in accordance with 10 CFR 50.55a(f). The fourth inspection interval begins in September of 2007.

This document outlines the IST Program for J.A. FitzPatrick based on the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1989 Edition (the Code). The 1989 edition of the Code specifies that the rules for the inservice testing of pumps and valves are stated in the ASME/ANSI Operations and Maintenance (OM) Standards, Part 6, "Inservice Testing of Pumps in Light-Water Reactor Power Plants," and Part 10, "Inservice Testing of Valves in Light-Water Reactor Power Plants." An exception was taken in 10 CFR 50.55a to OM-10 related to leakage rate testing of containment isolation valves. References in this document to OM-1, OM-6, and OM-10 correspond to the 1987 ASME/ANSI OM Standard Parts 1, 6, and 10, respectively, unless otherwise noted. For OM-6 and OM-10, the applicable edition includes the 1988 OMa addenda.

2.0 APPLICABLE DOCUMENTS

This IST Program was developed in accordance with the requirements of the following documents:

- Title 10, Code of Federal Regulations, Part 50
- Final Safety Analysis Report, J.A. FitzPatrick Nuclear Power Plant
- J.A. FitzPatrick Technical Specifications
- ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition
- ASME/ANSI Operations and Maintenance Standard, Parts 1, 6, 10, 1987 Edition including the 1988 OMa addenda

Other documents used for guidance in the development of the IST Program are listed below:

- NRC Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste- Contaminating Components of Nuclear Power Plants"
- Standard Review Plan NUREG 0800, Section 3.9.6, "Inservice Testing of Pumps and Valves"

- NRC Generic Letter 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"
- NRC Minutes of the Public Meetings on Generic Letter 89-04
- NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants"
- Safety Evaluation of Certain Relief Requests from Section XI of the American Society of Mechanical Engineers Code for the James A. Fitzpatrick Nuclear Power Plant, dated May 2, 1991.

3.0 SYSTEM CLASSIFICATION

In the NRC Safety Evaluation dated May 2, 1991 for the J.A. FitzPatrick Section XI pressure test program, the NRC evaluated the deletion of certain Class II-augmented air/nitrogen systems from the inservice inspection program. These systems included the Drywell Inerting, CAD, and Purge system, the Containment Differential Pressurization system, the Breathing, Instrument, and Service Air system, the Containment Hydrogen Monitoring system, and the Standby Gas Treatment system. The NRC's evaluation found, based on a review of the regulations, the ASME Code, and regulatory guides, that there is no basis for requiring inservice inspection of these particular systems.

Although this finding related only to the hydrostatic testing of these systems, the basis for classification of these systems would also be applicable to the IST program. Therefore, in accordance with NUREG-1482, components in these systems are not required to be in the IST program. They may be included in the IST program and designated as non-Code or augmented components. Relief requests for non-Code components may be implemented without NRC evaluation and approval.

Containment isolation valves in the systems listed above have been included as Category A valves in the IST program. Other safety-related components in those systems have also been included in the IST Program and identified as augmented components. In addition to the systems listed above, portions of the Main Steam Leakage Control System contain valves that are not within the scope of 10 CFR 50.55a. These valves have also been classified as augmented in the J.A. FitzPatrick IST Program.

Similarly, the Diesel Generator system is a non-Code Class system as identified in Regulatory Guide 1.26. The J.A. FitzPatrick ISI Program has classified the following Diesel Generator subsystems as augmented Class III:

- Emergency Diesel Generator Fuel Oil Transfer
- Emergency Diesel Generator Fuel Oil Service

- Emergency Diesel Generator Combustion Air
- Emergency Diesel Generator Lube Oil
- Emergency Diesel Generator Cooling Water
- Emergency Diesel Generator Air Start

These subsystems also meet the definitions for skid-mounted components and component subassemblies as discussed in NUREG-1482. In NUREG-1482, the NRC has determined that the testing of the major component is an acceptable means for verifying the operational readiness of the skid-mounted and component subassemblies. This is acceptable for both Code Class and non-Code Class components. Therefore, based on the NRC position in NUREG-1482 and the existing Technical Specification requirements, operability tests, preventative maintenance activities and design redundancy, the components in the six Emergency Diesel Generator subsystems listed above, will not be included in the IST Program.

4.0 INSERVICE TESTING PROGRAM FOR PUMPS

4.1 Code Compliance

This IST Program is based on the requirements of OM-6 as referenced by Subsection IWP of the 1989 Code edition. Where these requirements have been determined to be impractical, conformance would cause unreasonable hardship without any compensating increase in safety, or an alternative test provides an acceptable level of quality and safety, relief from Code requirements is requested pursuant to the requirements of 10 CFR 50. 55a (f)(6)(i).

4.2 Allowable Ranges of Test Quantities

The allowable ranges for test parameters as specified in OM-6 Table 3 will be used for all measurements of pressure, flow, and vibration except as provided for in specific relief requests.

4.3 Testing Intervals

The test frequency for pumps included in the IST Program will be as set forth in OM-6, Section 5.1. A band of ∀ 25 percent of the test interval may be applied to a test schedule as allowed by the J.A. FitzPatrick Technical Specifications to provide for operational flexibility.

4.4 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.

4.5 Relief Requests for Pump Testing

Appendix A includes relief requests related to pump testing.

5.0 INSERVICE TESTING PROGRAM FOR VALVES

5.1 Code Compliance

This IST Program is based on the requirements of OM-10 as referenced by Subsection IWV of the 1989 Code edition. Where these requirements have been determined to be impractical, conformance would cause unreasonable hardship without any compensating increase in safety, or an alternative test provides an acceptable level of quality and safety, relief from Code requirements is requested pursuant to the requirements of 10 CFR 50. 55a (f)(6)(i).

5.2 Testing Intervals

The test frequency for valves included in the IST Program will be as set forth in OM-10, Section 4.2, 4.3, and 4.4. A band of ∀ 25 percent of the test interval may be applied to a test schedule as allowed by the J.A. FitzPatrick Technical Specifications to provide for operational flexibility. Where quarterly testing of valves is impractical, testing may be performed during cold shutdown or refueling outage periods as permitted by OM-10, Sections 4.2.1.2 and 4.3.2.2.

5.3 Stroke Time Acceptance Criteria

The acceptance criteria for the stroke times of power-actuated valves will be as set forth in OM-10 Section 4.2.1.4 and 4.2.1.8 and NUREG-1482 Section 4.2.7.

5.4 Check Valve Testing

Full-stroke exercising of check valves to the open position using system flow requires that the maximum required accident condition flow be used and measured. Deviations to this requirement must satisfy the requirements of Generic Letter 89-04.

5.5 Containment Isolation Valves

Containment isolation valves which do not provide a reactor coolant system pressure isolation function are tested in accordance with OM-10 Section 4.2.2.2. In addition, as required by 10 CFR 50.55a(b)(2)(vii), containment isolation valves are analyzed in accordance with OM-10 Section 4.2.2.3(e) and corrective action is applied in accordance with OM-10 Section 4.2.2.3(f).

5.6 Valve Program Table

Appendix B lists those valves included in the IST Program with references to required testing, respective test intervals, applicable requests for relief and cold shutdown and refueling outage justifications.

5.7 Relief Requests for Valve Testing

Appendix B includes relief requests, cold shutdown justifications, and refueling outage justifications related to valve testing.

6.0 SYSTEMS SUBJECT TO TESTING

SYSTEM #	SYSTEM NAME	DRAWING #
01-125	Standby Gas Treatment	FM-48A
02-2	Reactor Water Recirculation	FM-26A
02-3	Nuclear Boiler Instrumentation	FM-47A
03	Control Rod Drive	FM-27B
07	Neutron Tip Monitors	FM-119A
10	Residual Heat Removal	FM-20A,B
11	Standby Liquid Control	FM-21A
12	Reactor Water Cleanup	FM-24A
13	Reactor Core Isolation Cooling	FM-22A
14	Core Spray	FM-23A
15	Reactor Building Closed Loop Cooling	FM-15A,B
16-1	Leak Rate Analyzer	FM-49A
19	Fuel Pool Cooling	FM-19A

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SYSTEM #	SYSTEM NAME	DRAWING #
20	Radioactive Waste	FM-17A
23	High Pressure Cooling Injection	FM-25A
27	Containment Atmosphere Dilution	FM-18A,B,D
29	Main Steam	FM-29A
34	Feedwater	FM-34A
39	Breathing, Instrument & Service Air	FM-39A
46	Service & Emergency Service Water	FM-46A,B
66	Reactor Building Service Ventilation (Service Water)	FM-10H
70	Control Room Service & Chilled Water	FB-35E

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PUMP TESTING PROGRAM

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PUMP TESTING PROGRAM

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PUMP TABLE EXPLANATION

Summary of Information Provided

The Pump Table provides the following information:

* System
* Individual pump identifier
* Class
* The drawing on which the pump appears
* Drawing coordinates
* Speed[1], if variable
* Differential pressure[1]
* Discharge pressure[1] (positive displacement pumps)
* Flow rate[1]
* Vibration[1]
* Test interval

[1] These parameters are each addressed with either an "X" indicating the parameter is measured, an "X" with a PRR notation indicates relief is requested to modify or eliminate measurement of the parameter. A blank indicates that measurement of the respective parameter is not applicable.

Pump Relief Requests

PRR-XX refers to relief requests for the Pump Testing Program. Each pump request for relief provides the following information:

* System
* Individual pump identifier
* Code Classification
* Safety Function
* Code test requirement for which relief is requested
* Basis for relief
* Proposed alternate testing

NEW YORK POWER AUTHORITY
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PUMP TABLE

PUMP ID	CLASS	DRAWING NUMBER	DWG CO-ORD	SPEED	DIFFERENTIAL PRESSURE		DISCHARGE PRESSURE	FLOW RATE		VIBRATION		INPSECTION FREQUENCY
10P-1A	3	FM-20B	B-6		X	PRR-06		X		X		1-QUARTERLY
10P-1B	3	FM-20B	B-5		X	PRR-06		X		X		1-QUARTERLY
10P-1C	3	FM-20B	C-6		X	PRR-06		X		X		1-QUARTERLY
10P-1D	3	FM-20B	C-5		X	PRR-06		X		X		1-QUARTERLY
10P-3A	2	FM-20A	C-7		X	PRR-01		X		X		1-QUARTERLY
10P-3B	2	FM-20A	C-4		X	PRR-01		X		X		1-QUARTERLY
10P-3C	2	FM-20A	C-7		X	PRR-01		X		X		1-QUARTERLY
10P-3D	2	FM-20A	C-4		X	PRR-01		X		X		1-QUARTERLY
11P-2A	2	FM-21A	D-4				X	X	PRR02-R1	X	PRR-03	1-QUARTERLY
11P-2B	2	FM-21A	B-4				X	X	PRR02-R1	X	PRR-03	1-QUARTERLY
14P-1A	2	FM-23A	C-8		X	PRR-01 PRR-04		X		X		1-QUARTERLY
14P-1B	2	FM-23A	C-3		X	PRR-01 PRR-04		X		X		1-QUARTERLY
23P-1B	2	FM-25A	E-5		X			X		X		1-QUARTERLY
23P-1M	2	FM-25A	E-4	X	X			X		X		1-QUARTERLY
46P-2A	3	FM-46B	D-8		X	PRR-05R1 PRR-06		X		X		1-QUARTERLY
46P-2B	3	FM-46B	C-8		X	PRR-05R1 PRR-06		X		X		1-QUARTERLY

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Pump Relief Requests

PRR-01

SYSTEM: **VARIOUS**

PUMPS: Various

CLASS: Various

FUNCTION: This is a generic relief request.

TEST REQUIREMENT: OM-6 Section 4.6.2.1, if the presence or absence of liquid in a gage line could produce a difference of more than 0.25% in the indicated value of the measured pressure, means shall be provided to assure or determine the presence or absence of liquid as required for the static correction used.

BASIS FOR RELIEF: In accordance with OM-6 Section 4.6.2.2, the pump differential pressure may be determined by the difference in the pressure at a point in the inlet pipe (suction pressure) and the pressure at a point in the discharge pipe (discharge pressure). When the requirements of OM-6 Section 4.6.2.1 are applied to the measurement of pump suction pressure, the 0.25% limit is overly restrictive since the pump suction pressures are typically at relatively low levels. Compliance with this requirement could complicate venting procedures and introduce unnecessary health physics risks associated with handling and disposing of radioactive contaminated water with no commensurate gain or improvement of test reliability.

In most cases, the pump discharge pressure exceeds the suction pressure by at least a factor of five (5). This being the case, a 0.25% error introduced into the suction pressure measurement results in an error of 0.0625% in the differential pressure calculation. This is insignificant in light of the potential 6% error (2% full scale accuracy and full scale range of three times the reference value) allowance applied to both the suction and discharge pressure measurement in OM-6 Section 4.6.

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Pump Relief Requests

PRR-01 (Continued)

ALTERNATE TESTING: If the presence of absence of liquid in a gauge line used for sensing pump suction pressure could produce a difference of more than 0.25% in the calculated value of the pump differential pressure, means shall be provided to ensure or determine the presence or absence of liquid as required for the static correction used.

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Pump Relief Requests

PRR-02R1

SYSTEM:	**STANDBY LIQUID CONTROL (SLC)**
PUMPS:	11P-2A, B
CLASS:	2
FUNCTION:	These pumps inject borated water into the reactor vessel as an alternate means for negative reactivity addition and reactor shutdown.
TEST REQUIREMENT:	OM-6 Section 4.6.5, specifies the use of a rate or quantity meter installed in the pump test circuit when measuring flow rate. OM-6 Section 4.6.1.1 specifies the instruments used for flow rate measurement must be accurate to within ± 2% of full scale reading on the instrument.
BASIS FOR RELIEF:	The SLC test loop is not equipped with flow instrumentation and the only practical means of determining flow rate is to monitor the change of level in a test tank to which water is being pumped. The installed tank has a capacity of only 210 gallons and is capable of accommodating less than 5 minutes of pump operation at rated conditions (≥ 50 GPM). Due to limitations of pumping time and human factors related to measuring the change in test tank water level, the accuracy of flow rate determination cannot be verified to be within ±2% as required by the Code. Historically, the calculated flow rates are within 0.95 to 1.10 of reference flow rate (54.5 gpm).
ALTERNATIVE TESTING:	The flow rate of the SLC pumps will be determined by measuring the change in water level in the test tank during a period of pump operation at the reference discharge pressure over a period of at least two (2) minutes. The level change will be converted to flow rate and evaluated in accordance with analysis and evaluation criteria specified in OM-6, Section 6, as applicable.

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Pump Relief Requests

PRR-03

SYSTEM:	**STANDBY LIQUID CONTROL (SLC)**
PUMPS:	11P-2A, B
CLASS:	2
FUNCTION:	These pumps inject borated water into the reactor vessel as an alternate means for negative reactivity addition and reactor shutdown.
TEST REQUIREMENT:	OM-6 Section 4.6.1.6, the frequency response range of the vibration measuring transducers and their readout system shall be from one-third minimum pump shaft rotational speed to at least 1000 Hz.
BASIS FOR RELIEF:	The nominal speed of the SLC pumps is 520 RPM, which correlates to a rotational frequency of 8.67 Hz. OM-6 Section 4.6.1.6 requires the frequency response range of the vibration measuring transducers and their readout system to be accurate to ± 5% full scale over the range of 2.89 - 1000 Hz. The Authority has instruments for use during surveillance testing with certified accuracy of ± 5% full scale over a range of 5-2000 Hz. Calibration is verified accurate using a system test methodology over a range of 10-1000 Hz in units of displacement (mils p-p) and 6.5-1000 Hz in units of velocity (ips peak). The system test verification is limited by the capability of the calibration shaker system to accurately sustain vibration at meaningful amplitudes outside the tested frequencies. The certified calibration ± 5% range is arrived at through addition of individual transducer and meter inaccuracies over the stated frequency range.

