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10CFR50.55a

November 13, 2008

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

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: Submittal of Program for the Fourth Ten-Year Interval Inservice Testing Program

In accordance with the ASME Code (ISTA-3200(a)), attached for your information is a copy of the Fourth Ten-Year Interval Inservice Testing (IST) Program for Peach Bottom Atomic Power Station, Units 2 and 3. The new interval began on August 15, 2008, and will conclude on August 14, 2018. On August 15, 2007, the latest edition and addenda of the code incorporated by reference in 10 CFR50.55a(b)(3) of the regulation was the 2001 Edition through the 2003 Addenda.

There are no regulatory commitments contained within this letter.

If you have any questions or require additional information, please call Tom Loomis (610-765-5510).

Sincerely,

D. P. Helker

David P. Helker
Manager – Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Pump and Valve Inservice Testing Program Fourth Ten Year Interval

cc: S. J. Collins, Regional Administrator, Region I, USNRC
F. Bower, USNRC Senior Resident Inspector, PBAPS
J. D. Hughey, Project Manager [PBAPS] USNRC

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**Attachment**

**Peach Bottom Atomic Power Station, Units 2 and 3**

**Pump and Valve Inservice Testing Program Fourth Ten Year Interval**

# PUMP AND VALVE INSERVICE TESTING PROGRAM FOURTH TEN YEAR INTERVAL

**This revision is a major rewrite; no annotations are used.**

## 1. PURPOSE

1.1. To provide requirements for the performance and administration of assessing the operational readiness of those ASME Class 1, 2, and 3 pumps and valves whose specific functions are required to:

- Shutdown the reactor to the safe shutdown condition,
- Maintaining the safe shutdown condition, or
- Mitigate the consequences of an accident.

Non-ASME components may be included as "augmented" components within the IST Program.

The Inservice Inspection (ISI) Classification Boundaries are identical to the Design Classification or Quality Group Boundaries shown on the plant Piping and Instrument Diagrams (P&IDs). This Inservice Testing (IST) Program was developed using the following documents:

- Title 10, Code of Federal Regulations, Part 50, Paragraph 50.55a
- UFSAR, Peach Bottom Atomic Power Station, Unit 2 and Unit 3
- Technical Specifications, Peach Bottom Atomic Power Station, Unit 2 and Unit 3
- NUREG-1482, Rev. 1 "Guidelines for Inservice Testing at Nuclear Power Plants"

## 2. TERMS AND DEFINITIONS

2.1. **Active valves** - Valves which are required to change obturator position to accomplish a specific function in shutting down a reactor to the safe shutdown condition, maintaining the safe shutdown condition, or mitigating the consequences of an accident.

2.2. **Administrative Controls** - A valve shall be considered to be under administrative control if the valve is locked or de-energized in its normal position, or procedurally controlled if mispositioned. Administrative controls may also consist of stationing a dedicated operator at the controls of the valve, who is in continuous communication with the control room.

2.3. **Containment Isolation** - Any valve which performs a containment isolation function and is included in the Appendix J, Type C, Local leak Rate Test program, or any valve designed to perform a containment isolation function but is exempt from Type C testing due to its attachment to a closed system or due to the presence of a 30 day water seal.

2.4. **Exercising** - The demonstration based on direct or indirect visual or other positive indication that the moving parts of a valve function satisfactorily.

2.5. **Instrument Accuracy** - The allowable inaccuracy of an instrument loop based on the combination of the inaccuracies of each instrument or component in the loop.

2.6. **Instrument Loop** - Two or more instruments or components working together to provide a single output (e.g., a vibration probe and its associated signal conditioning and readout devices).

2.7. **Operational Readiness** - The ability of a pump or valve to perform its intended safety function.

2.8. **Passive valves** - Valves that maintain obturator position and are not required to change position to accomplish the required functions(s) in shutting down a reactor to the safe shutdown, maintaining the safe shutdown condition, or mitigating the consequences of an accident.

2.9. **Pressure Isolation Valve** - Any valve which acts as an isolation boundary between the high pressure Reactor Coolant System and a system having a lower operating or design pressure.

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

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

## 3. RESPONSIBILITIES

3.1. Site IST Program Manager – Functions as Peach Bottom Atomic Power Station Subject Matter Expert for Inservice Testing Program.

3.2. Branch Manager of IST Program Manager – Site Functional Area Manager (SFAM) for T&RM ER-PB-321-1000.

## 4. IST PROGRAM PLAN AND PIMS CRL

The IST Program consists of two parts, the Program text with Attachments and the pumps and valves contained within the program as identified in the Plant Information Management System (PIMS) Component Record List (CRL). The Program text defines the basis for, and implementation of the IST program. It lists and explains the specific exemptions and selection criteria applied to safety related pumps and valves, thus defining the scope and extent of the IST testing requirements. The Attachments include all pumps and valves contained within the IST Program, along with the applicable testing requirements for each. The Attachments also include the Cold Shutdown Test Justifications, Pump Relief Requests, Valve Relief Requests, Refueling Outage Test Justifications, and Technical Positions. The CRL identifies all pumps and valves contained within the IST Program, along with the applicable testing requirements for each. It also provides detailed descriptions of component safety function(s); these descriptions were used for component selection subject to the test requirements of the IST Program, and in some cases provide specific justification for exclusion from inservice testing requirements.

## 5. INSERVICE TESTING BOUNDARIES

### 5.1. Scope

All references to the ASME OM Code within this document are intended to apply to the 2001 OM Code through the 2003 Addenda. The program plan was prepared to meet the requirements of the following:

- Subsections of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants, 2001 Edition through 2003 Addenda as follows:

- ASME OM Code, Subsection ISTA, "General Requirements"

  ISTA contains the requirements directly applicable to inservice testing including the Owner's Responsibility and Records Requirements.

- ASME OM Code, Subsection ISTB, "Inservice Testing of Pumps in Light-Water Reactor Nuclear Power Plants"

  ISTB establishes the requirements for inservice testing of pumps in light-water reactor nuclear power plants. The pumps covered are those provided with an emergency power source, that are required in the shutting down the reactor to the safe shutdown condition, in maintaining the safe shutdown condition, and/or in mitigation of the consequences of an accident.

– ASME OM Code, Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants"

ISTC establishes the requirements for inservice testing of valves in light-water reactor nuclear power plants. The valves covered include those that are required to perform a specific function, either active or passive, in shutting down a reactor to the safe shutdown condition, in maintaining the safe shutdown condition, or in mitigating the consequences of an accident if not exempt by paragraph 5.2. Valves that provide overpressure protection to systems or portions of systems that are required to perform any of these functions are also included.

– ASME OM Code, Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants"

Appendix I provides the requirements for performance testing and monitoring of nuclear plant pressure relief devices. Methods, intervals, and record requirements for monitoring and testing are established, as well as requirements for the evaluation of results. The Appendix applies to safety valves, safety relief valves, pilot-operated pressure relief valves, power-actuated pressure relief valves, nonreclosing pressure relief devices and vacuum relief devices, including all accessories and appurtenances, if not exempt by paragraph 3.2.2. These functions are interpreted to be required during accident and transient conditions. Valves which meet the preceding criteria and are located outside the Code class boundaries as defined on the PBAPS ASME Section XI ISI Boundary Drawings are included in the Program scope and tested as Augmented components.

– ASME OM Code, Mandatory Appendix II, "Check Valve Condition Monitoring Program"

Appendix II provides an alternative to the check valve testing or examination requirements of ISTC-3510, ISTC-3520, ISTC-3550 and ISTC-5221. The purpose of this program is both to improve valve performance and to optimize testing, examination, and preventive maintenance activities in order to maintain the continued acceptable performance of a select group of check valves.

Peach Bottom Atomic Power Station Pump and Valve Inservice Testing Plan will be in effect through the fourth 120-month interval.

- Unit Two: Begin: August 15, 2008(1) End: August 14, 2018
- Unit Three: Begin: August 15, 2008(1) End: August 14, 2018

(1) - By letter dated March 15, 2000, Peach Bottom Atomic Power Station (PBAPS) requested NRC's approval to combine the units interval dates. By letter dated March 15, 2000 (Clifford to Hutton), the NRC staff approved the third ten-year inservice testing interval for PBAPS to for both units to began on August 15, 1998. Therefore, the fourth ten-year inservice testing interval for PBAPS will begin on August 15, 2008.

5.2. Exclusions

5.2.1. Pump Exclusions are identified in 2001 OM Code through the 2003 Addenda, Section ISTB - 1200.

5.2.2. Drivers are excluded from the IST Program except where the pump and driver form an integral unit and the pump bearings are in the driver.