PRR-03 (Continued)

The instrument lower frequency response limits are a result of high-pass filters installed to eliminate low frequency elements associated with the input signal from entering the process of single and double integration. These filters prevent low frequency electronic noise from distorting reading in the resultant units (ips, mils). As a side effect, any actual vibration occurring at low frequencies is filtered out. This is a necessary trade-off, as 1 mv of electronic noise at 2.5 Hz translates to approximately 62.6 mils p-p with the accelerometer used with these instruments, at a nominal sensitivity of 50 mv/g.

The Authority has extensively researched this issue concerning Code compliance and intent, and strongly feels that, for these pumps, procurement of equipment capable of meeting the Code required accuracy is impractical with little or no benefit. Instrumentation capable of meeting the Code for these pumps is cumbersome, difficult to operate, prone to human error, costly to purchase and extensive to calibrate. The number of vendors that supply instrumentation accurate at these frequencies is limited, and there are even fewer vendors capable of performing the required calibration services. Most standard qualified calibration laboratories provide calibration services only to a minimum of 10 Hz.

In addition to the impracticality of procuring the instruments, the Authority feels that the instruments presently used are adequate to assess the condition of these pumps. The manufacturer of these pumps, Union Pump Company, Battle Creek, Michigan, has stated that these pumps, being of a simplified reciprocating design, have no failure mechanism that would be revealed at frequencies less than shaft speed. Union Pump has stated that all failure modes of this pump resulting in increasing vibration will be manifested at shaft speed frequency or harmonics thereof. In light of the information provided by Union Pump, monitoring sub-synchronous vibration for these pumps is not needed, but super-synchronous readings will provide meaningful information in the detection of imminent machinery faults.

PRR-03 (Continued)

A search of the INPO NPRDS database has revealed only one failure reported for pumps of this or similar design whose discovery mentioned increased vibration levels. The cited cause of the failure was improper endplay set leading to gearing failure. Failures of this type would normally be detected at running (shaft) speed frequency, harmonics thereof, or non-harmonic super-synchronous bearing defect frequencies. It should also be noted that these are standby pumps that are normally operated only during pump and valve testing. In the unlikely event this system is required to fulfill its design function, only one of the two redundant pumps need operate for a period of 23 to 125 minutes.

In addition to vibration monitoring performed for the IST Program, these pumps are included in the Authority's Rotating Equipment Monitoring Program. Vibration spectral data is periodically collected and analyzed for the pump and gear motors in addition to those required by the Code. The equipment used by the Rotating Equipment Program is certified accurate to ± 5% over a frequency range of 5-2000 Hz and is also limited by high-pass integrating filters, but allows for discrete frequency analysis and trending using FFTs. Vendor specifications state that this equipment should provide fairly accurate data down to 2 Hz in units of acceleration (g peak) by using the raw transducer signal, negating the need for integration. Study of low frequency spectra taken in g peak with these instruments has revealed no distinct sub-synchronous peaks above the noise floor acceleration signal.

In light of their rigorous testing and limited design run time, it is not likely that a minor mechanical fault would prevent these pumps from fulfilling their design function and unlikely that development of a major fault would go unnoticed.

PRR-03 (Continued)

In conclusion, the Authority feels that the use of high quality, commercially available vibration monitoring equipment calibrated to be at least accurate to ± 5% full scale over a range of 6 Hz to 500 Hz (nominal shaft speed - 8.67 hz) is an appropriate method of monitoring the mechanical condition of the SLC pumps. Such instruments will provide meaningful and useful measurements over the frequency range in which the pump faults will develop and manifest. This meets the intent of the Code and certainly will neither adversely impact system reliability nor the health and safety of the general public. In addition, it relieves the Authority of the burden and expense involved in the procurement, calibration, training and certification associated with obtaining new equipment that is simply not needed to adequately assess the condition of the SLC pumps.

ALTERNATE TESTING: The vibration measurements will be taken using instrumentation accurate to ± 5% full scale over a frequency response range of 6 Hz to 500 Hz. The data will be evaluated per OM-6 Section 6.

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Pump Relief Requests

PRR-04

SYSTEM:	**CORE SPRAY (CSP)**
PUMPS:	14P-1A, B
CLASS:	2
FUNCTION:	Pump cooling water from the suppression pool to the reactor in the event of a LOCA.
TEST REQUIREMENT:	OM-6 Section 4.6.1.2(a), the full scale-range of each analog instrument shall be not greater than three times the reference value.
BASIS FOR RELIEF:	The differential pressure for the Core Spray pumps is calculated using the installed suction and discharge pressure gauges. The suction pressure gauge is designed to provide adequate suction pressure indication during all expected operating conditions. The full-scale range, 60 psig, is sufficient for a post-accident condition when the torus is at the maximum accident pressure. This, however, exceeds the range limit for the suction pressure under the test condition (approximately 5 psig). The installed suction pressure gauge and discharge pressure instrumentation loop are calibrated to within ± 2% full scale accuracy. The full-scale range of the pump discharge pressure instrumentation loop is 500 psig. Pump discharge pressure during testing is typically 300 psig. Thus the maximum variation due to inaccuracy in measured suction pressure is ± 1.2 psi and in measured discharge pressure is ± 10 psi. Thus, the differential pressure would be 295 ± 11.2 psi or an inaccuracy of 3.8%. If the full scale range of the suction pressure gauge was within the Code allowable of 3 times the reference value or 15 psig, the resulting differential pressure measurement would be 295 ± 10.3 psi or an inaccuracy of 3.5%. Thus the increase in inaccuracy of 0.3% is insignificant and does not warrant the additional manpower and exposure required to change the suction pressure gauge for test purposes.

PRR-04 (Continued)

In addition, the Code would allow a full-scale range for the discharge pressure measurement of 900 psig. This would translate into a differential pressure measurement of 295 ± 18.3 psig or an inaccuracy of 6.2%. The existing measurement is significantly better than the maximum Code allowable inaccuracy.

ALTERNATE TESTING: The existing installed plant suction pressure gauges will be used to determine the pump differential pressure for testing of the Core Spray pumps.

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Pump Relief Requests

PRR-05R1

SYSTEM:	**EMERGENCY SERVICE WATER (ESW)**
PUMPS:	46P-2A, B
CLASS:	3
FUNCTION:	These pumps provide cooling water for safety-related heat loads during a loss-of-coolant design basis accident.
TEST REQUIREMENT:	OM-6 Section 5.2(b), the resistance of the system shall be varied until the flow rate equals the reference value. The pressure shall then be determined and compared to its reference value. Alternatively, the flow rate can be varied until the pressure equals the reference value and the flow rate shall be determined and compared to the reference flow rate value.
BASIS FOR RELIEF:	Emergency Service Water (ESW) systems are designed such that the total pump flow cannot be adjusted to one finite value for the purpose of testing without adversely affecting the system flow balance and Technical Specification operability requirements. These pumps must be tested in a manner that the service water loop remains properly flow balanced during and after the testing and each supplied load remains fully operable per Technical Specifications to maintain the required level of plant safety during plant operation. The ESW water system loops are not designed with a full flow test line with a single throttle valve. The flow therefore cannot be throttled to a fixed reference value every time. Total pump flow rate can only be measured using the total system flow indication installed on the common supply header. Only the flows of the serviced components can be individually throttled. Each load is throttled to a FSAR required flow range which must be satisfied for the load to be operable. All loads are aligned in parallel, and all receive ESW flow when the associated ESW pump is running, regardless whether the served component is in service or not.

PRR-05R1 (Continued)

During power operation, all loops of ESW are required to be operable per the Technical Specifications. A loop of ESW cannot be taken out of service for testing without entering a limiting

Condition for Operation (LCO). With each loop of ESW balanced a requirement to quarterly adjust ESW loop flow to one specific flow value for inservice testing conflicts with system design and operability requirements (i.e. flow balance) as required by Technical Specifications.

ALTERNATE TESTING: As discussed in the basis for relief it is extremely difficult or impossible to return to a specific flow rate or differential pressure for testing these pumps. Multiple reference points could be established according to the Code, but it would be impossible to obtain reference values at every possible point. An alternative to the testing requirements of OM-6 is to base the acceptance criteria on a reference curve. Flow rate and discharge pressure are measured during inservice testing in the as found condition and compared to an established reference curve. The following elements are used in developing and implementing the reference curves.

1) A reference pump curve has been established for each pump from empirical data obtained during tests when these pumps were known to be operating acceptably. These pump curves represent pump performance consistent with the original pump test data.

2) The reference points were used to develop the pump curves were measured using plant instruments that were calibrated to verify their accuracy prior to performing the tests. In addition to the plant instruments portable UT flow instrumentation was installed during reference testing.

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Pump Relief Requests

PRR-05R1 (Continued)

3) The reference pump curves are based upon the manufacturers pump curves that were validated during preoperational testing and in 1990. Performance Engineering report JPEM-91-001 provides the correlation of data developed during the five tests used to establish the reference pump curve.

4) The points utilized were beyond the flat portion of the curve and demonstrated that flow was within the acceptable design limits.

5) The acceptance criteria bases are documented in calculation JAF 91-96 Rev. 1. The limits established do not conflict with the Technical Specifications or the Final Safety Analysis Report operability criteria.

6) Review of vibration data trend plots indicates that the change in vibration reading do not vary significantly over the narrow range of pump curves being used. Based upon this reference values are uniform and recorded at the upper motor bearing housing location in three directions.

7) After any maintenance or repair that may affect the established reference pump curve, a new reference pump curve shall be determined or the existing pump curve revalidated by an inservice test.

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Pump Relief Requests

PRR-06

SYSTEM: **RHR SERVICE WATER/EMERGENCY SERVICE WATER**

PUMPS: 10P-1A, B, C, D & 46P-2A, B

CLASS: 3

FUNCTION: These pumps provide cooling water for safety-related heat loads during a loss-of-coolant design basis accident.

TEST REQUIREMENT: OM-6 Section 4.6.1.1 specifies the instruments used for pressure measurement must be accurate to within ± 2% of full-scale reading of the instrument.

BASIS FOR RELIEF: The RHRSW and ESW pumps are of a vertical submerged open line shaft design. There is no installed instrument for direct measurement of the inlet pressure. Instead, the minimum pumping level is monitored to ensure adequate NPSH is available for pump operation. Since the forebay water level is not expected to change significantly during the testing of these pumps, only one measurement per test is required.

During each test, the difference in elevation between the forebay water level and the pump discharge pressure gauge will be determined by measurement. This value will be verified to be less than or equal to the value corresponding to the minimum water level required for pump operation and will also be used to calculate pump differential pressure. This calculation method is in accordance with OM-6, Section 4.6.2.2, and NUREG-1482, Section 5.5.3.

Due to limitations of human factors related to measuring the elevation between the forebay water level and the pump discharge pressure gauge, the accuracy of differential pressure calculation(s) cannot be verified to within ± 2% as required by the Code.

PRR-06 (Continued)

ALTERNATE TESTING: In accordance with the guidance provided in NUREG-1482, Section 5.5.3, Differential Pressure for the RHRSW and ESW pumps will be measured as follows:

For each pump, the pump correction value will be determined by measuring the difference in elevation between the forebay water level and the pump discharge pressure gauge, and then calculated in accordance with the procedure. The discharge pressure of the pump will be recorded and then added to the pump correction value to determine the Differential Pressure. This value will be recorded during the performance of each test and then evaluated in accordance with analysis and evaluation criteria specified in OM-6, Section 6, as applicable.

VALVE TESTING PROGRAM

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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

VALVE TABLE EXPLANATION

Summary of Information Provided

The Valve Table is sorted by system number, then drawing number, and provides the following information:

* Individual valve identifier
* Drawing coordinates
* Code Class
* IST Category
* Nominal size
* Valve type
* Actuator type
* Test required
* Relief request (RR)/cold shutdown (CS) justification/ refueling outage (RO) justification
* Alternate test
* Remarks

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Cold Shutdown Justification

CSJ-XX refer to cold shutdown justifications which provide the justification for testing affected components at cold shutdown instead of every three months. The Cold Shutdown Justifications provide the following information:

* System
* Individual valve identifier
* Valve category
* Safety function
* Justification

Refueling Outage Justification

ROJ-XX refer to refueling outage justifications which provide the justification for testing affected components at refueling outages instead of every three months or at cold shutdown. The Refueling Outage Justifications provide the following information:

* System
* Individual valve identifier
* Valve category
* Safety function
* Justification

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Valve Relief Requests

VRR-XX refer to relief requests for the Valve Testing Program. Each valve request for relief provides the following information:

* System
* Individual valve identifier
* Valve category
* Code Classification
* Safety Function
* Code test requirement for which relief is requested
* Basis for relief
* Proposed alternate testing

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Valve Symbols

Valve Types

3W	Three-way valve
AN	Angle valve
BF	Butterfly valve
BK	Ball check
BL	Ball valve
CK	Swing check
GA	Gate valve
GL	Globe valve
LK	Lift check
NK	Non-return valve
PG	Plug valve
RD	Rupture disk
RV	Relief valve
SC	Stop check
SK	Spring check
TK	Testable check
WK	Wafer check
XP	Explosive valve

Valve Actuator Types

AO	Air operator
EH	Electro-hydraulic
HO	Hydraulic operator
MA	Manual operator
MO	Motor operator
PA	Pilot actuated
SA	Self actuated
SO	Solenoid operator
SP	Spring operator
SQ	Squib actuator

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Test Method

Test Requirement		OM-10 Section
PIT	Valve position indication	4.1
ETO	Exercise test to open position	4.2.1.2
ETC	Exercise test to closed position	4.2.1.2
PEO	Partial exercise to open position	4.2.1.2
PEC	Partial exercise to closed position	4.2.1.2
STO	Full stroke time measured to open position	4.2.1.4
STC	Full stroke time measured to close position	4.2.1.4
FSO	Fail safe test to the open position	4.2.1.6
FSC	Fail safe test to the closed position	4.2.1.6
LKJ	Leak test per 10 CFR 50 Appendix J	4.2.2.2
LKO	Leak test for other than containment isolation valve	4.2.2.3
RLF	Relief valve test	4.3.1
VBT	Vacuum breaker operability test	4.3.1
FFT	Check valve forward flow verification test	4.3.2.2
RFC	Check valve reverse flow closure test	4.3.2.2
PFT	Check valve partial flow test	4.3.2.2
MME	Check valve exercise using manual mechanical exerciser	4.3.2.4(b)
DIS	Check valve disassembly and inspection	4.3.2.4(c)
XPT	Explosively actuated valve test	4.4.1
RDT	Rupture disk test	4.4.2
XVD	Explosive valve internal inspection	Tech Spec

Test Frequency

-1	Quarterly	-6	10 CFR 50 Appendix J
-2	Cold Shutdown	-7	OM-1 Section 1.3.3
-3	Refueling	-8	OM-1 Section 1.3.4
-4	6 months	-9	OM-10 Section 4.4.1
-5	2 years	-10	OM-10 Section 4.4.2
		-11	Tech Spec Requirement