5.2.3. Pumps that are supplied with emergency power solely for operating convenience are not required to be included in the IST Program.

5.2.4. Valve Exclusions are identified in 2001 OM Code through the 2003 Addenda, Section ISTC - 1200.

5.2.5. Valves used only for operating convenience (such as manual vent, drain, instrument, and test valves), valves used only for system control (such as pressure regulating valves), and valves used only for maintenance are not included in the IST Program.

5.2.6. External control and protection systems responsible for sensing plant conditions and providing signals for valve operation are not included in the IST Program.

5.2.7. Valves which serve as boundary barriers solely for the function of establishing a Class break shall not be included in the scope of IST unless credited in related design basis documents as performing an active or passive safety related function.

5.2.8. This TRM does not apply to snubber inservice testing.

5.3. System Identification

The following is a list of the systems and associated system numbers for all systems contained in the IST Program.

| System Number | System |
|---|---|
| 01A | Main Steam |
| 01J | Main Steam Sampling |
| 02 | Reactor & Recirculation |
| 02A | Recirc Pump & Valves |
| 02E | Reactor Water Sampling |
| 02G | Reactor Vessel Level Instr. Reference LEG Backfill System |
| 03 | Control Rod Drive |
| 03A | Hydraulic Control Unit |
| 06 | Feedwater |
| 07 | Primary Containment |
| 07A | Primary Containment Leak Test |
| 07B | Containment Atmosphere Control |
| 07C | Containment Atmospheric Dilution |
| 07D | Drywell & Torus Sampling - CAC |
| 07E | Drywell & Torus Sampling - CAD |
| 07F | Traversing In Core Probe |
| 09A | Standby Gas Treatment |
| 10 | Residual Heat Removal (RHR) |
| 10A | RHR Sampling |
| 11 | Standby Liquid Control |
| 12 | Reactor Water Cleanup |
| 13 | Reactor Core Isolation Cooling (RCIC) |
| 13B | Reactor Core Isolation Cooling Pump |
| 13C | Reactor Core Isolation Cooling Turbine |
| 14 | Core Spray |
| 14A | Torus Water Cleanup |
| 14B | Torus Water Sampling |
| 16 | Instrument Nitrogen System |
| 16A | Backup Instr. Nitrogen to ADS |
| 16B | Backup Seismic Instr. Nitrogen |
| 19 | Fuel Pool Cooling |
| 20 | Radwaste |
| 21 | Post Accident Sampling System |
| 23 | High Pressure Coolant Injection (HPCI) |
| 23B | HPCI Pump |
| 23C | HPCI Turbine |
| 30 | Service Water |
| 32 | High Pressure Service Water |
| 33 | Emergency Service Water |
| 35 | Reactor Building Closed Cooling Water |
| 36A | Service Air |
| 36B | Instrument Air |
| 36E | Breathing Air |
| 40B | Reactor Building Ventilation |
| 44A | Drywell Chilled Water |
| 48 | Emergency Cooling Water |

| | |
|---|---|
| 52C | Diesel Generator Starting Air |
| 52D | Diesel Generator Fuel Oil |
| 63G | Drywell/Torus Radiation Monitoring |

5.4. P&ID Listing

The following is a list of all the P&IDs identifying pumps and valves within the scope of the IST Program.

| P&ID (Sheet Numbers) | SYSTEM |
|---|---|
| M-300 (1) Legend | |
| M-315 (1,2,3,4) | Emergency Service Water and High Pressure Service Water |
| M-316 (1,3) | Cooling Water-Reactor Bldg. |
| M-320 (1,4,21,41) | Compressed Air System |
| M-327 (2,4) | Chilled Water System Drywell Cooling |
| M-330 (1) | Emergency Cooling System |
| M-332 (1,2) | Primary Containment Leak Testing |
| M-333 (1,2) | Instrument Nitrogen |
| M-351 (1,2,3,4) | Nuclear Boiler |
| M-352 (1,2,3,4) | Nuclear Boiler Vessel Instrumentation |
| M-353 (1,2,3,4) | Reactor Recirculation Pump System |
| M-354 (1,2) | Reactor Water Clean-Up System |
| M-356 (1,2) | Control Rod Drive Hydraulic System Part A |
| M-357 (1,2) | Control Rod Drive Hydraulic System Part B |
| M-358 (1,2) | Standby Liquid Control System |
| M-359 (1,2) | Reactor Core Isolation Cooling System |
| M-360 (1,2) | RCIC Pump Turbine Details |
| M-361 (1,2,3,4) | Residual Heat Removal System |
| M-362 (1,2) | Core Spray Cooling System |
| M-363 (1,2) | Fuel Pool Cooling and Cleanup |
| M-365 (1,2) | High Pressure Coolant Injection System |
| M-366 (1,4) | HPCI Pump Turbine Details |
| M-367 (1,2,3) | Containment Atmospheric Control System |
| M-368 (1) | Radwaste Liquid Collection System (Unit 2 and Common) |
| M-369 (1) | Radwaste Liquid Collection System (Unit 3) |
| M-372 (1,2) | Containment Atmosphere Dilution System |
| M-373 (1) | Breathing Air System |
| M-376 (1,2) | Traversing Incore Probe System |
| M-377 (1,4) | Diesel Generator Auxiliary Systems |
| M-391 (1) | Primary & Secondary Containment Isolation Control |
| M-397 (1) | Standby Gas Treatment Control |

5.5. CRL IST Descriptions

Page 14 of the CRL identifies if a component is in the IST Program via the "ASME Section XI IST" field. Page 11 of the CRL contains the fields and descriptions of the fields listed in Section 6.2 and 7.2 below.

# 6. INSERVICE TESTING PLAN FOR PUMPS

## 6.1. Pump Inservice Testing Plan Description & Selection

This Program Plan meets the requirements of ASME OM Code 2001 edition through 2003 Addenda Section ISTB. Pumps which are within the scope of the IST Program as defined in Section 5.1, and are not exempt per Section 5.2, shall be tested in accordance with ASME OM Code 2001 Edition through 2003 Addenda Section ISTB. Pumps, including all applicable pump testing requirements and frequencies, are identified in Attachment 13 and in PIMS CRL. Pump descriptions are found in Section 7.2. When the pump testing requirements of the applicable Code cannot be met, Relief Requests are provided in Attachment 3.

## 6.2. Pump Plan Table Description

The pumps included in the Peach Bottom Atomic Power Station IST Plan are listed in Attachment 13, "Inservice Testing Pump Table". The information contained in these tables identifies those pumps required to be tested to the requirements of Subsection ISTB of the ASME OM Code 2001 Edition through 2003 Addenda along with their applicable tests and test frequencies, and associated relief requests and remarks. The headings for the pump tables are delineated below.

Pump Name — The descriptive name for the pump.

Pump ID NO.: — The unique Identification Number for the pump.

P&ID — The Piping and Instrumentation Drawing on which the pump is represented.

P&ID Coor. — The P&ID Coordinate location of the pump.

Category — The pump group as defined in ISTB-2000

- Group A — Continuous or routinely operated pumps
- Group B — Standby pumps not operated routinely
- N/A — Not Applicable (Skid Mounted)

Safety Class — The ASME Code classification of the valve

- 1 — ASME Class 1
- 2 — ASME Class 2
- 3 — ASME Class 3
- NC — Non-Code

Pump Type — The type of pump.

Centrifugal

Positive Displacement

Vertical Line Shaft

Pump Driver — The type of pump driver.

| | |
|---|---|
| MOTOR | Motor driven |
| TURBINE | Steam turbine driven |
| ENGINE | Combustion Engine |

Test Type — Measured test parameters.

DP(1) Discharge Pressure (Measured only for positive displacement pumps) and Differential Pressure as calculated by subtracting the suction from the discharge pressures or obtained by direct measurement.

Q(1) Flow Rate as measured using a rate or quantity meter installed in the pump test circuit.

N(1) Pump Speed (Measured only for variable speed pumps)

SKID Parameter(s) as determined by Peach Bottom Atomic Power Station are verified through the testing of the items parent/major component

V(1) Vibration, (Pump bearing).

(1) Following the specification of each 'Test Type' will be denoted as to which of the following test criteria will be applied:

a – Denotes a Group A Pump Test

b – Denotes a Group B Pump Test

c – Denotes a Comprehensive Pump Test

Test Freq. — The frequency for performing the specified inservice test.

| | |
|---|---|
| Q | Quarterly (92 Days) |
| Y | Once every year (annually) |
| T | Once every two years (Biennial) |

Relief Request — A relief request number is listed when a specific code requirement is determined to be impracticable.

Tech. Pos. — A Technical Position is a document which is used by the utility/Owner uses to clarify their interpretation of Code requirements when it is felt by the utility or Owner that either the requirements of the Code are not easily interpreted or when they simply want to document how Code requirement is being implemented at the station. Technical Positions are identified by their unique number identifier which contains either a "TP" prefix. Technical Positions are contained in Attachment 11 of this document.

## 7. INSERVICE TESTING PLAN FOR VALVES

### 7.1. Valve Inservice Testing Plan Description & Selection

This testing program for valves meets the requirements of the ASME OM Code 2001 Edition through 2003 Addenda, Section ISTC "Inservice Testing of Valves in Light-Water Reactor Nuclear Power Plants"; Mandatory Appendix I "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants"; Mandatory Appendix II Check Valve Condition Monitoring Program" with the limitations imposed by 10 CFR 50.55a(b)(3)(iv)(A), (B) and (D).

Valves which are within the scope of the IST Program as defined in Section 5.1, and are not exempt per Section 5.2, shall be tested in accordance with ASME OM Code 2001 Edition through 2003 Addenda Section ISTC. Valves, including all applicable testing requirements and frequencies, are identified in Attachment 15 and the CRL. When valve testing must be deferred to cold shutdowns or refueling outages, Cold Shutdown Test Justifications or Refueling Outage Test Justifications are provided in Attachments 7 and 9 respectively. When valve testing requirements of the applicable Code are determined to be impractical, specific requests for relief have been written and are included in Attachment 5.

Valves which are outside the Code class 1, 2, or 3 boundaries, as defined on the ISI boundary drawings, and which perform a specific function in shutting down/maintaining the reactor in a cold shutdown condition, or in mitigating the consequences of an accident, are included in the IST Program as Augmented components. These non-Code class components are outside the scope of 10 CFR 50.55(a)(f). Exceptions to code requirements for these components are documented in Appendix D, Refueling Outage Test Justifications, and Appendix E, Technical Positions.

7.2. Valve Plan Table Description

Attachment 15 list all ASME Class 1, 2, 3 and NC Valves that have been scoped to be with in the IST Program and have been assigned Valve Categories. Valves excluded per ASME OM Code IST-1200 are not listed. The Valve Plan Table is divided into sections by Plant System. The following information is included for each valve.

Valve Name The description of the valve.

Valve Number A unique identification number for the valve.

P&ID The Piping and Instrumentation Drawing (P&ID) number on which the valve appears. If the valve appears on multiple P&IDs, the primary P&ID will be listed.

P&ID Coor. The coordinate location on the P&ID where the valve appears.

Safety Class The ASME Class abbreviation.

| | |
|---|---|
| 1 | ASME Class 1 |
| 2 | ASME Class 2 |
| 3 | ASME Class 3 |
| NC | Non-Code |

Cat. The category(s) assigned to the valve based on the definitions per ASME OM Code ISTC-1300. The following categories are defined in the Code:

Category A – Valves for which seat leakage is limited to a specific maximum amount in the closed position for fulfillment of their function.

Category B – Valves for which seat leakage in the closed position is inconsequential for fulfillment of their function.

Category C – Valves, which are self-actuating in response to some system characteristic, such as pressure (relief valves) or flow direction (check valves).

Category D – Valves, which are actuated by an energy source capable of only one operation, such as rupture disks or explosive-actuated valves.

N/A – Valves which have been included into the IST Program as the result of either a regulatory or utility commitment.

<u>Size</u> - The nominal pipe size of the valve, in inches.

<u>Valve Type</u> - The valve body style abbreviation.

| | |
|---|---|
| 3-way | 3-Way Valve |
| 4-way | 4-Way Valve |
| ANG | Angle Valve |
| BAL | Ball Valve |
| BTF | Butterfly Valve |
| CHK | Check Valve |
| DIA | Diaphragm Valve |
| EX | Explosive |
| GA | Gate Valve |
| GL | Globe Valve |
| NEEDLE | Needle Valve |
| PLG | Plug Valve |
| PPT | Poppet Valve |
| RPD | Rupture Disk Valve |
| RV | Relief Valve |
| S-CK | Stop Check Valve |
| VAC | Vacuum Breaker |
| XFC | Excess Flow Check Valve |

Act. Type - The actuator type abbreviation.

| | |
|---|---|
| AO | Air Operator |
| EX | Explosive Actuator |
| HO | Hydraulic Operator |
| MA | Manual |
| MO | Motor Operator |
| SA | Self-Actuating |
| SO | Solenoid Operator |

Active/Passive - Active or Passive function determination for the valve in accordance with ISTA-2000

| | |
|---|---|
| A | Active |
| P | Passive |
| N/A | Not Applicable (Non-Safety Related Valves) |

Normal Position - The normal position of the valve during normal power operation. If the valves system does not operate during power operation, then the normal position is the position of the valve when the system is not operating.

| | |
|---|---|
| C | Closed |
| LC | Locked Closed |
| LO | Locked Open |
| LT | Locked Throttled |
| O | Open |
| O/C | System Condition Dependent |

<u>Safety Position</u> - The valves safety function position(s). For valves that perform safety functions in the open and closed positions more than one safety function position may be specified.

| | |
|---|---|
| C | Closed |
| N/A | Valve has no Safety Related Position |
| O | Open |
| O/C | Open and Closed |

Test Type - The test(s) that will be performed to fulfill the requirements of ASME OM Code ISTC. The definitions and abbreviations are identified below:

| | |
|---|---|
| CC | Exercised Closed – Check Valve1 |
| CO | Exercise Open – Check Valve1 |
| CP | Partial Exercise Open |
| EO | Exercise Test Open |
| ET | Full Stroke Exercise |
| EX | Explosive Test (destructive test) |
| FS-C | Fail Safe Test Closed |
| FS-O | Fail Safe Test Open |
| LJ | Seat Leakage Rate Test (low pressure air), Appendix J |
| LP | Seat Leakage Rate Test (high pressure water), Pressure Isolation Valve |
| ME | Manual Exercise |
| None | None |
| PI | Position Indication Test |
| RD | Rupture Disk (destructive test) |
| RT | Relief Valve Test |
| ST-C | Stroke Time Closed |
| ST-O | Stroke Time Open |
| TP | Temperature Monitoring (Condition Monitoring) |

[1] Three letter designations may be used for check valve condition monitoring tests to differentiate between the various methods of exercising check valves. The letter following "CC" or "CO" may be "A" for acoustics, "D" for disassembly and inspection, "F" for flow indication, "L" for leakage test, "M" for magnetics, "R" for radiography, or "U" for ultrasonics, or "X" for manual exercise.

Test Freq. The test frequency abbreviation.

| | |
|---|---|
| Q | Quarterly |
| C | Cold Shutdown |
| R | Every refueling, and when conditions specified in the associated Relief Request |
| Y | Yearly |
| T | Every 2 years or each operating cycle |
| B | As specified in the PCLRT Program |
| P1 | 50% each refueling outage per TS 3.4.3 |
| P2 | Every 5 years |
| P3 | Every 10 years |
| P4 | Every 24 months, one valve per group on a rotating basis |
| DI | After disassembly and inspection |
| P5 | 50% each refueling outage per TS 3.1.7 |
| P6 | At least 20% of the squib valves every 2 years |
| P7 | Every refueling outage per TS 3.1.7 |
| M | Condition Monitoring |
| OP | Operating Activities |
| OM | OMN-1 MOV Program |

*- Note that the frequency listed in the Program Plan is that frequency as required by the applicable section for the Code. The test/operator activity which is performed for which credit is taken may occur more frequently.*

<u>Relief Requests</u> The applicable Relief Request as it applies to the subject test. Relief Request are divided into two different types.

<u>Generic Relief Requests</u>

A Generic Relief Request is used when Relief applies to a grouping of pumps or valves (e.g.: all containment isolation valves that are Type C tested, or all pumps requiring ultrasonic flow measuring devices). These Relief Requests are formatted as follows:

GVRR-X or GPRR-X where:

- GVRR Generic Valve Relief Request
- GPRR Generic Pump Relief Request
- X Sequential number

<u>System Specific Relief Requests</u>

A System Specific Relief Request is used when the Relief applies to components located within a specific system. They are formatted as follows:

XX-VRR-Y where:

- XX System designation number
- VRR Valve Relief Request
- Y Sequential relief request number in any system

Deferred Just. — Deferred Test Justification. This field refers to applicable Cold Shutdown Justifications and Refuel Outage Justifications.