NEW YORK POWER AUTHORITY
JAMES A. FITZPATRICK NUCLEAR POWER PLANT
INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Standby Gas Treatment - SYSTEM ID: 01-125 DRAWING: FM-48A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
01-125MOV-100A	C-6	2A	B	4.00	BF	MO	O/C	STO-1 STC-1 PIT-5				AUGMENTED
01-125MOV-100B	F-6	2A	B	4.00	BF	MO	O/C	STO-1 STC-1 PIT-5				AUGMENTED
01-125MOV-11	G-8	2A	B	24.00	BF	MO	O	STO-1 PIT-5				AUGMENTED
01-125MOV-12	F-8	2A	B	24.00	BF	MO	O	STO-1 PIT-5				AUGMENTED
01-125MOV-14A	D-6	2A	B	24.00	BF	MO	O/C	STO-1 STC-1 PIT-5				AUGMENTED
01-125MOV-14B	E-6	2A	B	24.00	BF	MO	O/C	STO-1 STC-1 PIT-5				AUGMENTED
01-125MOV-15A	D-3	2A	B	24.00	BF	MO	O	STO-1 PIT-5				AUGMENTED
01-125MOV-15B	F-3	2A	B	24.00	BF	MO	O	STO-1 PIT-5				AUGMENTED

NEW YORK POWER AUTHORITY
JAMES A. FITZPATRICK NUCLEAR POWER PLANT
INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Automatic Depressurization System - SYSTEM ID: 02 DRAWING: FM-29A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
02AOV-17	G-7	1	B	1.00	GL	AO	C	PIT-5				PASSIVE
02AOV-18	G-7	1	B	1.00	GL	AO	C	PIT-5				PASSIVE
02RV-1	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-2	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-3	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-4	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-5	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-6	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-7	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-8	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-9	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-10	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	

NEW YORK POWER AUTHORITY
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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Automatic Depressurization System - SYSTEM ID: 02

DRAWING: FM-29A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQTS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
02RV-11	D-7	2	C	3.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02RV-71A	G-6	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02RV-71B	G-6	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02RV-71C	G-6	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02RV-71D	F-6	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								PLF-7				
02RV-71E	F-7	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02RV-71F	F-7	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02RV-71G	F-7	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02RV-71H	G-7	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02RV-71J	G-7	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02RV-71K	G-6	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02RV-71L	F-7	1	B/C	6.00	RV	SA, AO	O/C	STO-1		VRR-01	ETO-3	
								STC-1		VRR-02	ETC-3	
								RLF-7				
02VB-1	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02VB-2	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	

NEW YORK POWER AUTHORITY
JAMES A. FITZPATRICK NUCLEAR POWER PLANT
INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Automatic Depressurization System - SYSTEM ID: 02 DRAWING: FM-29A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
02VB-3	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02VB-4	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02VB-5	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02VB-6	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02VB-7	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02VB-8	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02VB-9	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02VB-10	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	
02VB-11	C-7	2	C	10.00	CK	SA	O/C	ETO-1	ROJ-04		MME-3	
								ETC-1			MME-3	

NEW YORK POWER AUTHORITY
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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Reactor Water Recirculation - SYSTEM ID: 02-2

DRAWING: FM-26A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
02-2AOV-39	E-4	1	A	0.75	GA	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				
02-2AOV-40	E-3	1	A	0.75	GA	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				
02-2EFV-PS-128A	B-6	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-2EFV-PS-128B	B-6	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-2EFV-PT-24A	C-3	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-2EFV-PT-24B	C-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-2EFV-PT-25A	C-3	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-2EFV-PT-25B	C-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-2RWR-13A	C-3	1	A/C	0.75	SK	SA	C	RFC-1 LKJ-6	ROJ-02		RFC-3	
02-2RWR-13B	C-8	1	A/C	0.75	SK	SA	C	RFC-1 LKJ-6	ROJ-02		RFC-3	
02-2RWR-41A	D-3	1	A/C	0.75	SK	SA	C	RFC-1 LKJ-6	ROJ-03		RFC-3	
02-2RWR-41B	D-8	1	A/C	0.75	SK	SA	C	RFC-1 LKJ-6	ROJ-03		RFC-3	
022EFV1-DPT111A	E-3	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW

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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Reactor Water Recirculation - SYSTEM ID: 02-2 DRAWING: FM-26A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
022EFV1-DPT111B	E-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV1-FT110A	F-3	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV1-FT110C	D-3	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV1-FT110E	F-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV1-FT110G	D-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV2-DPT111A	E-3	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV2-DPT111B	E-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV2-FT110A	F-3	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV2-FT110C	D-3	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV2-FT110E	F-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
022EFV2-FT110G	D-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02MOV-53A	C-3	1	B	28.00	GA	MO	C	STC-1 PIT-5	CSJ-01		STC-2	
02MOV-53B	C-8	1	B	28.00	GA	MO	C	STC-1 PIT-5	CSJ-01		STC-2	

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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Nuclear Boiler Vessel Instruments - SYSTEM ID: 02-3 DRAWING: FM-47A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
02-3EFV-11	F-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-13A	E-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-13B	E-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-15A	E-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-15B	E-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-15N	B-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-17A	D-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-17B	D-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-19A	D-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-19B	D-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-21A	H-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-21B	C-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-21C	C-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-21D	H-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-23	F-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW

NEW YORK POWER AUTHORITY
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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM Nuclear Boiler Vessel Instruments - SYSTEM ID: G2-3 DRAWING FM-47A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN.)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
02-3EFV-23A	H-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-23B	D-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-23C	D-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-23D	C-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-25	C-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31A	H-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31B	H-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31C	H-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31D	H-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31E	D-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31F	H-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31G	G-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31H	G-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31J	H-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31K	H-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW

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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Nuclear Boiler Vessel Instruments - SYSTEM ID: 02-3 DRAWING: FM-47A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
02-3EFV-31L	H-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31M	D-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31N	H-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31P	H-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31R	G-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-31S	G-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
02-3EFV-33	B-4	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW

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VALVE TABLE

SYSTEM Control Rod Drive - SYSTEM ID: 03 DRAWING: FM-27B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQTS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
03AOV-126	C-4	2	B	1.00	GL	AO	O	STO-1 FSO-1			ETO-3	SCRAM TIME TEST GL89-04 POSITION 7
03AOV-127	D-4	2	B	1.00	GL	AO	O	STO-1 FSO-1			ETO-3	SCRAM TIME TEST GL89-04 POSITION 7
03AOV-32	H-4	2	B	1.00	GL	AO	C	STC-1 FSC-1 PIT-5				
03AOV-33	F-4	2	B	2.00	GL	AO	C	STC-1 FSC-1 PIT-5				
03AOV-34	H-4	2	B	1.00	GL	AO	C	STC-1 FSC-1 PIT-5				
03AOV-35	F-4	2	B	2.00	GL	AO	C	STC-1 FSC-1 PIT-5				
03AOV-36	H-6	2	B	1.00	GL	AO	C	STC-1 FSC-1 PIT-5				
03AOV-37	F-6	2	B	2.00	GL	AO	C	STC-1 FSC-1 PIT-5				
03AOV-38	H-6	2	B	1.00	GL	AO	C	STC-1 FSC-1 PIT-5				
03AOV-39	F-6	2	B	2.00	GL	AO	C	STC-1 FSC-1 PIT-5				
03HCU-114	D-4	2	C	0.75	BK	SA	O	FFT-1			FFT-3	SCRAM TIME TEST GL89-04 POSITION 7
03HCU-115	C-4	2	C	0.50	BK	SA	C	RFC-1	CSJ-02		RFC-2	
03HCU-138	C-4	2	C	0.50	BK	SA	C	RFC-1				REVERSE FLOW TESTED VIA ROD MOTION

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VALVE TABLE

SYSTEM: Control Rod Drive - SYSTEM ID: 03 DRAWING: FM-27B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
03SOV-120	C-4	2	B	0.50	GA	AO	C	STC-1 FSC-1			ETC-3	SCRAM TIME TEST GL89-04 POSITION 7
03SOV-121	C-4	2	B	0.50	GA	AO	C	STC-1 FSC-1			ETC-3	SCRAM TIME TEST GL89-04 POSITION 7
03SOV-122	C-4	2	B	0.50	GA	AO	C	STC-1 FSC-1			ETC-3	SCRAM TIME TEST GL89-04 POSITION 7
03SOV-123	C-4	2	B	1.50	GA	AO	C	STC-1 FSC-1			ETC-3	SCRAM TIME TEST GL89-04 POSITION 7
03Z-132	B-4	2A	D	0.50	RD	SA	C	RDT-10				

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VALVE TABLE

SYSTEM: Traversing In-Core Probe - SYSTEM ID: 07 DRAWING: FM-119A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
07EV-104A	F-5	2A	D	0.375	XP	SQ	C	XPT-9				AUGMENTED
07EV-104B	F-4	2A	D	0.375	XP	SQ	C	XPT-9				AUGMENTED
07EV-104C	F-4	2A	D	0.375	XP	SQ	C	XPT-9				AUGMENTED
07SOV-104A	F-5	2A	A	0.375	BL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6		VRR-03		AUGMENTED
07SOV-104B	F-4	2A	A	0.375	BL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6		VRR-03		AUGMENTED
07SOV-104C	F-4	2A	A	0.375	BL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6		VRR-03		AUGMENTED

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VALVE TABLE

SYSTEM: Residual Heat Removal - SYSTEM ID: 10 DRAWING: FM-20A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY POSITION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
10AOV-68A	F-6	1	A/C	24.00	TK	SA, AO	O/C	FFT-1 RFC-1 LKO-5	CSJ-03 CSJ-03		FFT-2 RFC-2	
10AOV-68B	F-5	1	A/C	24.00	TK	SA, AO	O/C	FFT-1 RFC-1 LKO-5	CSJ-03 CSJ-03		FFT-2 RFC-2	
10MOV-13A	B-6	2	B	20.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
10MOV-13B	C-4	2	B	20.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
10MOV-13C	C-6	2	B	20.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
10MOV-13D	C-5	2	B	20.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
10MOV-15A	C-6	2	B	20.00	GA	MO	C	STC-1 PIT-5				
10MOV-15B	C-4	2	B	20.00	GA	MO	C	STC-1 PIT-5				
10MOV-15C	C-6	2	B	20.00	GA	MO	C	STC-1 PIT-5				
10MOV-15D	C-4	2	B	20.00	GA	MO	C	STC-1 PIT-5				
10MOV-16A	D-8	2	B	4.00	GA	MO	O/C	STO-1 STC-1 PIT-5				

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VALVE TABLE

SYSTEM: Residual Heat Removal - SYSTEM ID: 10 DRAWING: FM-20A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
10MOV-16B	D-3	2	B	4.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
10MOV-17	D-5	1	A	20.00	GA	MO	C	STC-1 PIT-5 LKO-5 LKJ-6	CSJ-04		STC-2 LKJ-3	 LKO-5 SATISFIED BY LKJ-3 PER JAF-CALC-MISC-00554
10MOV-18	E-5	1	A	20.00	GA	MO	C	STC-1 PIT-5 LKO-5	CSJ-04		STC-2	JAF-SE-96-017
10MOV-21A	E-8	2	B	4.00	GA	MO	C	PIT-5				PASSIVE
10MOV-21B	E-4	2	B	4.00	GA	MO	C	PIT-5				PASSIVE
10MOV-25A	F-8	1	A	24.00	GA	MO	O/C	STO-1 STC-1 PIT-5 LKO-5 LKJ-6			 LKJ-3	LKO-5 SATISFIED BY LKJ-3 PER JAF-CALC-MISC-00554
10MOV-25B	F-3	1	A	24.00	GA	MO	O/C	STO-1 STC-1 PIT-5 LKO-5 LKJ-6			 LKJ-3	LKO-5 SATISFIED BY LKJ-3 PER JAF-CALC-MISC-00554
10MOV-26A	G-7	2	A	10.00	GA	MO	O/C	STO-1 STC-1 PIT-5				JAF-SE-96-017
10MOV-26B	G-4	2	A	10.00	GA	MO	O/C	STO-1 STC-1 PIT-5				JAF-SE-96-017
10MOV-27A	F-8	1	A	18.00	AN	MO	O/C	STO-1 STC-1 PIT-5				JAF-SE-96-017

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VALVE TABLE

SYSTEM: Residual Heat Removal - SYSTEM ID: 10

DRAWING: FM-20A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
10MOV-27B	F-3	1	A	18.00	AN	MO	O/C	STO-1 STC-1 PIT-5				JAF-SE-96-017
10MOV-31A	G-6	2	A	10.00	GL	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				
10MOV-31B	G-5	2	A	10.00	GL	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				
10MOV-34A	E-7	2	B	14.00	GL	MO	O/C	STO-1 STC-1 PIT-5				
10MOV-34B	E-3	2	B	14.00	GL	MO	O/C	STO-1 STC-1 PIT-5				
10MOV-38A	E-7	2	A	4.00	GL	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				
10MOV-38B	E-4	2	A	4.00	GL	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				
10MOV-39A	E-8	2	A	16.00	GL	MO	O/C	STO-1 STC-1 PIT-5				JAF-SE-96-017
10MOV-39B	E-3	2	A	16.00	GL	MO	O/C	STO-1 STC-1 PIT-5				JAF-SE-96-017

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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Residual Heat Removal - SYSTEM ID: 10 DRAWING: FM-20A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
10MOV-66A	D-8	2	B	20.00	GL	MO	O/C	STO-1 STC-1 PIT-5				
10MOV-66B	D-3	2	B	20.00	GL	MO	O/C	STO-1 STC-1 PIT-5				
10RHR-262	H-3	2	C	4.00	CK	SA	C	RFC-1				
10RHR-277	G-8	2	C	4.00	CK	SA	C	RFC-1				
10RHR-42A	C-8	2	C	16.00	CK	SA	O/C	FFT-1 RFC-1				
10RHR-42B	C-3	2	C	16.00	CK	SA	O/C	FFT-1 RFC-1				
10RHR-42C	C-8	2	C	16.00	CK	SA	O/C	FFT-1 RFC-1				
10RHR-42D	C-3	2	C	16.00	CK	SA	O/C	FFT-1 RFC-1				
10RHR-64A	C-8	2	C	3.00	CK	SA	O/C	FFT-1 RFC-1	ROJ-05		PFT-1 DIS-3	AT LEAST ONE VALVE PER OUTAGE WITH ALL VALVES IN GROUP INSPECTED AT LEAST ONCE/6 YRS.
10RHR-64B	C-3	2	C	3.00	CK	SA	O/C	FFT-1 RFC-1	ROJ-05		PFT-1 DIS-3	AT LEAST ONE VALVE PER OUTAGE WITH ALL VALVES IN GROUP INSPECTED AT LEAST ONCE/6 YRS.
10RHR-64C	D-8	2	C	3.00	CK	SA	O/C	FFT-1 RFC-1	ROJ-05		PFT-1 DIS-3	AT LEAST ONE VALVE PER OUTAGE WITH ALL VALVES IN GROUP INSPECTED AT LEAST ONCE/6 YRS.
10RHR-64D	D-3	2	C	3.00	CK	SA	O/C	FFT-1 RFC-1	ROJ-05		PFT-1 DIS-3	AT LEAST ONE VALVE PER OUTAGE WITH ALL VALVES IN GROUP INSPECTED AT LEAST ONCE/6 YRS.