A Cold Shutdown Justification is a document that provides a justification as allowed by ISTC-3510 to extend the applicable testing frequency to that which coincides with the plants "Cold Shutdown" frequency. Cold Shutdown Justifications are identified by their unique number identifier which can take two different forms.

The cold shutdown test justifications are formatted as follows:

System Specific Cold Shutdown Justifications

XX-VCS-Y where:

- XX System designation number
- VCS Valve Cold Shutdown test justification
- Y Sequential number within any system

Generic Cold Shutdown Justification

A Generic Cold Shutdown Justification is used when the justification covers valves in more than one system. These justifications are formatted as follows:

GVCS-X where:

- GVCS Generic Valve Cold Shutdown Justification
- X Sequential number

Cold Shutdown Justifications are contained in Attachment 7 of this document.

A Refuel Outage Justification is a document that provides a justification as allowed by ISTC-3510 to extend the applicable testing frequency to that which coincides with the plants "Refuel Outages" frequency Refuel Outage Justifications are identified by its unique number identifiers which can take two different forms. Refueling Outage Justifications are contained in Attachment 9 of this document.

The refueling outage test justifications are formatted as follows:

System Refueling Outage Justifications

XX-ROJ-Y where:

- XX = System Number
- ROJ = Refueling Outage test Justification
- Y = Sequential number within any system

Generic Refueling Justification

A Generic Refueling Justification is used when the justification covers valves in more than one system. These justifications are formatted as follows:

GROJ-X where:

- GROJ Generic Valve Refueling Outage Justification
- X Sequential number

Tech. Pos.

A Technical Position is a document which is used by the utility/Owner uses to clarify their interpretation of Code requirements when it is felt by the utility or Owner that either the requirements of the Code are not easily interpreted or when they simply want to document how Code requirement is being implemented at the station. Technical Positions are identified by their unique number identifier which contains either a "TP" prefix. Technical Positions are contained in Attachment 11 of this document.

Also in this column are identified the applicable Check Valve Condition Monitoring Program groups, when applicable.

The Technical Positions are formatted for numerical filing as follows:

- TP-X where:
- TP = Technical Position
- X = Sequential number

# 8. PROGRAM IMPLEMENTATION

## 8.1. General

Implementation of IST requirements shall be conducted under the Surveillance Testing Program, the Preventive Maintenance Program, and the Corrective Maintenance Program. Post maintenance testing of components in the IST Program shall be performed in accordance with the requirements of this T&RM and Specification M-679, "ASME Section XI Repair and Replacement Programs".

## 8.2. Preparation of IST Implementing Documents

The following requirements apply to the preparation of IST implementing documents:

- IST Program requirements satisfied by a Surveillance Test (ST) Procedure shall be identified in the procedure.
- IST Program requirements for individual components do not have to be met by a single implementing document, i.e., more than one document may be used to perform all required inservice testing.
- Maintenance Work Orders (W/O's) are utilized to perform check valve disassembly, bench testing of safety/relief valves, and rupture disc replacement as identified in the IST Program.

## 8.3. Control of IST Implementing Documents

Changes/revisions to IST Implementing Documents which affect IST Program testing requirements or acceptance criteria must have the approval of the IST Program Manager and the appropriate System Manager.

## 8.4. Specific pump Testing Requirements

ST Procedures shall be written for testing those pumps in the IST Program. These procedures shall provide for measurement of the required parameters at the stated frequency.

### 8.4.1. Pump Reference Values

Reference values shall be at points of operation readily duplicated during subsequent Inservice Testing.

Corrective action for Inservice Testing, follow-up for pump rework, or replacement may require establishment of new reference values. Reference values will be used to generate specific pump acceptance criteria. The acceptance criteria shall be incorporated into the appropriate ST procedure. The process of obtaining reference values shall be in accordance with the following discussion.

8.4.2. Reference Values Following Pump Replacement, Rework, or non- Routine Servicing

Since maintenance/replacement of a pump or changes to system configuration can affect operating conditions, a revision to reference values may be required. Whenever a pump is replaced or when testing after maintenance indicates that the pre-maintenance reference values are no longer valid, a new set of reference values shall be generated in accordance with the following:

- After maintenance, pump data will be evaluated against Technical Specification limits, manufacturers /preoperational data (if available), and/or previous tests.
- The System Manager and IST Program Manager shall concur on reference value changes, based on adequate justification from the evaluation of pump data.
- The revised reference values shall be used to generate new acceptance criteria which will be incorporated into the appropriate ST procedure.

8.4.3. Revision of Reference Values for any other reason

This is a general method to change or re-verify pump reference values for any reasons other than replacement or rework.

- Identify the probable cause for the deviation in reference values.
- Identify a new, acceptable level of pump performance which involves a change in pump reference values.
- Evaluate the new pump values with the old values, Technical Specification limits, previous pump tests and/or manufacturers'/preoperational data (if available) to ensure the pump can still perform its safety function.
- Revised reference values shall be reviewed and approved by the System Manager and the IST Program Manager.
- New acceptance criteria will then be generated and incorporated into the appropriate implementing document(s).

8.4.4. Establishment of an Additional Set of Reference Values

If it desirable to establish an additional set of reference values, for reasons other than maintenance, replacement, or repair, an inservice test shall first be run at the conditions of an existing set of reference values and the results analyzed. If operation is satisfactory, a second test run at the new reference conditions shall follow as soon as practical. The results of this test shall establish the additional set of reference values. Whenever an additional set of reference values is established, the reasons for so doing shall be justified and documented.

8.4.5. Allowable Variance from Fixed Reference Points

The Code does not allow for variance from a fixed reference value, stating only that "the resistance of the system shall be varied until the measured differential pressure or measured flow rate equals the corresponding reference value". If the system design does not allow for establishing and maintaining flow at an exact value, achieving a steady flow or differential pressure at approximately the reference value is acceptable without requesting relief. The allowed tolerance for setting the fixed parameter must be established for each case individually including the accuracy of the instrument and the precision of the display. A total tolerance of ±2% of the reference value is allowed without approval from the NRC. A corresponding adjustment to acceptance criteria may be made to compensate for the uncertainty, or an evaluation would be performed and documented justifying a greater tolerance. In using the guidance provided in NUREG-1482, Rev.1 Section 5.3, the variance and the method for establishing the variance must be documented in the IST program documents or implementing procedures.

8.4.6. Core Spray Pump Test Procedure

Due to the difficulties in throttling the CS full flow test valves, system resistance is not varied to establish a fixed parameter (e.g. flow) when testing the pumps. The pump is started and a steady flow rate is achieved. The flowrate and differential pressure are then measured and compared to the IST Acceptance Criteria contained in the ST procedure.

8.5. Pump Failures/Corrective Actions

All Code required test parameters will be reviewed after completion of test to verify that they do not fall outside the acceptable range specified in ISTB Table 5100-1. Those that fall within the required action range will be processed as described below. Those that do not fall within the required action range will be analyzed within a reasonable amount of time after completion of test to ensure any increased frequency testing is implemented in a timely fashion.

Upon notification that test results fall in the Required Action range, Shift Supervision shall consider the pump inoperable. The Technical Specifications shall be reviewed for any applicable Limiting Condition of Operation (LCO) Conditions. At this time, corrective action shall commence, beginning with an evaluation/analysis of the test conditions and parameters to determine the validity of the test results as follows:

- Recalibrate/replace test instruments.
- Re-run test.
- Evaluate system condition for test and ensure test loop configuration is correct.
- Review work activities on the pump to ensure the deviation was not caused by maintenance.
- Analyze previous test data for trends.
- Identify the need for a change to pump reference value by performing an evaluation.

If the evaluation/analysis concludes the pump is operating in the acceptable range, the corrective action shall be documented in the Record of Tests and the pump may be returned to operable status. If the evaluation/analysis concludes that the pump is inoperable, it shall not be declared operable until the cause of the deviation has been corrected. Corrective action will involve rework, repair or replacement and a new set of reference values shall be established.

8.6. Specific Valve Testing Requirements

8.6.1. Inservice tests for Category A, B, and C valves shall nominally be performed quarterly unless a Cold Shutdown Test Justification, Refueling Outage Test Justification, Relief Request, or Technical Position has been provided. For valves that are in systems declared inoperable or not required to be operable, the testing schedule need not be followed. However, within 90 days prior to returning the system to service, the valve shall be tested and the test schedule resumed.

8.6.2. Exercise Test Requirements for ASME Category A and B power operated valves are as follows:

- The exercise test shall consist of exercising the valve full open and/or full close and measuring stroke time(s) in the safety direction(s) as required.
- When measuring valve stroke time, stroke time will commence upon movement of the valve control switch and end when the desired position indication is the only light that is illuminated (control switch to light) indicating full open/full close.
- When a valve has no indicating lights in its designed electrical circuit, alternate acceptable means may be used to measure time from initiation of actuating signal to end of activating cycle (e.g., local timing by acoustic or visual observation).
- Diagnostic test data is an acceptable alternate means of verifying valve stroke time (e.g., Votes)
- For fail-safe valves , whereby placing the control switch in the OPEN position for fail-open valves, and the CLOSED position for fail-closed valves, results in a loss of actuator power; the fail safe testing requirements are satisfied by the exercise test.

8.6.3. Exercise Test Requirements for Category C check valves are as follows:

- The necessary valve obturator movement during exercise testing shall be demonstrated by performing BOTH an open and a closed test.
- Stroke of check valve in the open direction is defined as the ability of the valve to travel to either the full open position or to a position required to perform its intended function, or visually verifying a full mechanical stroke utilizing an external indicator or weighted arm/lever. Valve disassembly may also be performed per Section ISTC-5221(a)(3)(c) to satisfy exercise requirements.
- Valves that are required to be tested in the closed direction shall be confirmed closed by observation of system parameters (e.g. flow, temperature or pressure), remote or local position indicators, visual observation, leak testing, or other positive means.

8.6.4. Valve leak rate testing is performed as follows:

- Leak rate testing for Category A containment isolation valves shall be performed in accordance with the PCLRT Program.
- All remaining leak rate testing of Category A (e.g., pressure isolation, etc.) valves required by the IST Program will be performed under the Surveillance Testing Program.

8.6.5. Explosively actuated valves (Category D) shall be tested and replaced at the frequency specified by Technical Specifications or this specification.

8.6.6. Rupture discs shall be replaced as required by this specification.

8.6.7. Safety/Relief valve tests are performed as follows:

- Main Steam safety/relief valves are tested in accordance with Technical Specification 3.4.3.
- All remaining safety/relief valves contained in the IST Program will be tested per ASME OM Code 2001 Edition through 2003 Addenda, Mandatory Appendix I, except that Augmented relief valves will not be subject to the additional testing requirements of Appendix I should a failure occur.
- Non-Code class relief valves contained in the IST Program as Augmented components will be tested to the requirements of ASME OM Code 2001 Edition through 2003 Addenda, Mandatory Appendix I except that they will not be subject to the expanded testing scope requirements of Mandatory Appendix I if a failure should occur.

8.6.8. Vacuum Breaker/Relief valve tests are performed as follows:

All vacuum breaker/relief valves shall be tested per ASME OM Code 2001 Edition through 2003 Addenda, Appendix I. Vacuum breakers that are simple check valves shall also be tested per ASME OM Code 2001 Edition through 2003 Addenda, ISTC.

8.6.9. Valve position indicator verification is performed as follows:

Verification of proper remote position indication will normally be accomplished by locally observing the position of the valve and comparing it with the remote indication. Some valves are not equipped with a local means to verify position. Therefore, position will be verified by the observation of system parameters such as flow, pressure temperature or level. For valves having remote position indicators at multiple locations that include the control room, the control room remote position indicator will be verified for accuracy and the remote position indicator used for exercise testing and stroke timing the valve will also be verified for accuracy. If exercise testing and stroke timing are performed using only the control room remote position indicator, then only the control room remote position indicator needs to be verified for accuracy.

8.6.10. Cold shutdown valve testing is performed as follows:

For valve testing which is deferred to cold shutdown, testing will commence within 48 hours after cold shutdown is achieved and will continue until all tests are complete or the plant is ready to return to power. Any testing not completed at one cold shutdown shall be performed during subsequent cold shutdowns provided plant conditions can be achieved to allow testing. For planned cold shutdowns in which there is sufficient time to complete the testing of all valves identified to be tested at cold shutdown, exception may be taken to the 48 hour start time. As a minimum, all cold shutdown valves shall be tested during each refueling outage. However, valve testing will not be required at a frequency greater than quarterly for Category A, B, and C valves.

8.6.11. System Test Valves

Power operated valves which are placed in a non-conservative position to facilitate system testing are included in the IST Program if their position is critical to safety-related system operation and they respond to an automatic actuation signal to align the system for its safety related function. The system analysis postulates that the system is in a test mode when the initiation signal occurs. Manual valves that are allowed by plant procedure to be repositioned during normal plant evolutions from their required safety position, without administrative controls, are considered active valves and are included in the IST Program.

Valves that are locked, de-energized, or otherwise disabled, or are administratively controlled in their safety position, including valves used solely for testing, shall be considered passive due to the unlikelihood that the valve could be in a position other than its safety position during pre/post accident conditions.

8.6.12. Category A PCIV Leak Testing

All valves included in the PBAPS Primary Containment Leak Rate Test (PCLRT) Program complying to 10 CFR 50, Appendix J, shall be included in the IST Program as Category A valves. Primary containment isolation valves (PCIVs) shall be analyzed to ensure cumulative leakage does not exceed 0.6 La for primary containment allowable leakage. Corrective action shall be implemented to ensure cumulative leakage remains below 0.6 La limit for primary containment allowable leakage. Single valve leakage criteria is established for the purpose of monitoring the condition of the valves and for taking corrective action. If two or more valves on a containment penetration are tested as a group, limiting leakage rate values will be assigned to the group.

Where a valve is identified as a PCIV in the UFSAR, and it is determined to be an active valve with respect to this function, it will be subjected to exercise testing to the closed position when there is an associated requirement for leak testing. This exercising requirement will also extend to containment isolation valves that are not subjected to Appendix J leak testing provided that the subject valve is required to be closed as part of the post-accident response for long term leakage control.

8.6.13. Category A PIV Leak Testing:

All valves designated as pressure isolation valves (PIVs) are considered to perform a pressure isolation function between the Reactor Coolant System (RCS) and systems of a lower design pressure and are included in the IST Program as Category A valves. The listing of designated PIVs also include isolation valves, optionally classified as PIVs, which prevent the communication of a high pressure source with the low pressure suction piping of a pump contained in a high pressure system (e.g. HPCI and RCIC).

8.7. <u>Maximum Allowable Valve Stroke Time</u>

8.7.1. The Code requires the Owner to specify limiting value(s) of full stroke times (maximum allowable stroke times) for power operated valves. The maximum allowable stroke time specified shall be the most restrictive of the following:

- Technical Specification requirements
- UFSAR requirements
- Reference stroke time plus or minus the percentages identified in the Table provided in Section 6.8.

8.7.2. Rapid-acting valves are those valves that operate too quickly to enable meaningful comparison of stroke time data for evaluation or determination of a degraded valve condition. Rapid acting valves, therefore, are exempt from the trending requirements.

8.8. STROKE TIME ACCEPTANCE CRITERIA for Power Operated Valves

8.8.1. For all power operated valves except rapid-acting valves, use the guidance provided in the following table.

8.8.2. The following criteria will be used to establish alert and limiting values (maximum stroke time) for power operated valves:

NOTE: The limiting stroke time value assigned will be the more restrictive of the below calculated values or the maximum design stroke time from the UFSAR, Tech. Specs., or other related design documents.

| TYPE | Alert Range | Limiting Value |
|---|---|---|
| MOVs >10sec. | $\pm 1.15\ t_{ref}$ | $+1.30\ t_{ref}$ |
| MOVs ≤ 10sec. | $\pm 1.25\ t_{ref}^{*}$ | $+ 1.50\ t_{ref}$ |
| SOVs/AOVs >10sec. | $\pm 1.25\ t_{ref}$ | $+ 1.50\ t_{ref}$ |
| SOVs/AOVs ≤ 10sec. | $\pm 1.50\ t_{ref}$ | $+ 2.00\ t_{ref}$ |

* or ± 1 second change in stroke time, whichever is greater, when compared to the reference value.

8.9. Valve Failures/Corrective Action

8.10. Power operated valves which fail to operate or exceed the limiting (maximum) stroke time acceptance criteria contained in the ST procedure shall be declared inoperable. The Technical Specifications shall be reviewed for any applicable LCO Conditions. The valve shall remain inoperable until corrective action is completed and a successful re-test is performed. Since valve failures can be the result of many causes, a partial list of corrective actions is listed below:

- Recalibrate/replace test instruments.
- Re-run test.
- Evaluation system conditions to determine if failure was caused by a change in system parameters.
- Check position indication.
- Analyze previous test data for trends.
- Review work activities on the valve to ensure the failure was not caused by rework or replacement.