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VALVE TABLE

SYSTEM: Residual Heat Removal - SYSTEM ID: 10 DRAWING: FM-20A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
10RHR-81A	F-6	1	B	24.00	GA	MA	O	PIT-5				PASSIVE
10RHR-81B	F-5	1	B	24.00	GA	MA	O	PIT-5				PASSIVE
10RHR-95A	C-8	2	C	0.75	SK	SA	C	RFC-1	ROJ-06		RFC-3	
10RHR-95B	B-5	2	C	0.75	SK	SA	C	RFC-1	ROJ-06		RFC-3	
10RV-41A	C-7	2	C	1.00	RV	SA	C	RLF-8				
10RV-41B	C-4	2	C	1.00	RV	SA	C	RLF-8				
10RV-41C	C-7	2	C	1.00	RV	SA	C	RLF-8				
10RV-41D	C-4	2	C	1.00	RV	SA	C	RLF-8				
10SV-35A	E-8	2	C	1.00	RV	SA	C	RLF-8				
10SV-35B	E-3	2	C	1.00	RV	SA	C	RLF-8				
10SV-40	D-5	2	C	1.00	RV	SA	C	RLF-8				

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VALVE TABLE

SYSTEM: Residual Heat Removal - SYSTEM ID: 10 DRAWING: FM-208

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
10AOV-71A	F-6	2	B	3.00	GL	AO	C	PIT-5				PASSIVE
10AOV-71B	F-5	2	B	3.00	GL	AO	C	PIT-5				PASSIVE
10MOV-12A	F-6	2	B	16.00	GA	MO	O	PIT-5				PASSIVE
10MOV-12B	F-5	2	B	16.00	GA	MO	O	PIT-5				PASSIVE
10MOV-148A	E-8	3	B	16.00	GA	MO	C	PIT-5				PASSIVE
10MOV-148B	E-2	3	B	16.00	GA	MO	C	PIT-5				PASSIVE
10MOV-149A	D-8	3	B	16.00	GA	MO	C	PIT-5				PASSIVE
10MOV-149B	D-2	3	B	16.00	GA	MO	C	PIT-5				PASSIVE
10MOV-167A	F-8	2	B	1.00	GL	MO	C	PIT-5				PASSIVE
10MOV-167B	F-3	2	B	1.00	GL	MO	C	PIT-5				PASSIVE
10MOV-65A	G-6	2	B	16.00	GL	MO	O	PIT-5				PASSIVE
10MOV-65B	G-5	2	B	16.00	GL	MO	O	PIT-5				PASSIVE
10MOV-89A	D-6	3	B	16.00	GA	MO	O	STO-1 PIT-5				
10MOV-89B	E-5	3	B	16.00	GA	MO	O	STO-1 PIT-5				
10RHR-14A	B-7	3	C	12.00	CK	SA	O/C	FFT-1 RFC-1				
10RHR-14B	B-4	3	C	12.00	CK	SA	O/C	FFT-1 RFC-1				
10RHR-14C	C-7	3	C	12.00	CK	SA	O/C	FFT-1 RFC-1				

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VALVE TABLE

SYSTEM: Residual Heat Removal - SYSTEM ID: 10 DRAWING: FM-20B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
10RHR-14D	C-4	3	C	12.00	CK	SA	O/C	FFT-1 RFC-1				
10RV-43A	E-7	3	C	0.75	RL	SA	O	RLF-8				
10RV-43B	E-4	3	C	0.75	RL	SA	O	RLF-8				
10RV-46A	F-7	2	C	0.75	RL	SA	O	RLF-8				
10RV-46B	F-3	2	C	0.75	RL	SA	O	RLF-8				
10SOV-101A	B-6	3	B	0.75	GL	SO	O	STO-1 FSO-1				
10SOV-101B	B-5	3	B	0.75	GL	SO	O	STO-1 FSO-1				
10SOV-101C	C-6	3	B	0.75	GL	SO	O	STO-1 FSO-1				
10SOV-101D	C-5	3	B	0.75	GL	SO	O	STO-1 FSO-1				
10SOV-263A	F-7	2	B	0.375	GA	SO	C	PIT-5				PASSIVE
10SOV-263B	F-4	2	B	0.375	GA	SO	C	PIT-5				PASSIVE
10SV-74A	G-8	2	C	4.00	RL	SA	C	RLF-8				
10SV-74B	G-3	2	C	4.00	RL	SA	C	RLF-8				

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VALVE TABLE

SYSTEM: Residual Heat Removal - SYSTEM ID: 10

DRAWING: FM-18C

VALVE ID	P&ID COORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
10SOV-203	E-7	2	B	0.50	GA	SO	C	PIT-5				PASSIVE
10SOV-204	D-7	2	B	0.50	GA	SO	C	PIT-5				PASSIVE

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VALVE TABLE

SYSTEM: Standby Liquid Control - SYSTEM ID: 11 DRAWING: FM-21A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQTS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
11EV-14A	D-6	1	D	1.50	XP	SQ	O	XPT-9 XVD-3				
11EV-14B	B-6	1	D	1.50	XP	SQ	O	XPT-9 XVD-3				
11SLC-16	C-7	1	A/C	1.50	CK	SA	O/C	FFT-1 RFC-1 LKJ-6	ROJ-07		FFT-3 RFC-3	
11SLC-17	D-7	1	A/C	1.50	SK	SA	O/C	FFT-1 RFC-1 LKJ-6	ROJ-07		FFT-3 RFC-3	
11SLC-18	D-7	1	B	1.50	GL	MA	O	FIT-5				PASSIVE
11SLC-43A	D-6	2	C	1.50	SK	SA	O/C	FFT-1 RFC-1				
11SLC-43B	B-6	2	C	1.50	SK	SA	O/C	FFT-1 RFC-1				
11SV-39A	D-4	2	C	1.00	RV	SA	C	RLF-8				
11SV-39B	C-4	2	C	1.00	RV	SA	C	RLF-8				

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VALVE TABLE

SYSTEM: Reactor Water Clean Up - SYSTEM ID: 12 DRAWING: FM-24A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CS/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
12MOV-15	E-8	1	A	6.00	GA	MO	C	STC-1 PIT-5 LKJ-6				
12MOV-18	E-7	1	A	6.00	GA	MO	C	STC-1 PIT-5 LKJ-6				
12MOV-69	H-7	1	A	4.00	GA	MO	C	STC-1 PIT-5 LKJ-6				

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VALVE TABLE

SYSTEM: Reactor Core Isolation Cooling - SYSTEM ID: 13 DRAWING: FM-22A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
13EFV-01A	F-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
13EFV-01B	F-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
13EFV-02A	G-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
13EFV-02B	F-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
13MOV-15	F-7	1	A	3.00	GA	MO	C	STC-1 PIT-5 LKJ-6				
13MOV-16	F-7	1	A	3.00	GA	MO	C	STC-1 PIT-5 LKJ-6				
13MOV-21	F-5	1	A	4.00	GA	MO	C	STC-1 PIT-5 LKJ-6				
13MOV-27	E-5	2	B	2.00	GL	MO	C	STC-1 PIT-5				
13MOV-41	D-7	2	B	6.00	GA	MO	C	STC-1 PIT-5				
13MOV-130	E-6	2	B	1.50	GA	MO	O	PIT-5				PASSIVE
13RCIC-37	E-6	2	C	1.50	CK	SA	O	FFT-1	CSJ-06		FFT-2	
13RCIC-38	E-6	2	C	1.50	CK	SA	O	FFT-1	CSJ-06		FFT-2	
13RCIC-4	D-6	2	A/C	8.00	LK	SA	C	RFC-1 LKJ-6	ROJ-08		RFC-3	
13RCIC-5	C-6	2	A/C	8.00	LK	SA	C	RFC-1 LKJ-6	ROJ-08		RFC-3	
13RCIC-7	C-7	2	C	2.00	SC	SA, MA	C	RFC-1	CSJ-05		RFC-2	

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VALVE TABLE

SYSTEM: Core Spray - SYSTEM ID: 14 DRAWING: FM-23A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
14AOV-13A	G-6	1	A/C	10.00	TK	SA, AO	O/C	FFT-1 RFC-1 PIT-5 LKO-5	ROJ-09		FFT-3 RFC-3 LKO-3 PEO-2 PEC-2	
14AOV-13B	G-5	1	A/C	10.00	TK	SA, AO	O/C	FFT-1 RFC-1 PIT-5 LKO-5	ROJ-09		FFT-3 RFC-3 LKO-3 PEO-2 PEC-2	
14SCP-10A	D-8	2	C	12.00	CK	SA	O	FFT-1				
14CSP-10B	D-3	2	C	12.00	CK	SA	O	FFT-1				
14CSP-14A	G-6	1	B	10.00	GA	MA	O	PIT-5				PASSIVE
14CSP-14B	G-5	1	B	10.00	GA	MA	O	PIT-5				PASSIVE
14CSP-62A	E-7	2	C	1.00	SK	SA	O/C	RFC-1	ROJ-10		RFC-3	
14CSP-62B	E-3	2	C	1.00	SK	SA	O/C	RFC-1	ROJ-10		RFC-3	
14CSP-76A	F-7	2	C	2.00	SK	SA	C	RFC-1				
14CSP-76B	F-4	2	C	2.00	SK	SA	C	RFC-1				
14EFV-31A	E-4	1	A/C	1.00	BK	SA	O/C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
14EFV-31B	E-4	1	A/C	1.00	BK	SA	O/C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
14MOV-11A	F-7	1	A	10.00	GA	MO	O	STO-1 STC-1 PIT-5				JAF-SE-96-017
14MOV-11B	F-4	1	A	10.00	GA	MO	O	STO-1 STC-1 PIT-5				JAF-SE-96-017

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VALVE TABLE

SYSTEM: Core Spray - SYSTEM ID: 14 DRAWING: FM-23A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
14MOV-12A	F-6	1	A	10.00	GA	MO	O/C	STO-1 STC-1 PIT-5 LKO-5 LKJ-6			LKJ-3	LKO-5 SATISFIED BY LKJ-3 PER JAF-CALC-MISC-00554
14MOV-12B	F-4	1	A	10.00	GA	MO	O/C	STO-1 STC-1 PIT-5 LKO-5 LKJ-6			LKJ-3	LKO-5 SATISFIED BY LKJ-3 PER JAF-CALC-MISC-00554
14MOV-26A	F-7	2	B	8.00	GL	MO	C	STC-1 PIT-5				
14MOV-26B	F-3	2	B	8.00	GL	MO	C	STC-1 PIT-5				
14MOV-5A	E-7	2	B	3.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
14MOV-5B	E-3	2	B	3.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
14MOV-7A	C-6	2	B	16.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
14MOV-7B	C-4	2	B	16.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
14SV-20A	E-8	2	C	1.50	RL	SA	C	RLF-8				
14SV-20B	E-2	2	C	1.50	RL	SA	C	RLF-8				

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VALVE TABLE

SYSTEM: Reactor Building Closed Loop Cooling - SYSTEM ID: 15

DRAWING: FM-15B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
15AOV-130A	C-7	2A	A	6.00	GL	AO	C	STC-1 PIT-5 LKJ-6	CSJ-07		STC-2	AUGMENTED
15AOV-130B	D-4	2A	A	4.00	GL	AO	C	STC-1 PIT-5 LKJ-6	CSJ-07		STC-2	AUGMENTED
15AOV-131A	E-7	2A	A	4.00	GL	AO	C	STC-1 PIT-5 LKJ-6	CSJ-07		STC-2	AUGMENTED
15AOV-131B	E-4	2A	A	4.00	GL	AO	C	STC-1 PIT-5 LKJ-6	CSJ-07		STC-2	AUGMENTED
15AOV-132A	F-4	2A	A	4.00	GL	AO	C	STC-1 PIT-5 LKJ-6	CSJ-08		STC-2	AUGMENTED
15AOV-132B	F-7	2A	A	4.00	GL	AO	C	STC-1 PIT-5 LKJ-6	CSJ-08		STC-2	AUGMENTED
15AOV-133A	F-4	2A	A	4.00	GL	AO	C	STC-1 PIT-5 LKJ-6	CSJ-08		STC-2	AUGMENTED
15AOV-133B	F-7	2A	A	4.00	GL	AO	C	STC-1 PIT-5 LKJ-6	CSJ-08		STC-2	AUGMENTED
15AOV-134A	C-6	2A	A	1.50	GL	AO	C	STC-1 PIT-5 LKJ-6	CSJ-07		STC-2	AUGMENTED
15RBC-61	F-7	3A	C	1.00	SK	SA	C	RFC-1				AUGMENTED

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VALVE TABLE

SYSTEM: Reactor Building Closed Loop Cooling - SYSTEM ID: 15

DRAWING: FM-18C

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
15RBC-214	E-7	3	C	1.00	CK	SA	C	RFC-1	ROJ-11		DIS-3	
15SOV-215	E-7	3	B	1.00	GL	SO	C	PIT-5				PASSIVE

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VALVE TABLE

SYSTEM Leak Rate Analyzer - SYSTEM ID: 16-1 DRAWING: FM-49A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
16-1AOV-101A	D-7	2A	A	0.375	GA	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				FAST ACTING VALVE AUGMENTED
16-1AOV-101B	E-7	2A	A	0.375	GA	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				FAST ACTING VALVE AUGMENTED
16-1AOV-102A	D-7	2A	A	0.375	GA	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				FAST ACTING VALVE AUGMENTED
16-1AOV-102B	C-7	2A	A	0.375	GA	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				FAST ACTING VALVE AUGMENTED

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VALVE TABLE

SYSTEM: Fuel Pool Cooling - SYSTEM ID: 19 DRAWING: FM-19A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
19VB-1A	G-5	3A	C	1.50	RV	SA	C	RLF-8				AUGMENTED
19VB-1B	G-5	3A	C	1.50	RV	SA	C	RLF-8				AUGMENTED

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VALVE TABLE

SYSTEM: Radwaste - SYSTEM ID: 20 DRAWING: FM-17A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
20AOV-83	F-6	2A	A	3.00	BL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				FAST ACTING VALVE AUGMENTED
20AOV-95	C-6	2A	A	3.00	BL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				FAST ACTING VALVE AUGMENTED
20MOV-82	F-7	2A	A	3.00	GA	MO	C	STC-1 PIT-5 LKJ-6				AUGMENTED
20MOV-94	C-6	2A	A	3.00	GA	MO	C	STC-1 PIT-5 LKJ-6				AUGMENTED

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VALVE TABLE

SYSTEM: High Pressure Coolant Injection - SYSTEM ID: 23 DRAWING: FM-25A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
23AOV-42	G-2	2	B	1.00	GA	AO	C	STC-1 FSC-1 PIT-5				FAST ACTING VALVE
23EFV-01A	G-6	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
23EFV-01B	G-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
23EFV-02A	G-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
23EFV-02B	G-7	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
23HOV-1	F-3	2	B	10.00	GA	HO	O/C	STO-1 STC-1 PIT-5				FAST ACTING VALVE
23HPI-12	C-6	2	A/C	16.00	LK	SA	O/C	FFT-1 RFC-1 LKJ-6	ROJ-12		RFC-3	
23HPI-13	C-7	2	C	2.00	SC	SA, MA	O/C	FFT-1 RFC-1	ROJ-13 CSJ-09		DIS-3 RFC-2	
23HPI-130	C-5	2	C	2.00	SK	SA	O/C	FFT-1 RFC-1	ROJ-17		DIS-3 PFT-1	
23HPI-131	C-5	2	C	2.00	SK	SA	C	RFC-1	ROJ-18		DIS-3	
23HPI-18	F-7	1	C	14.00	CK	SA	O	FFT-1	CSJ-10		MME-2	
23HPI-32	G-5	2	C	16.00	CK	SA	C	RFC-1	ROJ-14		DIS-3	
23HPI-402	E-7	2A	C	2.00	CK	SA	O/C	FFT-1 RFC-1	CSJ-11	VRR-04	FFT-2 RFC-2	AUGMENTED COMPONENT VERIFIED CLOSED AS PAIR WITH 23HPI-403
23HPI-403	E-7	2A	C	2.00	CK	SA	O/C	FFT-1 RFC-1	CSJ-11	VRR-04	FFT-2 RFC-2	AUGMENTED COMPONENT VERIFIED CLOSED AS PAIR WITH 23HPI-402

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VALVE TABLE

SYSTEM: High Pressure Coolant Injection - SYSTEM ID: 23 DRAWING: FM-25A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
23HPI-56	C-6	2	C	2.00	SK	SA	O	FFT-1	ROJ-13		DIS-3	
23HPI-61	B-7	2	C	16.00	CK	SA	O	FFT-1	ROJ-15		DIS-3 PFT-3	
23HPI-62	F-4	2	C	4.00	CK	SA	O	FFT-1	ROJ-16		DIS-3	
23HPI-65	C-5	2	A/C	20.00	LK	SA	O/C	FFT-1 RFC-1 LKJ-6	ROJ-12		RFC-3	
23MOV-14	F-3	2	B	10.00	GA	MO	O	STO-1 PIT-5				
23MOV-15	F-8	1	A	10.00	GA	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				
23MOV-16	F-7	1	A	10.00	GA	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				
23MOV-17	G-5	2	B	16.00	GA	MO	C	STC-1 PIT-5				
23MOV-19	F-6	1	A	14.00	GA	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				
23MOV-20	F-6	2	B	14.00	GA	MO	O	STO-1 PIT-5				
23MOV-21	G-6	2	B	8.00	GL	MO	C	STC-1 PIT-5				
23MOV-25	F-5	2	B	4.00	GL	MO	O/C	STO-1 STC-1 PIT-5				
23MOV-57	F-5	2	B	16.00	GA	MO	O	STO-1 PIT-5				

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VALVE TABLE

SYSTEM: High Pressure Coolant Injection - SYSTEM ID: 23 DRAWING: FM-25A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
23MOV-58	C-7	2	B	16.00	GA	MO	O/C	STO-1 STC-1 PIT-5				
23MOV-60	F-7	1	A	1.00	GL	MO	C	STC-1 PIT-5 LKJ-6				
23SV-34	E-5	2	C	1.00	RV	SA	C	RLF-8				
23SV-66	D-5	2	C	2.00	RV	SA	C	RLF-8				
23Z-7	F-3	2	D	16.00	RD	SA	C	RDT-10				
23Z-8	F-3	2A	D	16.00	RD	SA	C	RDT-10				AUGMENTED

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27 DRAWING: FM-18A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27AOV-126A	G-5	2A	B	1.00	GL	AO	O	STO-1				AUGMENTED
								FSO-1				FAST ACTING VALVE
								PIT-5			PIT-3	
27AOV-126B	F-5	2A	B	1.00	GL	AO	O	STO-1				AUGMENTED
								FSO-1				FAST ACTING VALVE
								PIT-5			PIT-3	
27AOV-128A	G-4	2A	B	1.50	GL	AO	O/C	STO-1				AUGMENTED
								STC-1				FAST ACTING VALVE
								FSO-1				
								PIT-5			PIT-3	
27AOV-128B	E-4	2A	B	1.50	GL	AO	O/C	STO-1				AUGMENTED
								STC-1				FAST ACTING VALVE
								FSO-1				
								PIT-5			PIT-3	
27AOV-129A	F-4	2A	B	1.00	GL	AO	O/C	STO-1				AUGMENTED
								STC-1				FAST ACTING VALVE
								FSO-1				
								PIT-5			PIT-3	
27AOV-129B	F-4	2A	B	1.00	GL	AO	O/C	STO-1				AUGMENTED
								STC-1				FAST ACTING VALVE
								FSO-1				
								PIT-5			PIT-3	
27CAD-19A	G-6	2A	C	2.00	CK	SA	O	FFT-1				AUGMENTED
27CAD-19B	C-6	2A	C	2.00	CK	SA	O	FFT-1				AUGMENTED
27RD-1A	F-7	2A	D	2.00	RD	SA	C	RDT-10				AUGMENTED
27RD-1B	C-7	2A	D	2.00	RD	SA	C	RDT-10				AUGMENTED
27RD-2A	F-6	2A	D	2.00	RD	SA	C	RDT-10				AUGMENTED
27RD-2B	C-6	2A	D	2.00	RD	SA	C	RDT-10				AUGMENTED
27SV-114A	G-6	2A	C	1.00	RV	SA	C	RLF-8				AUGMENTED
27SV-114B	D-6	2A	C	1.00	RV	SA	C	RLF-8				AUGMENTED

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27 DRAWING: FM-18A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27SV-115A	G-4	2A	C	0.50	RV	SA	C	RLF-8				AUGMENTED
27SV-115B	E-4	2A	C	0.50	RV	SA	C	RLF-8				AUGMENTED
27SV-118A	G-5	2A	C	0.50	RV	SA	C	RLF-8				AUGMENTED
27SV-118B	C-6	2A	C	0.50	RV	SA	C	RLF-8				AUGMENTED
27SV-119A	F-7	2A	C	0.50	RV	SA	C	RLF-8				AUGMENTED
27SV-119B	C-7	2A	C	0.50	RV	SA	C	RLF-8				AUGMENTED
27SV-201A	F-3	2A	C	1.00	RV	SA	C	RLF-8				AUGMENTED
27SV-201B	F-3	2A	C	1.00	RV	SA	C	RLF-8				AUGMENTED
27SV-202	H-3	2A	C	1.00	RV	SA	C	RLF-8				AUGMENTED

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27 DRAWING: FM-18B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTIO	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27AOV-101A	C-6	2A	A	20.00	BF	AO	O/C	STO-1 STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED
27AOV-101B	C-6	2A	A	20.00	BF	AO	O/C	STO-1 STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED
27AOV-111	C-2	2A	A	24.00	BF	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-12		STC-2 FSC-2	AUGMENTED
27AOV-112	C-3	2A	A	24.00	BF	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-12		STC-2 FSC-2	AUGMENTED
27AOV-113	D-8	2A	A	24.00	BF	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-12		STC-2 FSC-2	AUGMENTED
27AOV-114	D-8	2A	A	24.00	BF	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-12		STC-2 FSC-2	AUGMENTED
27AOV-115	C-2	2A	A	20.00	BF	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-12		STC-2 FSC-2	AUGMENTED
27AOV-116	C-3	2A	A	20.00	BF	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-12		STC-2 FSC-2	AUGMENTED

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27

DRAWING: FM-18B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27AOV-117	B-8	2A	A	20.00	BF	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED
27AOV-118	B-8	2A	A	20.00	BF	AO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED
27AOV-131A	C-4	2A	A	1.50	GL	AO	O/C	STO-1 STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED
27AOV-131B	C-3	2A	A	1.50	GL	AO	O/C	STO-1 STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED
27AOV-132A	C-4	2A	A	1.50	GL	AO	O/C	STO-1 STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED
27AOV-132B	C-3	2A	A	1.50	GL	AO	O/C	STO-1 STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED
27CAD-67	C-4	2A	A/C	1.50	SK	SA	O/C	FFT-1 RFC-1 LKJ-6				AUGMENTED
27CAD-68	C-4	2A	A/C	1.50	SK	SA	O/C	FFT-1 RFC-1 LKJ-6				AUGMENTED
27CAD-69	C-3	2A	A/C	1.50	SK	SA	O/C	FFT-1 RFC-1 LKJ-6				AUGMENTED

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27 DRAWING: FM-18B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27CAD-70	C-3	2A	A/C	1.50	SK	SA	O/C	FFT-1 RFC-1 LKJ-6				AUGMENTED
27MOV-113	C-8	2A	A	3.00	BF	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				AUGMENTED
27MOV-117	B-8	2A	A	3.00	BF	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				AUGMENTED
27MOV-120	H-8	2A	B	12.00	BF	MO	O	STO-1 STC-1 PIT-5	CSJ-16			AUGMENTED
27MOV-121	H-8	2A	B	6.00	BF	MO	O	STO-1 PIT-5				AUGMENTED
27MOV-122	C-8	2A	A	3.00	GL	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				AUGMENTED
27MOV-123	B-8	2A	A	3.00	GL	MO	O/C	STO-1 STC-1 PIT-5 LKJ-6				AUGMENTED
27SOV-125A	F-5	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-125B	F-4	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-125C	F-5	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27 DRAWING: FM-18B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27SOV-125D	F-4	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-135A	E-5	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-135B	F-5	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-135C	E-5	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-135D	F-5	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27VB-1	C-6	2A	A/C	30.00	CK	SA	O/C	ETO-1 ETC-1 PIT-5 LKO-5			MME-1 MME-1 LKO-3	AUGMENTED
27VB-2	C-6	2A	A/C	30.00	CK	SA	O/C	ETO-1 ETC-1 PIT-5 LKO-5			MME-1 MME-1 LKO-3	AUGMENTED
27VB-3	C-6	2A	A/C	30.00	CK	SA	O/C	ETO-1 ETC-1 PIT-5 LKO-5			MME-1 MME-1 LKO-3	AUGMENTED
27VB-4	C-6	2A	A/C	30.00	CK	SA	O/C	ETO-1 ETC-1 PIT-5 LKO-5			MME-1 MME-1 LKO-3	AUGMENTED

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27 DRAWING: FM-18B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27VB-5	C-6	2A	A/C	30.00	CK	SA	O/C	ETO-1			MME-1	AUGMENTED
								ETC-1			MME-1	
								PIT-5				
								LKO-5			LKO-3	
27VB-6	C-6	2A	A/C	20.00	CK	SA	O/C	ETO-1			MME-1	AUGMENTED
								ETC-1			MME-1	
								PIT-5				
								LKJ-6				
27VB-7	C-6	2A	A/C	20.00	CK	SA	O/C	ETO-1			MME-1	AUGMENTED
								ETC-1			MME-1	
								PIT-5				
								LKJ-6				

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27

DRAWING: FM-18D

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27SOV-119E1	C-7	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-119E2	C-6	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-119F1	D-4	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-119F2	C-5	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-120E1	F-6	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-120E2	F-6	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-120F1	F-4	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-120F2	F-4	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-122E1	F-6	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27 DRAWING: FM-18D

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27SOV-122E2	F-6	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-122F1	G-4	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-122F2	G-4	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-123E1	E-6	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-123E2	E-6	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-123F1	F-4	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-123F2	F-4	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-124E1	C-4	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-124E2	C-4	2A	A	1.00	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27 DRAWING: FM-18D

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27SOV-124F1	C-4	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-124F2	C-4	2A	A	0.375	GL	SO	C	STC-1 FSC-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE

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VALVE TABLE

SYSTEM: Containment Atmospheric Dilution - SYSTEM ID: 27

DRAWING: FM-39C

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
27SOV-141	E-6	2A	A	1.00	GL	SO	O/C	STO-1 STC-1 FSO-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE
27SOV-145	G-5	2A	A	1.00	GL	SO	O/C	STO-1 STC-1 FSO-1 PIT-5 LKJ-6				AUGMENTED FAST ACTING VALVE

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VALVE TABLE

SYSTEM Main Steam - SYSTEM ID: 29 DRAWING: FM-29A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
29AOV-80A	E-5	1	A	24.00	GL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	ROJ-19		FSC-3	
29AOV-80B	D-5	1	A	24.00	GL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	ROJ-19		FSC-3	
29AOV-80C	D-5	1	A	24.00	GL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	ROJ-19		FSC-3	
29AOV-80D	D-5	1	A	24.00	GL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	ROJ-19		FSC-3	
29AOV-86A	G-4	1	A	24.00	GL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-13		FSC-2	
29AOV-86B	F-4	1	A	24.00	GL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-13		FSC-2	
29AOV-86C	[illegible]	1	A	24.00	GL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-13		FSC-2	
29AOV-86D	D-4	1	A	24.00	GL	AO	C	STC-1 FSC-1 PIT-5 LKJ-6	CSJ-13		FSC-2	

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VALVE TABLE

SYSTEM: Main Steam - SYSTEM ID: 29 DRAWING: FM-29A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
29EFV-30A	F-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-30B	F-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-30C	F-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-30D	F-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-34A	F-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-34B	F-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-34C	F-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-34D	F-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-53A	E-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-53B	E-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-53C	E-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-53D	E-8	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-54A	E-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-54B	E-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29EFV-54C	E-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW

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VALVE TABLE

SYSTEM: Main Steam - SYSTEM ID: 29 DRAWING: FM-29A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
29EFV-54D	E-5	1	A/C	1.00	BK	SA	C	ETC-1 LKO-5	ROJ-01		ETC-3 LKO-3	VALVE ISOLATES ON EXCESS FLOW
29MOV-200A	C-3	2A	B	1.00	GL	MO	O	STO-1 PIT-5				AUGMENTED
29MOV-200B	B-3	2A	B	1.00	GL	MO	O	STO-1 PIT-5				AUGMENTED
29MOV-201A	C-3	2A	B	1.00	GL	MO	O/C	STO-1 STC-1 PIT-5				AUGMENTED
29MOV-201B	B-3	2A	B	1.00	GL	MO	O/C	STO-1 STC-1 PIT-5				AUGMENTED
29MOV-202A	C-3	2A	B	1.00	GL	MO	O/C	STO-1 STC-1 PIT-5				AUGMENTED
29MOV-202B	B-3	2A	B	1.00	GL	MO	O/C	STO-1 STC-1 PIT-5				AUGMENTED
29MOV-203A	H-3	2A	B	1.00	GL	MO	C	STO-1 PIT-5	CSJ-14		STO-2	AUGMENTED
29MOV-203B	H-3	2A	B	1.00	GL	MO	O	STO-1 PIT-5	CSJ-14		STO-2	AUGMENTED
29MOV-204A	C-3	2A	B	1.00	GL	MO	C	STC-1 PIT-5				AUGMENTED
29MOV-204B	B-3	2A	B	1.00	GL	MO	C	STC-1 PIT-5				AUGMENTED
29MOV-74	C-6	1	A	3.00	GA	MO	C	STC-1 PIT-5 LKJ-6				
29MOV-77	C-5	1	A	3.00	GA	MO	C	STC-1 PIT-5 LKJ-6				

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VALVE TABLE

SYSTEM: Feedwater - SYSTEM ID: 34

DRAWING: FM-34A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
34FWS-28A	E-7	1	A/C	18.00	CK	SA	C	RFC-1 LKJ-6	ROJ-20		RFC-3 LKJ-3	
34FWS-28B	F-7	1	A/C	18.00	CK	SA	C	RFC-1 LKJ-6	ROJ-20		RFC-3 LKJ-3	
34NRV-111A	E-7	1	A/C	18.00	NK	SA, AO	C	RFC-1 LKJ-6 PIT-3	CSJ-15		RFC-2	
34NRV-111B	F-7	1	A/C	18.00	NK	SA, AO	C	RFC-1 LKJ-6 PIT-3	CSJ-15		RFC-2	

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VALVE TABLE

SYSTEM Instrument Air - SYSTEM ID 39 DRAWING FM-39C

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFTEY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
39IAS-22	E-5	2A	A/C	2.00	CK	SA	O/C	FFT-1 RFC-1 LKJ-6	ROJ-21		FFT-3	AUGMENTED
39IAS-29	F-3	2A	A/C	1.00	CK	SA	O/C	FFT-1 RFC-1 LKJ-6	ROJ-21		FFT-3	AUGMENTED