Results shall be documented as appropriate for the corrective action taken (e.g., A/R, work order, etc.).

8.10.1. If a power operated valve does not meet its acceptance criteria and is considered in the "Alert Range", it will be immediately retested or declared inoperable. If retested and the second set of data does not meet the acceptance criteria, the data will be analyzed within 96 hours to verify that the new stroke time represents acceptable valve operation, or the valve will be declared inoperable. If the second set of data meets the acceptance criteria, the cause of the initial deviation shall be analyzed and the results documented in the record of tests. Valve operability based upon analysis shall have the results of the analysis recorded in the record of tests.

8.10.2. Check valves which fail to exhibit the required change of disc position or fail to pass design flow rates shall be considered inoperable. The Technical Specifications shall be reviewed for any applicable LCO Conditions. The valve shall remain inoperable until corrective action is complete and a successful re-test is performed.

8.10.3. Containment isolation valves with leakage rates that exceed their maximum permissible leakage rates shall be evaluated per the LLRT Program. If a Category "A" valve which performs a function other than containment isolation exceeds its maximum permissible leakage rate, the valve shall be declared inoperable and repaired or replaced.

8.11. <u>Test Scheduling</u>

8.11.1. Test scheduling shall be controlled by the Surveillance Testing Program and the Preventative Maintenance Program.

If a pump is found to be in the "Alert Range", the ST Coordinator shall be notified to increase the testing frequency as required by the applicable ASME Code. This notification shall be made in a fashion which provides an adequate amount of time to ensure the new accelerated frequency requirement is met. The accelerated testing frequency shall continue until corrective action has been completed and/or the pump has been tested to verify that it is operating acceptably.

## 9. DOCUMENTATION

9.1. <u>Technical Specifications</u>

The PBAPS Units 2 & 3 Technical Specification (T.S.), invokes the IST Program and was used in conjunction with the UFSAR in determining the pumps and valves which are in scope. The T.S. surveillance requirements were compared with the ASME OM Code requirements to determine equivalent testing. Whenever possible, equivalent T.S. testing will be used to satisfy ASME OM Code requirements.

9.2. NRC Publications

Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs"

NUREG/CR-6396, "Examples, Clarification, and Guidance on Preparing Requests for Relief from Pump and Valve Inservice Testing Requirements"

9.3. Administrative Procedures

Procedure ER-AA-321 provides the administrative controls for the conduct Peach Bottom's activities associated with the fulfillment of ASME Code IST requirements.

9.4. Miscellaneous

9.4.1. WC-PB-430, "Control and Administration of Surveillance Testing Program"

9.4.2. ER-AA-380, "Primary Containment Leak Testing Program"

9.4.3. MG-27, " Maintenance Local Leak Rate Test Program"

9.4.4. MA-MA-716-009, "Preventive Maintenance (PM) Work Order Process"

9.4.5. CC-AA-102, "Design Input and Configuration Change Impact Screening"

9.4.6. CC-AA-103, "Configuration Change Control for Permanent Physical Plant Changes"

9.4.7. PC-AA-1005, " Projects Implementation"

9.4.8. NE-C-110, "Preparation and Control of Specifications"

9.4.9. NE-C-210, "Establishing and Maintaining Component Classifications"

9.4.10. NE-C-211, "CRL Control"

9.4.11. CC-AA-311, " Drawing Creation and Revision"

9.4.12. CC-MA-103-1001, "Implementation of Configuration Changes"

9.4.13. MA-MA-716-010-1000, "PIMS Work Order Process Manual"

9.4.14. MA-AA-716-003, "Tool Pouch Minor Maintenance"

9.4.15. MA-MA-716-010-1002, "Equipment Deficiency Tag Initiation and Processing"

9.4.16. MA-MA-716-010-1003, "Corrective Maintenance Action Request AR Initiation and Processing"

9.4.17. MA-MA-716-010-1004, "Minor Maintenance"

9.4.18. MA-MA-716-010-1005, "Work Order WO Planning Process"

9.4.19. MA-MA-716-010-1007, "Post Maintenance Testing (PMT)"

9.4.20. MA-MA-716-010-1008, "Workorder (WO) Work Performance"

9.4.21. MA-MA-716-010-1009, "Monitoring Performance of Maintenance Activities"

9.4.22. MA-MA-716-010-1010, "Post-Job Review, Documentation Review, Action Request Work Order Activities Package Closure"

9.4.23. CM-1, T04059, "Third 10-Year Interval IST for PPS and Valves"

9.4.24. CM-2, T01988, "PBAPS Response to Notice of Violation 92-070-03"

9.4.25. CM-3, T01025, "Letter to the NRC dated 01/07/91, Response to Notice of Violation 90-18/18"

9.4.26. Exelon Peach Bottom Specification M-679, "Specification for ASME Section XI Repair and Replacement Programs"

9.4.27. Exelon Peach Bottom Specification M-733, "Second Ten Year ISI Program"

9.4.28. Exelon Peach Bottom Specification M-710, "Pump and Valve Inservice Testing Program

9.4.29. Third Ten Year Interval"

10. **REFERENCES**

10.1. None

## 11. **ATTACHMENTS**

11.1. Attachment 1 - Pump and Valve Inservice Testing Program Fourth Ten Year Interval Cover Page

11.2. Attachment 2 - Pump Relief Request Index

11.3. Attachment 3 - Pump Relief Requests

11.4. Attachment 4 - Valve Relief Request Index

11.5. Attachment 5 - Valve Relief Requests

11.6. Attachment 6 - Cold Shutdown Justification Index

11.7. Attachment 7 - Cold Shutdown Justifications

11.8. Attachment 8 - Refuel Outage Justification Index

11.9. Attachment 9 - Refuel Outage Justifications

11.10. Attachment 10 - Technical Positions Index

11.11. Attachment 11 - Technical Positions

11.12. Attachment 12 - None

11.13. Attachment 13 - Inservice Testing Pump Table

11.14. Attachment 14 - None

11.15. Attachment 15 - Inservice Testing Valve Table

**ATTACHMENT 1**
**Pump and Valve Inservice Testing Program Fourth Ten Year Interval**
**Cover Page (Continued)**
**Page 1 of 3**

Peach Bottom Nuclear Power Station

Units 2 & 3

Inservice Testing Program

Fourth Ten Year Interval

Commercial Service Dates:

Unit 2 – 10/25/73

Unit 3 – 7/02/74

Peach Bottom Atomic Power Station

1848 Lay Road

Delta, Pennsylvania 17314

Exelon Generation Company, LLC (EGC)

300 Exelon Way

Kennett Square, PA 19348

**ATTACHMENT 1**
**Pump and Valve Inservice Testing Program Fourth Ten Year Interval**
**Cover Page (Continued)**
**Page 2 of 3**

REVISION LOG

| Effective Date | Revision Description | Prepared; IST Program Engineer | Date | Approved; Engineering Programs Manager | Date |
|---|---|---|---|---|---|
| 08/15/2007 | Revision 0,<br>4th Ten Year Interval Update | Marcellus Ruff | 08/14/2008 | Nick Alexakos | 08/14/2008 |
| 10/31/2008 | Revision 1,<br>Major Rewrite | Marcellus Ruff | 10/31/2008 | Nick Alexakos | 10/31/2008 |

## ATTACHMENT 1
## Pump and Valve Inservice Testing Program Fourth Ten Year Interval
## Cover Page (Continued)
## Page 3 of 3

This page represents the original 4th 10 Year Interval Update signoff page. The station elected to have a reviewer for this initial revision. Future revisions to ER-PB-321-1000 will only require Branch Manager approval.