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VALVE TABLE

SYSTEM: Emergency Service Water - SYSTEM ID: 46(70)

DRAWING: FB-35E

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
46(70)ESW-101	G-6	3	B	4.00	GA	MA	O	ETO-1	ROJ-22		ETO-3	
46(70)ESW-102	C-6	3	B	4.00	GA	MA	O	ETO-1	ROJ-22		ETO-3	
46(70)ESW-103	F-6	3	B	4.00	GA	MA	O	ETO-1	ROJ-22		ETO-3	
46(70)ESW-104	C-6	3	B	4.00	GA	MA	O	ETO-1	ROJ-22		ETO-3	
46(70)SWS-101	H-8	3	C	6.00	CK	SA	C	RFC-1				
46(70)SWS-102	H-8	3	C	6.00	CK	SA	C	RFC-1				
46(70)SWS 13	H-4	3	B	6.00	GL	MA	C	ETC-1				
46(70)SWS-14	E-4	3	B	6.00	GL	MA	C	ETC-1				
70TCV-120A	F-7	3	B	2.00	3W	AO	O	STO-1 FSO-1		VRR-06R1		
70TCV-120B	C-5	3	B	2.00	3W	AO	O	STO-1 FSO-1		VRR-06R1		
70TCV-121A	F-8	3	B	2.00	3W	AO	O	STO-1 FSO-1		VRR-06R1		
70TCV-121B	C-7	3	B	2.00	3W	AO	O	STO-1 FSO-1		VRR-06R1		
70WAC-12A	F-6	3	B	4.00	GA	MA	C	ETC-1				
70WAC-12B	C-6	3	B	4.00	GA	MA	C	ETC-1				
70WAC-5A	F-2	3	B	4.00	GA	MA	C	ETC-1				
70WAC-5B	D-2	3	B	4.00	GA	MA	C	ETC-1				

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VALVE TABLE

SYSTEM: Emergency Service Water - SYSTEM ID: 46 DRAWING: FM-46A

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
46ESW-19A	B-6	3	C	2.00	SK	SA	O	FFT-1				
46ESW-20B	B-8	3	C	2.00	SK	SA	O	FFT-1				
46ESW-21B	B-8	3	C	2.00	SK	SA	O	FFT-1				
46ESW-22A	B-7	3	C	2.00	SK	SA	O	FFT-1				
46SWS-67A	B-6	3	C	3.00	CK	SA	C	RFC-1				
46SWS-67B	B-7	3	C	3.00	CK	SA	C	RFC-1				
46SWS-68	B-6	3	C	3.00	CK	SA	C	RFC-1				
46SWS-69	B-8	3	C	3.00	CK	SA	C	RFC-1				

NEW YORK POWER AUTHORITY
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INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

VALVE TABLE

SYSTEM: Emergency Service Water - SYSTEM ID: 46 DRAWING: FM-46B

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
46ESW-13A	E-3	3	C	3.00	CK	SA	O	FFT-1				
46ESW-13B	C-2	3	C	3.00	CK	SA	O	FFT-1				
46ESW-1A	E-7	3	C	12.00	CK	SA	O	FFT-1				
46ESW-1B	D-7	3	C	12.00	CK	SA	O	FFT-1				
46ESW-40A	E-5	3	C	1.00	CK	SA	C	RFC-1				
46ESW-40B	E-4	3	C	1.00	CK	SA	C	RFC-1				
46ESW-7A	E-5	3	C	6.00	CK	SA	O	FFT-1				
46ESW-7B	E-5	3	C	6.00	CK	SA	O	FFT-1				
46ESW-9A	E-4	3	C	8.00	CK	SA	O	FFT-1				
46ESW-9B	D-4	3	C	8.00	CK	SA	O	FFT-1				
46MOV-101A	E-6	3	B	10.00	GA	MO	O	STO-1 PIT-5				
46MOV-101B	C-6	3	B	10.00	GA	MO	O	STO-1 PIT-5				
46MOV-102A	E-6	3	B	8.00	GA	MO	C	STC-1 PIT-5				
46MOV-102B	D-6	3	B	8.00	GA	MO	C	STC-1 PIT-5				
46RV-112A	G-7	3	C	6.00	RL	SA	C	RLF-8				
46RV-112B	F-6	3	C	6.00	RL	SA	C	RLF-8				
46RV-112C	F-7	3	C	6.00	RL	SA	C	RLF-8				
46RV-112D	G-6	3	C	6.00	RL	SA	C	RLF-8				

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VALVE TABLE

SYSTEM: Service Water - SYSTEM ID: 46 DRAWING: FB-10H

VALVE ID	DWG CO-ORD	CLASS	VALVE CATEGORY	SIZE (IN)	VALVE TYPE	ACTUATOR TYPE	SAFETY FUNCTION	TEST REQ'TS	CSJ/ROJ	RELIEF REQUEST	ALTERNATE TEST	REMARKS
46SWS-60A	C-5	3	C	4.00	CK	SA	C	RFC-1				
46SWS-60B	C-5	3	C	4.00	CK	SA	C	RFC-1				
67PCV-101	D-2	3	B	2.50	GL	AO	O	STO-1 FSO-1		VRR-06R1		

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Cold Shutdown Justifications

CSJ-01

SYSTEM: **REACTOR WATER RECIRCULATION (RWR)**

COMPONENTS: 02MOV-53A, B CATEGORY: B

SAFETY FUNCTION: These valves close, on low reactor pressure to isolate the faulted loop coincident with initiation of the RHR System in the LPCI mode, to prevent diversion of LPCI flow.

JUSTIFICATION: To exercise these valves, the respective recirculation pump must be secured. Securing either pump (single loop operation) is limited by Technical Specification requirements and is not prudent. Single loop operation also requires a reduction in power.

These valves will be tested during cold shutdown and each refueling outage when Reactor Water Recirculation Pumps can be secured in accordance with OM-10 Section 4.2.1.2(f) and (g).

CSJ-02

SYSTEM: **CONTROL ROD DRIVE HYDRAULICS (CRD)**

COMPONENTS: 03HCU-115 (Typical for 137 HCUs) CATEGORY: C

SAFETY FUNCTION: These valves close on initiation of a scram to prevent diversion of scram drive water into a depressurized charging header.

JUSTIFICATION: Exercising these valves during operation would require depressurization of the charging header with the potential for a loss of scram function.

These valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.3.2.2(f) and (g).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Cold Shutdown Justifications

CSJ-03

SYSTEM: **RESIDUAL HEAT REMOVAL (RHR)**

COMPONENTS: 10AOV-68A, B CATEGORY: A/C

SAFETY FUNCTION: These valves open to provide flowpaths for LPCI injection to the reactor vessel. They close for pressure isolation from the reactor vessel.

JUSTIFICATION: With the reactor at operating pressure, the RHR pumps cannot develop sufficient discharge pressure to open these valves. The installed air operators are designed to open these valves at zero differential pressure, which is not practical with the reactor at operating pressure. Therefore, these valves cannot be full or part stroke exercised during normal plant operation.

Since there is no position indication for these valves, closure verification must be done by backflow testing. Such testing during plant operation is impractical due to personnel safety concerns related to the potential release of radioactive steam at high pressure.

These valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.3.2.2(f) and (g).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Cold Shutdown Justifications

CSJ-04

SYSTEM: **RESIDUAL HEAT REMOVAL (RHR)**

COMPONENTS: 10MOV-17 & 10MOV-18 CATEGORY: A

SAFETY FUNCTION: These valves remain closed to protect the RHR System piping and components from overpressurization during plant operation and inadvertent drain down events while in cold shutdown. 10MOV-17 also performs a containment isolation function.

JUSTIFICATION: With the reactor pressure greater than 75 psig, these valves are prevented from opening by an electrical interlock.

These valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.2.1.2(f) and (g).

CSJ-05

SYSTEM: **REACTOR CORE ISOLATION COOLING (RCIC)**

COMPONENTS: 13RCIC-7 CATEGORY: A/C

SAFETY FUNCTION: This valve opens to allow condensate drainage from the steam exhaust piping to the suppression chamber. It closes for containment isolation.

JUSTIFICATION: Closure verification for this valve is accomplished by performing a back flow test where the drain line is isolated from the steam exhaust line. Placing the RCIC system in this configuration during plant operation is undesirable and could adversely affect the plant's response in the event of a transient.

This valve will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.3.2.2(f) and (g).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Cold Shutdown Justifications

CSJ-06

SYSTEM: **REACTOR CORE ISOLATION COOLING (RCIC)**

COMPONENTS: 13RCIC-37 & 13RCIC-38 CATEGORY: C

SAFETY FUNCTION: These valves open to eliminate any differential pressure that could force water from the suppression chamber into the RCIC steam exhaust piping when the suppression chamber pressure is greater than atmospheric.

JUSTIFICATION: Verifying proper operation of these valves involves a test that requires isolation of the vacuum breakers for an extended period of time. During this test, the RCIC system is considered to be inoperable. Due to operational concerns associated with the plant's response to possible transients without an operable RCIC system, it is considered to be imprudent to test these valves while the plant is operational.

These valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.3.2.2.(f) an (g).

CSJ-07

SYSTEM: **REACTOR BUILDING CLOSED LOOP COOLING (RBC)**

COMPONENTS: 15AOV-130A, B; 15AOV-131A, B
15AOV-134A CATEGORY: A

SAFETY FUNCTION: These valves close to provide containment isolation.

JUSTIFICATION: During normal plant operation, these valves must remain open to provide cooling water to the Drywell coolers and Drywell equipment drain sump cooler. Closing these valves during plant operation could cause a spike in drywell pressure due to the loss of cooling water flow, which may result in a reactor scram and plant shutdown.

These valves will be tested during cold shutdowns and each refueling outage in accordance with OM-10 Section 4.2.1.2(f) and (g).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Cold Shutdown Justifications

CSJ-08

SYSTEM: **REACTOR BUILDING CLOSED LOOP COOLING (RBC)**

COMPONENTS: 15AOV-132A, B; 15AOV-133A, B CATEGORY: A

SAFETY FUNCTION: These valves close to provide containment isolation.

JUSTIFICATION: During normal plant operation, these valves must remain open to provide cooling water to the recirculation pump motor and seal coolers. Closing these valves would result in damage to the recirculation pumps.

These valves will be tested during cold shutdowns and each refueling outage in accordance with OM-10 Section 4.2.1.2(f) and (g).

CSJ-09

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-13 CATEGORY: A/C

SAFETY FUNCTION: This valve opens to allow condensate drainage from the steam exhaust piping to the suppression chamber. It closes for containment isolation.

JUSTIFICATION: Closure verification for this valve is accomplished by performing a back flow test where the drain line is isolated from the steam exhaust line and the torus is vented to atmosphere. Placing the HPCI system and containment in this configuration during plant operation is undesirable and could adversely affect the plant's response in the event of an accident.

This valve will be tested during cold shutdowns and each refueling outage in accordance with OM-10 Section 4.3.2.2(f) and (g).

APPENDIX B

Cold Shutdown Justifications

CSJ-10

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-18 CATEGORY: C

SAFETY FUNCTION: This valve opens to provide a flowpath for the HPCI system injection to the reactor vessel.

JUSTIFICATION: With the reactor at operating pressure, the HPCI pump can develop sufficient discharge pressure to open this valve, however HPCI injection of cold water to the reactor vessel during critical operation could result in an undesirable reactivity excursion and thermal transient to the piping components. During plant operation, the differential pressure developed across the valve disc could be in excess of 1000 psid - precluding manual manipulation of the valve. Therefore, these valves cannot be exercised during normal plant operation.

This valve will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.3.2.2(f) and (g).

CSJ-11

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-402 and 23HPI-403 CATEGORY: C

SAFETY FUNCTION: These valve open to eliminate any differential pressure that could force water from the suppression chamber into the HPCI exhaust piping when the suppression chamber pressure is greater than atmospheric. They close to prevent HPCI exhaust steam from entering the suppression chamber air space, thus bypassing the quenching action of the torus.

JUSTIFICATION: Operation of the HPCI pump turbine does not prove operability of these valves and special testing is required. This testing necessitates isolation of the vacuum breaker piping, which results in the inoperability of the HPCI system for the duration of the test. Due to the importance of the HPCI system function and the lack of a redundant HPCI train, it is not considered prudent to perform this testing during plant operation at power.

CSJ-11 (Continued)

These valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.3.2.2(f) and (g).

CSJ-12

SYSTEM: **CONTAINMENT VENT & PURGE (CAD)**

COMPONENTS: 27AOV-111, 112, 113
27AOV-114, 115, 116

CATEGORY: A

SAFETY FUNCTION: These valves close to provide a containment isolation function.

JUSTIFICATION: Due to NRC concerns that these valves will not close under Design Basis Accident conditions, they will not be opened whenever primary containment is required except for safety-related reasons. For this reason, these valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.2.1.2(f) and (g).

CSJ-13

SYSTEM: **MAIN STEAM (MSS)**

COMPONENTS: 29AOV-86A, B, C, D

CATEGORY: A

SAFETY FUNCTION: These valves close to provide containment isolation.

JUSTIFICATION. Performance of the fail close test for the MSIVs requires entry into the Steam Tunnel. This cannot be done during normal operation.

These valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.2.1.2(f) and (g).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Cold Shutdown Justifications

CSJ-14

SYSTEM: **MAIN STEAM (MSS)**

COMPONENTS: 29MOV-203A, B CATEGORY: B

SAFETY FUNCTION: These valves open to provide flowpaths for post-accident MSIV packing leak-off to the Standby Gas Treatment System.

JUSTIFICATION: Opening these valves during power operation could subject downstream piping to pressures in excess of its 150 psig design pressure.

These valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.2.1.2(f) and (g).

CSJ-15

SYSTEM: **FEEDWATER (FWS)**

COMPONENTS: 34NRV-111A, B CATEGORY: A/C

SAFETY FUNCTION: These valves close to provide containment isolation and to prevent diversion of HPCI flow into the feedwater system.

JUSTIFICATION: Exercising these valves during operation would require isolation of feedwater flow to the reactor vessel. This is neither prudent nor practical without a plant shutdown.

These valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.3.2.2(f) and (g).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Cold Shutdown Justifications

CSJ-16

SYSTEM: **CONTAINMENT VENT & OURGE (CAD)**

COMPONENTS: 27MOV-120 CATEGORY: B

SAFETY FUNCTION: This valve is closed to provide isolation for one path of containment purge to the Standby Gas Treatment System to ensure purge flow doesn't exceed filter capacity. The valve is opened to connect either the drywell atmosphere or the torus atmosphere to SBGT for normal containment venting and purging when primary containment is not required. The valve maybe required to be opened to vent primary containment to SBGT under severe accident conditions.

JUSTIFICATION: This valve is required to be closed whenever primary containment is required (Tech Spec Amendment 154).

These valves will be tested during cold shutdown and each refueling outage in accordance with OM-10 Section 4.2.1.2(f) and (g).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-01

SYSTEM: **VARIOUS**

COMPONENTS: Excess Flow Check Valves (Listed Below) CATEGORY: A/C

SAFETY FUNCTION: These valves close to isolate the respective instrument lines in the event of a pipe break downstream of the valves.

JUSTIFICATION: Exercising these valves requires isolation of their associated safety-related instrument, which could place the plant in an unsafe condition. In addition, the induced hydraulic transients resulting from establishing flow and subsequent valve closure would most likely result in an engineered safety feature actuation. During such testing, radiation doses to test personnel would be high due to the location of these valves and reactor water effluent during the test.