EXELON GENERATION COMPANY

PEACH BOTTOM ATOMIC
POWER STATION
UNITS 2, 3 AND COMMON

TRAINING AND REFERENCE MATERIAL

FOR THE

PUMP AND VALVE

INSERVICE TESTING PROGRAM,

FOURTH TEN YEAR INTERVAL

| Rev No. | Effective Date | Reason for Issue | ORIGINATOR | REVIEWER | APPROVAL | QA |
|---|---|---|---|---|---|---|
| 0 | 08/15/08 | 4th 10 Year Interval Update | MER 8/14/08 (signature) Marcellus Ruff | JJD 8/14/08 (signature) John Dore | NA 8/14/08 (signature) Nicholas Alexakos | N/A |
| | | | | | | |

| | | |
|---|---|---|
| | T&RM for the Pump and Valve Inservice Testing Program, Fourth Ten Year Interval, Peach Bottom Atomic Power Station, Units 2, 3 and Common. | Procedure No. ER-PB-321-1000 Rev. 0 Page |

## ATTACHMENT 2
## Pump Relief Request Index
## Page 1 of 1

There are no Pump Relief Requests for the 4th 10 Year IST Interval Update

## ATTACHMENT 3
## Pump Relief Requests
## Page 1 of 1

There are no Pump Relief Requests for the 4th 10 Year IST Interval Update

## ATTACHMENT 4
## Valve Relief Request Index
## Page 1 of 1

| Valve Relief Request No. | Description | NRC Approval Date |
|---|---|---|
| GVRR-1 | Use of ASME Code Case OMN-1, from the ASME OMb Code, 2006 Addenda | 09/03/2008 |
| 01A-VRR-1 | Extension of Class 1 Pressure Relief Valve Test Frequency | 09/03/2008 |
| 01A-VRR-2 | Main Steam Safety Relief Valves (SRVs) with Automatic Depressurization System (ADS) Functions | 09/03/2008 |

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request GVRR-1**
**Use of ASME Code Case OMN-1 from the ASME OMb Code, 2006 Addenda**
**Page 1 of 4**

## ASME CODE COMPONENT(S) AFFECTED

All active, non-skid mounted, ASME Class 1, 2 and 3 Motor Operated Valves (MOVs) scoped into the Peach Bottom Atomic Power Station (PBAPS) Inservice Testing Program.

## APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda is the ASME OM Code, 2001 Edition through 2003 Addenda. The new interval begins on August 15, 2008, and will conclude on August 14, 2018.

## APPLICABLE CODE REQUIREMENTS

ISTC-3000, "General Testing Requirements", (excluding ISTC-3600)
ISTC-5120, "Motor-Operated Valves"
The provision for motor control center testing contained in Section 6.1 ("Acceptance Criteria") as applied in this relief request is excluded from this request (i.e., "Motor control center testing is acceptable if correlation with testing at the MOV has been established").

## REASON FOR REQUEST

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested from the requirements of OM Code, Subsection ISTC-3000, excluding ISTC-3600 and requested from the requirements of OM Code, Subsection ISTC-5120. The alternative would provide an acceptable level of quality and safety.

## ALTERNATIVE AND BASIS FOR USE

The Nuclear Regulatory Commission (NRC) in a September 22, 1999, Federal Register Notice (64 FR 51370), issued a Final Rule on 10 CFR Part 50, "Industry Codes and Standards; Amended Requirements." In the final rule, the NRC amended its regulations to incorporate by reference the 1995 Edition and 1996 Addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants. The final rule also permits the use of alternate rules for IST of MOVs as described in ASME Code Case OMN-1 Rev. 0, in lieu of certain provisions of Subsection ISTC.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request GVRR-1**
**Use of ASME Code Case OMN-1 from the ASME OMb Code, 2006 Addenda**
**(Continued)**
**Page 2 of 4**

10 CFR 50.55a(b) states in part, that Regulatory Guide 1.192, "Operating and Maintenance Code Case Acceptability, ASME Code" (June 2003), has been approved for incorporation by reference. In Regulatory Guide 1.192, it states within Table 2, "Conditionally Acceptable OM Code Cases," that the alternative rules of ASME Code Case OMN-1, Rev. 0, when applied in conjunction with the provisions for leakage rate testing in ISTC-3600, may be applied with the following provisions:

1. The adequacy of the diagnostic test interval for each valve must be evaluated and adjusted as necessary but not later than 5 years or three refueling outages (whichever is longer) from initial implementation of ASME Code Case OMN-1.

2. When extending the exercise test intervals for high risk MOVs beyond a quarterly frequency, licensees shall ensure that the potential increase in core damage frequency and risk associated with the extension is small and consistent with the intent of the Commission's Safety Goal Policy Statement.

3. When applying risk insights as part of the implementation of OMN-1, licensees must categorize MOVs according to their safety significance using the methodology described in Code Case OMN-3, "Requirements for Safety Significance Categorization of Components Using Risk Insights for Inservice Testing of LWR Power Plants," with the conditions discussed in this regulatory guide or use other MOV risk-ranking methodologies accepted by the NRC on a plant-specific or industry-wide basis with the conditions in the applicable safety evaluations.

This conditional acceptance of OMN-1, Rev. 0, per Regulatory Guide 1.192 is applicable in lieu of the provisions for stroke-time testing in Subsection ISTC of the 1995 Edition, up to and including the 2000 Addenda, of the ASME OM Code.

PBAPS will adopt the requirements of Code Case OMN-1 from the ASME OMb Code, 2006 Addenda, in lieu of the performance of stroke time testing and position indication testing as described by ASME OM ISTC 2001/2003a.

Since Regulatory Guide 1.192 was last published, Code Case OMN-1 has been updated/modified to address and incorporate all of the original Regulatory Guide 1.192 listed provisions.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request GVRR-1**
**Use of ASME Code Case OMN-1 from the ASME OMb Code, 2006 Addenda**
**(Continued)**
**Page 3 of 4**

The PBAPS MOV testing program was developed as a result of Generic Letters (GL) 89-10, "Safety Related Motor Operated Valve Testing and Surveillance," and 96-05, "Periodic Verification of Design Basis Capability of Safety Related Motor Operated Valves," utilizing Topical Report MPR-1807, Rev. 2. PBAPS is currently utilizing MPR-2524-A, "Joint Owners' Group (JOG) Motor Operated Valve Periodic Verification Program Summary," (November 2006) for its MOV Program guidance. The adoption of OMN-1 will consolidate testing between the site's Inservice Testing (IST) and MOV Programs.

**TECHNICAL POSITION**

The following positions describe how the EGC interprets and complies with the various requirements of Code Case OMN-1 from the ASME OMb Code, 2006 Addenda.

4. OMN-1, Section 3.1 allows for the use of testing that was conducted prior to the implementation of OMN-1 if it meets the requirements of the Code Case. PBAPS intends to utilize the testing credited under its GL 89-10/96-05 responses to satisfy the requirement for a one-time test to verify the capacity of each individual or group of MOV's safety-related design basis requirements.

5. OMN-1, Section 3.2 requires that each MOV be tested during the preservice test period or before implementing inservice inspection. PBAPS intends to utilize the testing credited under its GL 96-05 response to satisfy this requirement.

6. OMN-1, Section 3.3(b) states that inservice tests shall be conducted in the as-found condition, and activities shall not be conducted if they might invalidate the as-found condition for inservice testing. PBAPS maintenance activities that would affect the as-found condition of the valve, such as motor operator preventive maintenance or stem lubrication, are typically scheduled to occur in conjunction with the performance of the MOV Periodic Verification Testing, and are performed after as-found testing. Any other activities that could affect the as-found test results are not performed until after the as-found testing has been conducted.

7. OMN-1 Section 3.3(c) requires the inservice test program to include a mix of static and dynamic MOV performance testing. PBAPS has utilized the JOG program's mix of static and dynamic MOV performance testing (MPR-2524-A) to develop its current MOV testing program. Additionally, PBAPS will continue to utilize the existing engineering standards, which are consistent with the JOG standards, to justify any changes to the mix of required MOV performance testing. The use of such an evaluation will serve to ensure PBAPS continues to meet this requirement.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request GVRR-1**
**Use of ASME Code Case OMN-1 from the ASME OMb Code, 2006 Addenda**
**(Continued)**
**Page 4 of 4**

8. OMN-1, Section 3.3(e) requires that Remote Position Indication shall be verified locally during inservice testing or maintenance activities. The PBAPS will continue to verify the operability of each MOV's position indication system as part of each MOV's diagnostic test. In addition, the function of each MOV's position indication system will be verified during the performance of maintenance activities affecting remote position indication.

9. OMN-1, Section 3.3.1(b) requires MOV inservice testing to be conducted every 2 refueling cycles or 3 years (whichever is longer), if insufficient data exists to determine inservice test frequencies. PBAPS has sufficient MOV testing data to justify its current testing frequencies, and therefore meets this requirement. If in the future, modification or replacement results in the necessity to re-baseline a valve or group of valves, the requirements of OMN-1 Section 3.3.1(b), or 3.7.2.2(c) as applicable, will be followed.

10. OMN-1, Section 6.4.4 requires that calculations for determining the MOV's functional margin are evaluated to account for potential performance-related degradation. The PBAPS MOV Program, including the corporate MIDAS Software (or similar updated product), takes into account performance-related degradation, to calculate valve margin.