These valves cannot be tested during cold shutdown since the reactor vessel is not pressurized.

These valves will be tested during refueling outages during the primary system inservice pressure test in accordance with OM-10 Section 4.3.2.2(e) and (h).

EXCESS FLOW CHECK VALVES

02-2EFV-PS-128A,B
02-2EFV-PT-24A,B
02-2EFV-PT-25A,B
02-2EFV1-DPT-111A,B
02-2EFV1-FT-110A,C,E,G
02-2EFV2-DPT-111A,B
02-2EFV2-FT-110A,C,E,G
02-3EFV-11
02-3-EFV-13A,B
02-3EFV-15A,B
02-3EFV-15N
02-3EFV-17A,B
02-3EFV-19A,B
02-3EFV-21A,B,C,D
02-3EFV-23A,B,C,D
02-3EFV-23
02-3EFV-25
02-3EFV-31A,B,C,D
02-3EFV-31E,F,G,H
02-3EFV-31J,K,L,M
02-3EFV-31N,P,R,S
02-3EFV-33
13EFV-01A,B
13EFV-02A,B
14EFV-31A,B
23EFV-01A,B
23EFV-02A,B
29EFV-30A,B,C,D
29EFV-34A,B,C,D
29EFV-53A,B,C,D
29EFV-54A,B,C,D

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-02

SYSTEM: **REACTOR WATER RECIRCULATION (RWR)**

COMPONENTS: 02-2RWR-13A, B CATEGORY: A/C

SAFETY FUNCTION: These recirculation pump seal water injection valves close to provide containment isolation.

JUSTIFICATION: Exercising these valves during normal operations or cold shutdown requires securing the Recirculation pumps and entering containment to check the valves closed by using a back-leakage test. Testing during operations is therefore impossible.

Testing during cold shutdown by performing back-leakage tests would require extensive time for test equipment set-up and place an undue burden on the plant staff. In addition, entry into the containment may be prohibited if the drywell remains inerted.

Back-leakage testing and leakrate testing will be performed during each refueling outage in accordance with OM-10 Section 4.3.2.2(e) and (h).

ROJ-03

SYSTEM: **REACTOR WATER RECIRCULATION (RWR)**

COMPONENTS: 02-2RWR-41A,B CATEGORY: A/C

SAFETY FUNCTION: These recirculation pump seal purge check valves close to provide containment isolation.

JUSTIFICATION: Closing these valves any time Reactor Water Recirculation Pumps are running subjects the pump seals to thermal transients and pressure fluctuations, thereby, shortening seal life. Pressure fluctuations and oscillations can degrade the pressure-retaining ability of either or both seal stages. Additionally, securing seal purge flow while the Reactor Water Recirculation Pumps are running introduces reactor coolant and associated corrosion products into the seal cavity, which also shortens seal life. These valves will be tested during each refueling outage during leak testing performed per 10CFR50, Appendix J, in accordance with OM-10 Section 4.3.2.2(e) and (h).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-04

SYSTEM: **AUTOMATIC DEPRESSURIZATION (ADS)**

COMPONENTS: 02RV-1 through 02RV-11
02VB-1 through 02VB-11 CATEGORY: C

SAFETY FUNCTION: These valves remain closed to prevent steam from an open safety/relief valve (SRV) from entering the drywell. They open following closure of an SRV to prevent the formation of a water column within the downcomer that could cause torus damage during subsequent lifting of the same SRV.

JUSTIFICATION: Exercising these valves requires local manipulation of each valve and thus entry into the containment. During plant operation at power, and on occasion while in cold shutdown, the containment atmosphere is maintained in a nitrogen-inerted condition. During such periods, entry into the containment is not practical due to personnel safety concerns.
Testing will be performed during each refueling outage in accordance with OM-10 Section 4.3.2.2(e) and (h).

ROJ-05

SYSTEM: **RESIDUAL HEAT REMOVAL (RHR)**

COMPONENTS: 10RHR-64A, B, C, D CATEGORY: C

SAFETY FUNCTION: These valves open on forward flow to provide minimum flow protection for the RHR pumps and close on reverse flow to prevent diversion of flow through an idle parallel pump.

JUSTIFICATION: These valves are exercised open every three months by flow during pump testing. However, quantitative flow measurements as a means of verifying these valves open has been determined to be impractical.

There is no installed flow instrumentation in the minimum flow line thus attempts at flow measurements are being made with a strap on ultrasonic flow meters. Due to the minimum flow line configuration and operating conditions, there is a high amount of cavitation/turbulence in the line

ROJ-05 (Continued)

causing the ultrasonic flow meter to go into fault. Attempts have been made at different locations and with different size transducers, and faults still occur.

This test method requires the RHR pumps to be operated repeatedly (three to four times) at minimum flow conditions for the maximum time period allowed by procedure. Running at this condition is undesirable, particularly for a test method that frequently does not yield meaningful results. NRC Information Notice 89-08 documented concerns about pump damage by operating at low flow conditions. When this test is performed with no flow measurements being taken, the time spent at minimum pump flow is short.

In addition, this testing must be performed in a radiation area, which has caused increased exposure to personnel while multiple test attempts and transducer repositioning are accomplished. It is concluded that continued efforts with this method are not practical.

Attempts were made to distinguish the check valve opening impact on the valve bonnet using a seismic vibration probe. Meaningful results could not be obtained again due to the high background noise and vibration associated with a pump start at minimum flow.
The method of using process flow and pressure instrumentation in the main line to infer the flow in the minimum flow line was investigated. However, the small flow rate through the minimum flow line in comparison with the main line flow would not be discernable within the accuracy of the process instrumentation.

In accordance with Generic Letter 89-04, Position 2, during each refuel outage at least one (1) valve will be disassembled, inspected, and verified operable. The acceptance criteria as stated in the Generic Letter is provided in the maintenance procedure used for check valve disassemble. If any valve is found to be inoperable, the remaining valves will be disassembled and inspected prior to startup. The inspection schedule will be such that all four (4) valves in the group are inspected at least once every six (6) years.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-06

SYSTEM: **RESIDUAL HEAT REMOVAL (RHR)**

COMPONENTS: 10RHR-95A,B CATEGORY: C

SAFETY FUNCTION: These valves close to prevent reverse flow from the torus.

JUSTIFICATION: These are simple check valves with no means of determining disc position without performing a back leakage test. Performing such a test during plant operations would require setting up a test rig and performing a hydrostatic test. As discussed in NUREG 1482, section 4.1.4, the NRC has determined that the need to set up test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage.

During cold shutdown, the system lineup changes and the effort involved with setting up test equipment would constitute an unreasonable burden on the plant staff.

These valves will be verified to close each refueling outage during a hydrostatic leak rate test in accordance with OM-10 Section 4.3.2.2(e) and (h).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-07

SYSTEM: **STANDBY LIQUID CONTROL (SLC)**

COMPONENTS: 11SLC-16 & 11SLC-17 CATEGORY: A/C

SAFETY FUNCTION: These valves prohibit backflow from the reactor vessel to the SLC System and provide for containment isolation. They open to permit SLC System flow to the reactor vessel.

JUSTIFICATION: Full or partial-stroke exercising these valves requires that flow be established through the subject check valves. The only practical means of initiating flow through these valves requires actuation of the SLC system and pumping from the SLC Tank to the reactor vessel. During normal plant operation, this would introduce boron into the reactor vessel resulting in unacceptable reactivity and chemistry transients. Testing during cold shutdown would result in chemistry transients and undue burden on the plant staff with respect to maintenance of the SLC pump explosive valves.

Testing will be conducted during each refueling outage and as required by Technical Specifications, by injecting water into the reactor vessel by use of the Standby Liquid Control pumps. Following the exercise open test, the valves will be verified to close by means of a back-leakage test.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-08

SYSTEM: **REACTOR CORE ISOLATION COOLING (RCIC)**

COMPONENTS: 13RCIC-04 and 13RCIC-05 CATEGORY: A/C

SAFETY FUNCTION: These valves close to provide containment isolation.

JUSTIFICATION: There is no provision on either of these valves that provides position indication of the disc. As a result, valve closure must be verified by back-leakage testing. In order to verify valve closure by the back-leakage technique, the RCIC exhaust line must be isolated for the duration of the test causing the RCIC system to be inoperable.

The potential safety impact of voluntarily placing the RCIC system in an inoperable status during plant operation at power is considered to be imprudent and unwarranted in relation to any apparent gain in system reliability derived from the closure verification. In addition, the valves are located approximately twenty (20) feet from the floor necessitating erection of a large scaffold in the vicinity of the RCIC pump. This also is considered to be undesirable from the aspect of potential damage to RCIC system components should the scaffold be subjected to structural failure.

Based on the foregoing discussion, testing of these valves during plant operation at power is considered to be impractical. During cold shutdowns, erection of the scaffold in addition to other activities related to test performance would place an extreme burden on the plant staff and would likely result in unwarranted extensions to all forced outages with the added negative impact on plant performance and availability.

These valves will be verified to close by performing a back-leakage test at each refueling outage in accordance with OM-10 Section 4.3.2.2(e) and (h).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-09R1

SYSTEM: **CORE SPRAY (CSP)**

COMPONENTS: 14AOV-13A,B CATEGORY: A/C

SAFETY FUNCTION: These valves open to provide flowpaths from the Core Spray System to the reactor vessel. They close for pressure isolation protection of the low pressure core spray piping.

JUSTIFICATION: There is no mechanism by which these valves can be full-stroke exercised without injecting water from the core spray pumps to the reactor vessel. During plant operation, the core spray pumps cannot produce sufficient discharge pressure to overcome reactor vessel pressure and provide flow into the vessel.

The installed air operators are capable of exercising the valves, providing there is not differential pressure across the valve seat. During plant operation, there is a significant differential pressure across the valve seat.

During cold shutdown, injecting into the reactor vessel requires a major effort to establish the prerequisite conditions and realignment of the Core Spray system to allow supplying water from the Condensate Storage Tank. Torus water cannot be used since it does not meet the chemistry requirements for reactor grade makeup. It is estimated that such a test would take about 24 hours to perform and would result in a significant burden on the plant operating staff. In addition, there is a potential for overfilling the reactor vessel and flooding the main steam lines. This could adversely affect the performance of the main steam safety/relief valves (SRVs) since a contributing factor to the historically poor performance of the SRVs is water contamination of the operators.

During cold shutdowns, each of the valves will be exercised using the installed air operators (considered a partial-stroke). This test satisfies the exercising of both safety positions.

Each of the valves will be full-stroked exercised during each refuel outage in accordance with OM-10 Section 4.3.2.2(e) and (h) by injecting full accident flow into the reactor vessel. The closed position is leak tested every 24 months per OM-10 Section 4.2.2.3(a). This position complies with the guidance of NUREG-1482, Section 4.1.4.

APPENDIX B

Refueling Outage Justifications

ROJ-10

SYSTEM: **CORE SPRAY (CSP)**

COMPONENTS: 14CSP-62A,B CATEGORY: C

SAFETY FUNCTION: These valves close to prevent reverse flow from the torus.

JUSTIFICATION: There are no position indicators or other means to verify closure of these valves. As a result, valve closure must be verified by back-leakage testing. Performing such a test during plant operations would require setting up for and performing a hydrostatic test. As discussed in NUREG 1482, section 4.1.4, the NRC has determined that the need to set up test equipment is adequate justification to defer backflow testing of a check valve until a refueling outage.

During cold shutdown, the system lineup changes and the effort involved with setting up test equipment would constitute an unreasonable burden on the plant staff.

These valves will be verified close each refueling outage in accordance with OM-10 Section 4.3.2.2(e) and (h) during a hydrostatic leak rate test.

ROJ-11

SYSTEM: **REACTOR BUILDING CLOSED LOOP COOLING (RBC)**

COMPONENTS: 15RBC-214 CATEGORY: C

SAFETY FUNCTION: This valve closes to prevent flow diversion when the Emergency Service Water system is supplying cooling water to RBC heat loads.

JUSTIFICATION: There is no provision on this valve that provides position indication of the disc. There are no test taps and block valves to enable a back-leakage test to verify closure. OM-10, Section 4.3.2.4(c) allows disassembly each refueling outage to verify operability as an alternative to quarterly testing.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-12

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-12 and 23HPI-65 CATEGORY: A/C

SAFETY FUNCTION: These valves close to provide containment isolation.

JUSTIFICATION: There is no provision on either of these valves that provides position indication of the disc. As a result, valve closure must be verified by back-leakage testing. In order to verify valve closure by the back-leakage technique, the HPCI exhaust line must be isolated for the duration of the test causing the HPCI system to be inoperable. The potential safety impact of voluntarily placing the HPCI system in an inoperable status during plant operation at power is considered to be imprudent and unwarranted in relation to any apparent gain in system reliability derived from the closure verification. In addition, the valves are located approximately twenty (20) feet from the floor necessitating erection of a large scaffold in the vicinity of the HPCI pump. This also is considered to be undesirable from the aspect of potential damage to HPCI system components should the scaffold be subjected to structural failure.

Based on the foregoing discussion, testing of these valves during plant operation at power is considered to be impractical. During cold shutdowns, erection of the scaffold in addition to other activities related to test performance would place an extreme burden on the plant staff and would likely result in unwarranted extensions to all forced outages with the added negative impact on plant performance and availability. These valves will be verified to close by performing a back-leakage test at each refueling outage in accordance with OM-10 Section 4.3.2.2(e)and (h).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-13

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-13 and 23HPI-56 CATEGORY: C

SAFETY FUNCTION: These valves opens to permit HPCI turbine condensate to drain to the torus.

JUSTIFICATION: There are no means for exercising these valves to the open position where positive indication of acceptable valve performance is verified. OM-10, Section 4.3.2.4(c) allows disassembly each refueling outage to verify operability as an alternative to quarterly testing.

ROJ-14

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-32 CATEGORY: C

SAFETY FUNCTION: This valve closes during the suction swap from the Condensate Storage Tank to the torus to prevent diversion of the torus flow from the HPCI pump suction.

JUSTIFICATION: There is no provision on this valve that provides position indication of the disc. There are no block valves between this valve and the suction of the HPCI pump to enable a back-leakage test to verify closure. OM-10, Section 4.3.2.4(c) allows disassembly each refueling outage to verify operability as an alternative to quarterly testing.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-15

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-61 CATEGORY: C

SAFETY FUNCTION: This valve opens to provide a flowpath from the torus to the suction of the HPCI booster pump.

JUSTIFICATION: The only practical method available to full flow exercise this valve is to pump water from the torus into the reactor vessel. Due to the lack of suitable water quality in the torus, this option is not practical. OM-10, Section 4.3.2.4(c) allows disassembly each refueling outage to verify operability as an alternative to quarterly testing. In addition, this valve will be partial-flow tested once per operating cycle.

ROJ-16

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-62 CATEGORY: C

SAFETY FUNCTION: This valve opens to provide a flowpath for minimum flow from the HPCI main pump.

JUSTIFICATION: Due to the configuration of the minimum flow motor operated valve control logic, fully developed flow cannot be achieved through this check valve. Additionally, full-stroke exercising cannot be verified with existing instrumentation. OM-10, Section 4.3.2.4(c) allows disassembly each refueling outage to verify operability as an alternative to quarterly testing.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-17

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-130 CATEGORY: C

SAFETY FUNCTION: This valve opens to provide a flowpath for cooling water circulation through the HPCI turbine lube oil cooler and closes to prevent flow diversion.

JUSTIFICATION: This valve has no means of determining disc position or flowrate and, thus there is no mechanism for verifying full accident flow. In addition, there are no test taps and block valves to enable a back-leakage test to verify closure. OM-10, Section 4.3.2.4(c) allows disassembly each refueling outage to verify operability as an alternative to quarterly testing.

ROJ-18

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

COMPONENTS: 23HPI-131 CATEGORY: C

SAFETY FUNCTION: This valve closes to prevent flow diversion from the HPCI booster pump.

JUSTIFICATION: There is no provision on this valve that provides position indication of the disc. There are no test taps and block valves to enable a back-leakage test to verify closure. OM-10, Section 4.3.2.4(c) allows disassembly each refueling outage to verify operability as an alternative to quarterly testing.

ROJ-19

SYSTEM: **MAIN STEAM (MSS)**

COMPONENTS: 29AOV-80A,B,C,D CATEGORY: A

SAFETY FUNCTION: These valves are normally open to provide steam to the main turbine generator and auxiliaries. They close to isolate steam flow and for containment isolation.

JUSTIFICATION: Fail safe exercising these valves requires local manipulation of valves located inside containment. During plant operation at power, and on occasion while in cold shutdown, the containment atmosphere is maintained in a nitrogen-inerted condition. During such periods, entry into the containment is not practical due to personnel safety concerns.

These valves will be verified to fail safe close at each refueling outage in accordance with OM-10 Section 4.2.1.2(e) and (h).

ROJ-20

SYSTEM: **FEEDWATER (FWS)**

COMPONENTS: 34FWS-28A, B CATEGORY: A/C

SAFETY FUNCTION: These valves close to provide containment isolation upon cessation of feedwater flow during accident conditions.

JUSTIFICATION: There is no provision on either of these valves that provides position indication of the disc. As a result, valve closure must be verified by back-leakage testing. During plant operation at power, these valves cannot be closed without precipitating a plant shutdown.

During cold shutdowns, performing a back-leakage test requires entry into the containment vessel and extensive system preparations, including draining of the main feedwater piping from the outlet of the sixth point feedwater heaters to the reactor vessel isolation valves (approximately 2000 gallons per line). Furthermore, testing of 34FWS-28B requires shutdown of the cleanup system. It is estimated that testing either of these

ROJ-20 (Continued)

valves would require up to 24 hours and demand significant staff resources. Also, entry into the containment at cold shutdown with the containment inerted is a personnel safety concern.

Closure of these valves will be demonstrated during each refuel outage in accordance with OM-10 Section 4.3.2.2(e) and (h) by conducting a back-leakage test.

ROJ-21

SYSTEM: **INSTRUMENT AIR (IAS)**

COMPONENTS: 39IAS-22 & 39IAS-29 CATEGORY: A/C

SAFETY FUNCTION: These valves open to provide nitrogen to the MSIVs and the SRV accumulators inside the containment. They close for containment isolation.

JUSTIFICATION: Exercising these valves open is performed by charging the bleed-down header following MSIV testing. During plant operation at power, this is impractical since closure of the MSIVs would cause a plant trip. Also performing such a test requires entry into the containment vessel and local manipulation of test connections located inside the drywell.

During plant operation at power and, on occasion, while in the cold shutdown mode, the containment atmosphere is maintained in a nitrogen-inerted condition. During such periods, entry into the containment is not practical due to personnel safety concerns.

These valves will be tested open at each refueling outage in accordance with OM-10 Section 4.3.2.2(e) and (h).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Refueling Outage Justifications

ROJ-22

SYSTEM: **EMERGENCY SERVICE WATER (ESW)**

COMPONENTS: 46(70)ESW-101, 102, 103, 104 CATEGORY: B

SAFETY FUNCTION: These valves are manually opened to provide ESW flow to Control and Relay Room air handlers to ensure continued cooling in the event the normal chilled water system is rendered inoperable.

JUSTIFICATION: These valves provide isolation between the raw ESW System and the glycol/water mixture in the chilled water system. Opening these valves will cause contamination of the glycol/water solution. Therefore, it is not practical to test these valves during plant operation.

During cold shutdown, extensive time would be required to drain the glycol from the system to prevent contamination. This would constitute an unreasonable burden on the plant staff.

These valves will be exercised open during each refueling outage in accordance with OM-10 Section 4.2.1.2(e) and (h).

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Valve Relief Requests

VPR-01

SYSTEM: **AUTOMATIC DEPRESSURIZATION (ADS)/MAIN STEAM**

COMPONENTS: 02RV-71A,B,C,D,E,F,G,H,J,K and L

CATEGORY: B/C

CLASS: 1

FUNCTION: These valves open when actuated by a manual switch to relieve reactor pressure during an accident or transient condition. Valves 02RV-71A, B, C, D, E, G, and H open on receipt of ADS actuation signal.

TEST REQUIREMENT: OM-10, Section 4.2.1.4 - stroke time for power operated valves

BASIS FOR RELIEF: These valves are fast-acting valves and do not have position indication. Therefore, stroke time cannot be effectively measured.

When testing these valves, a reactor pressure of at least 50 psig is needed for opening by the pilot assembly and a minimum reactor pressure of 940 psig is specified to minimize potential damage to the pilot valve and disc surfaces. Testing at each startup from a cold shutdown would produce additional stress cycles, which may lead to a low cycle fatigue failure.

ALTERNATE TESTING: Following each refuel outage or once each operating cycle with reactor pressure at least 940 psig, these valves will be exercised in accordance with the operational test requirements set forth in the JAF Technical Specifications. SRV tailpipe temperatures and acoustic monitors will be used to verify valve opening.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Valve Relief Requests

VRR-02

SYSTEM: **AUTOMATIC DEPRESSURIZATION (ADS)/MAIN STEAM**

COMPONENTS: 02RV-71A,B,C,D,E,F,G,H,J,K and L

CATEGORY: B/C

CLASS: 1

FUNCTION: These valves open to relieve reactor pressure during an accident or transient condition.

TEST REQUIREMENT: OM-1, Section 3.3.1.1 - Periodic testing of Class 1 Pressure Relief Valves

BASIS FOR RELIEF: Currently during refueling outages, the SRV pilot assembly is removed and transported to a certified valve testing facility for performance of the following tests: setpoint (lift pressure), reseat (reclosing pressure), and pilot stage seat tightness. A main body slave is used to test each pilot. ANSI/ASME OM-1 states, "No maintenance, adjustment, disassembly, or other activity which could affect as found set pressure or seat tightness data is permitted prior to testing." Since main body seat leakage is monitored continuously during normal plant operation, its seat tightness as found determination is satisfied prior to the pilot assembly removal.

ANSI/ASME OM-1 also states, "Tests prior to maintenance or set pressure adjustment, or both, shall be performed in the following sequence: (a) visual examination; (b) seat tightness determination; (c) set pressure determination; (d) determination of compliance with the Owner's set tightness criteria; (e) determination of electrical characteristics and pressure integrity of solenoid valves; (f) determination of pressure integrity and stroke capability of air actuator; (g) determination of operation and electrical characteristics of position indicators; (h) determination of operation and electrical characteristics of bellows alarm switch; and (i) determination of actuating pressure of auxiliary actuating device sensing element, where applicable, and electrical continuity".

VRR-02 (Continued)

Strict adherence to the sequence cannot be satisfied by testing the pilot assembly only. Currently, the plant's test practices ensure that applicable tests specified in ANSI/ASME OM-1 Section 3.3.1.1, Main Steam Pressure Relief Valves with Auxiliary Actuating Devices, are performed and the entire valve operability is verified in accordance with Technical Specifications, but not in the sequence specified by OM-1 Section 3.3.1.1.

Common industry practice is to test the Target Rock safety/relief SRV pilot assemblies as separate units. Therefore, removal of the entire valve assembly for testing would create hardship by (1) extending plant outages for the removal and installation process, (2) cost increase and schedule delays for decontamination, and (3) increased shipping expenses. These hardships are not warranted since there is no compensating increase in the level of quality and safety. The as found test data is not affected and all applicable tests required by ANSI/ASME OM-1 are performed.

ALTERNATE TESTING: SRV pilot assemblies will be tested using a slave main valve body to comply with ANSI/ASME OM-1, Periodic Testing requirements.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Valve Relief Requests

VRR-03

SYSTEM: **TRAVERSING IN-CORE PROBE (TIP)**

VALVES: 07SOV-104A, B, C

CATEGORY: A

CLASS: 2 Augmented

FUNCTION: These valves close to provide containment isolation.

TEST REQUIREMENT: OM-10, Section 4.2.1.4 - stroke time for power operated valves

BASIS FOR RELIEF: The computer control system for the TIP system includes a provision for measuring valve cycle time (opened and closed) and not closure time alone. The sequence opens the subject valve (stroke < 2 seconds), maintains it energized for 10 seconds (including the opening stroke), and de-energizes the valve solenoid allowing the valve to stroke closed (< 2 seconds). The total elapsed time is specified to be ≤ 12 seconds.

ALTERNATE TESTING: The overall cycle time (opened and closed) for these valves will be measured and evaluated in accordance with OM-10 Section 4.2.1.8.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Valve Relief Requests

VRR-04

SYSTEM: **HIGH PRESSURE COOLANT INJECTION (HPCI)**

VALVES: 23HPI-402, 23HPI-403

CATEGORY: C

CLASS: 2 Augmented

FUNCTION: These valves open to eliminate any differential pressure that could force water from the suppression chamber into the HPCI exhaust piping when the suppression chamber pressure is greater than atmospheric. They close to prevent HPCI exhaust steam from entering the suppression chamber air space, thus bypassing the quenching action of the suppression pool.

TEST REQUIREMENT: OM-10, Section 4.3.2.2 - each check valve shall be exercised or examined in a manner which verifies obturator travel to the closed, full-open or partially open position required to fulfill its function.

BASIS FOR RELIEF: There are no position indicators on these valves or other means for verifying valve closure, thus the only practical means of verifying closure is to perform a back-leakage test. Since the valves are installed in series with no intermediate test tap, verifying the each individual valve closes is not practical.

To perform the specified safety function in the closed direction, only one valve of the pair needs to close. Thus in accordance with NUREG-1482 Section 4.1.1, verifying that either valve closes is adequate to demonstrate reliable operation of the pair.

ALTERNATE TESTING: These valves will be exercised open and the pair (at least one valve) will be verified to close during cold shutdown and each refueling outage in accordance with OM-10 Section 4.3.2.2(f) and (g). In accordance with NUREG-1482, if the closure test of the pair of valves fails, then corrective action will be applied to both valves prior to returning the system to operability.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX B

Valve Relief Requests

VRR-06[illegible]1

SYSTEM: **SERVICE WATER/EMERGENCY SERVICE WATER**

COMPONENTS: 70TCV-120A,B, 70TCV-121A,B, 67PCV-101

CATEGORY: B

CLASS: 3

FUNCTION: The normal function of the temperature control valves 70TCV 120A & B and 121A & B are modulation to limit the flow of chilled water to maintain discharge air temperature and relative humidity to maintain a temperature of 75 degrees F in the Operations Office, Control Room, and Relay Room. Moisture elements provide a control signal to keep the valves in the full open position when the relative humidity rises above 50%. The safety function of these valves is the same as above except that failure of the valve actuator mechanism results in valve movement to the maximum cooling water flow position(full open). Emergency Service Water (ESW) can also be circulated through the unit coolers if the chiller units become inoperable.

The normal function of valve 67PCV-101 is to maintain a backpressure at the common service water return header for the cable tunnel and electric bay coolers. The safety function of this valve is to fail open upon the loss of air.

TEST REQUIREMENT: OM-10, Section 4.2.1.4 - stroke time for power operated valves

BASIS FOR RELIEF: These valves have no position indication or manual control switches. Valve operation is controlled by temperature switches or pressure controllers. Stroke timing these valves would be extremely difficult and require an abnormal system configuration to obtain consistent stroke time results. Performing a stroke time test of these valves is impractical without a compensating level of quality and safety.

ALTERNATE TESTING: In accordance with the guidance provided in NUREG-1482 adequate assessment of the operational readiness of these valves is achieved as follows:

All valves are fail safe tested on a quarterly frequency. Prior to the test the valves are verified to not be in the full open position. During conduct of the test the valve air or electrical control is interrupted and the valve operation is observed locally to verify proper operation and movement to the fail safe full open position.

Valves 70TCV-121A,B are also stroked once per operating cycle per Technical Specification 4.11.B.2 during the calibration of their associated instrumentation control loop.

Valves 70TCV-120A,B are also stroked once per operating cycle during the calibration of their associated instrumentation control loop.

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX C

SUMMARY OF CHANGES

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX C

Pump Changes

PAGE	PUMP ID(s)	CHANGE	REASON
5 of 123	NA	Deleted reference to code interpretations in paragraph 4.1	Editorial
11 of 123	Note 1	Revised for clarification	Editorial
11 of 123	ALL	Added system, pump class and eliminated test type	NUREG 1482
12 of 123	10P-1A-D 10P-3A-D 14P-1A/B 11P-2A/B 46P-2A/B	Corrected relief request references	Typos
15 of 123	PRR-02 R1	Revised Relief Request	RAI dated April 30, 1998
22 of 123	PRR-05 R1	Revised Relief Request	RAI dated April 30, 1998
25 of 123	PRR-06	New Relief Request	Address Water Level Measurement

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

APPENDIX C

Valve Changes*

PAGE	VALVE ID(s)	CHANGE	REASON
Valve Table	All	Added safety function	Required by OM Code
Valve Table	Various	Corrected Dwg Coord	Editorial
6 of 123	NA	Deleted reference to do code interpretation in paragraph 5.1	Editorial
29 of 123	NA	Revise to Table of Contents	Reflect changes to ROJ & RR's
30 of 123	NA	Changed valve category to IST category	Editorial
33 of 123	NA	Changed RL to RV for relief valve designator	Consistency
34 of 123	Test Frequency	Added Test Frequency No. 11	TS change 241 added SLC valve testing to IST Program
34 of 123	Test Requirements	Added XVD test requirement to table	TS change 241 added SLC valve testing to IST Program
36, 37, 38, 57, 65 of 123	02RV-1 thru 11, 02VB-1 thru 11, 23HPI-402 & 403, 13RCIC-37&38	Deleted Relief Valve Test Requirement	Valves are not relief valves
37 of 123	02RV-71A thru L	Added STC-1	IST Requirement
50 of 123	10RHR-52A 10RHR-52B	Deleted from IST Program	Appendix J Testing no longer required
73 of 123	27VB-1 thru 5	Added Test ETC-1 & MME-1	Show test requirements for both safety funtion
82 of 123	34FWS-28B	Deleted FFT-2	Re-evaluation of safety function

INSERVICE TESTING PROGRAM FOR PUMPS AND VALVES

Valve Changes*
(continued)

PAGE	VALVE ID(s)	CHANGE	REASON
87 of 123	46SWS-911 & 916	Deleted Valves	Exempt per OM-10, 1.1
116 &117 of 123	All	Added augmented after 2 for Class	Editorial
116 of 123	27AOV101-A&B 27VB-6&7	Deleted Relief Request VRR-05	Revised Testing Requirements
118 of 123	66PCV-101, 67TCV-107C 66TCV-107F 70TCV-120A, B 70TCV-101	Revised VVR06R1 to delete system 66 valves and expand the function, basis for relief, and alternative testing	Address RAI dated April 30, 1998 and to remove valves not required to be tested
Various Table	All Relief Valves	Change all type RL Valves to RV	To be consistent with valve IST database

*changes to the valve tables are not indicated with a revision bar since the entire table was revised to evaluate the safety positions for valves.