11. The provision for motor control center testing contained in Section 6.1 ("Acceptance Criteria") as applied in this relief request is excluded from this request (i.e., "Motor control center testing is acceptable if correlation with testing at the MOV has been established").

**DURATION OF ALTERNATIVE**
This alternative will be utilized for the fourth ten-year interval.

**PRECEDENTS**
A similar relief was approved for LaSalle County Station, Units 1 and 2, Relief Request RV-02, in NRC Safety Evaluation Report dated September 26, 2007.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request 01A-VRR-1**
**Safety Relief Valve Testing**
**Page 1 of 4**

## ASME CODE COMPONENT(S) AFFECTED

Components:

Safety Relief Valves (SRVs): S/N 178 (currently installed in Unit 2)
S/N 20 (currently installed in Unit 2)
S/N 73 (currently installed in Unit 3)

Category:

Valves S/N 178, S/N 20, and S/N 73 are Category C

Manufacturer:

Target Rock, Model: 67F

## APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda is the ASME OM Code, 2001 Edition through 2003 Addenda. The new interval begins on August 15, 2008, and will conclude on August 14, 2018.

## APPLICABLE CODE REQUIREMENTS

Exelon Generation Company, LLC (EGC) requests relief from the ASME OM Code, "Code for Operations and Maintenance of Nuclear Power Plants," 2001 Edition through 2003 Addenda, Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear Power Plants," Section I-1320, "Test Frequencies, Class 1 Pressure Relief Valves".

## REASON FOR REQUEST

EGC is requesting relief from the identified code requirements on the basis that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality in accordance with 10 CFR 50.55a(a)(3)(ii). ISTC–3200 (ASME OM Code, 2001 Edition through 2003 Addenda), "Inservice Testing," states that inservice testing shall commence when the valves are required to be operable to fulfill their required function(s). Additionally, ISTC-5240, "Safety and Relief Valves," directs that safety and relief valves meet the inservice testing requirements set forth in Mandatory Appendix I of the ASME OM Code. Section I-1320(a) (ASME OM Code, 2001 Edition through 2003 Addenda) states that Class 1 pressure relief valves shall be tested at least once every five years. The required test ensures that the Safety Relief Valves (SRVs), which are located on the main steam lines between the reactor vessel and the first isolation valve within the drywell, will open at the pressures assumed in the safety analysis.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request 01A-VRR-1**
**Safety Relief Valve Testing**
**(Continued)**
**Page 2 of 4**

EGC is requesting a proposed alternative in accordance with 10 CFR 50.55a(a)(3)(ii) from the above requirements to extend the test interval for S/N 178 (two (2) months – until the Unit 2 fall outage in 2010), S/N 20 (three (3) months – until the Unit 2 fall outage 2010) and S/N 73 (two (2) months – until the Unit 3 fall outage in 2009). The valves will be replaced in the identified outages.

EGC typically removes and tests either six (6) or seven (7) of thirteen (13) SRV/Safety Valves (SVs) on Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3 every refueling outage, so that all valves are removed and tested every two refueling outages. This methodology supports the ASME OM Code requirements for testing untested Class 1 pressure relief valves. After each valve is removed and tested, the SRV/SVs are overhauled to a like-new condition, and reset to an as-left nominal setpoint plus or minus 1%.

EGC utilizes an ASME Code-certified off-site vendor (Wyle Labs) to perform as-found and as-left testing of the PBAPS SRVs. EGC utilizes an ASME Code-certified off-site vendor (Target Rock Corporation) to perform disassemblies, inspections and refurbishments of the PBAPS SRVs. EGC purchase orders require Target Rock Corporation (TRC) to comply with procedures to disassemble, inspect and refurbish each SRV upon removal from service, independent of the as-found test results.

The TRC procedures identify the critical components that are required to be inspected for wear and defects, and the critical dimensions that are required to be measured during the inspection. If components are found worn or outside of the specified tolerances, the components are either reworked to within the specified tolerances, or replaced. All parts that are defective, outside-of-tolerance, and all reworked/replaced components are identified, and PBAPS is notified in writing of these components by TRC. The SRV is then re-assembled, the as-left test is performed, and the SRV is shipped by Wyle Labs to PBAPS.

At PBAPS, a procedure is used for handling and storage of Safety Related and Augmented Quality equipment (SM-AA-102, "Warehouse Operations"). The procedure requires the storage of SRV/SVs within a fire resistant, tear-resistant, weather-tight and well-ventilated building or equivalent enclosure. The procedure also states that the storage area or enclosure shall not be subject to flooding; the floor shall be paved or equal and well drained. The storage area must be provided with uniform heating and temperature control to prevent condensation and corrosion. Minimum and maximum temperatures are controlled.
Since the PBAPS does not perform setpoint testing of SRVs maintained in a controlled environment for an extended period of time prior to installation, PBAPS has provided the as-found set-pressure test results for SRVs stored in a controlled environment at PBAPS for an extended period of time, placed in service for approximately 4 years (48 months), and then tested. This information is contained in the attached Tables 1, 2 and 3.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request 01A-VRR-1**
**Safety Relief Valve Testing**
**(Continued)**
**Page 3 of 4**

**ALTERNATIVE AND BASIS FOR USE**

EGC requests relief from the specified sections of the ASME OM Code, until such time that the valves are removed and refurbished. The requested extensions are for S/N 178 (two (2) months – until the Unit 2 fall outage in 2010), S/N 20 (three (3) months – until the Unit 2 fall outage 2010) and S/N 73 (two (2) months – until the Unit 3 fall outage in 2009).

As-found testing history for PBAPS's Target Rock Valves from 1999 to prior to the Fall 2007 outage indicates that all as-found tests on Target Rock Valves (i.e., a total of 53 tests) that have been installed in PBAPS Unit 2 and Unit 3 for two operating cycles (48 months), have successfully passed the as-found acceptance criteria of plus or minus 3%.

As found testing data for the three (3) valves is contained in Tables 1, 2 and 3. As demonstrated by the testing results, the valve testing results are generally within the rigorous ±1% Technical Specification limit (exceptions noted in Table 2). We note that this relief request is not requesting relief from the Technical Specification limit of 1%. The short extensions (maximum of three (3) months) requested in this relief request are not anticipated to impact the ability of the valves to meet the Technical Specification limit of 1%, or the reactor steam dome safety limit specified in Technical Specifications (1325 psig).

**DURATION OF ALTERNATIVE**

EGC requests relief from the specified sections of the ASME OM Code, until such time that the valves are removed and refurbished. The requested extensions are for S/N 178 (two (2) months – until the Unit 2 fall outage in 2010), S/N 20 (three (3) months – until the Unit 2 fall outage 2010) and S/N 73 (two (2) months – until the Unit 3 fall outage in 2009).

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request 01A-VRR-1**
**Safety Relief Valve Testing**
**(Continued)**
**Page 4 of 4**

## PRECEDENTS

- In Reference 1, the NRC reviewed and approved a similar relief request for Peach Bottom Atomic Power Station, Unit 2. This relief request was approved on October 25, 2007.

- In Reference 2, the NRC reviewed and approved a relief request for Susquehanna Steam Electric Station, Units 1 and 2 to extend the main steam safety/relief valves test interval duration for individual valves to six years for the entire third 10-year Inservice Testing interval.

- In Reference 3, the NRC reviewed and approved a relief request for Nine Mile Point, Unit 2 to extend the main steam safety/relief valves test interval duration for individual valves to three refueling outages or approximately six years for the entire third 10-year Inservice Testing interval.

## REFERENCES

- Letter from H. K. Chernoff (USNRC) to C. G. Pardee (Exelon Generation Company, LLC), "Peach Bottom Atomic Power Station, Unit 2 – Request for Relief from ASME OM Code 5-Year Test Interval For Safety Relief Valve/Safety Valves, Relief Request (RR) 01A-VRR-2 (TAC NO. MD6701)," dated October 25, 2007.
- Letter from R. J. Laufer (USNRC) to B. L. Shriver (SSES), "Susquehanna Steam Electric Station Units 1 and 2 - Third 10-Year Interval Inservice Testing (IST) Program Plans," dated March 10, 2005.
- Letter from M. Banerjee (USNRC) to J.H. Mueller (NMPC), "Nine Mile Point Nuclear Station, Unit No. 2 – Alternative to American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Regarding Inservice Testing of Main Steam Safety/Relief Valves (TAC NO. MB0290)," dated April 17, 2001.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request 01A-VRR-2**
**Main Steam Safety Relief Valves (SRVs) with Automatic Depressurization System (ADS) Functions**
**Page 1 of 5**

## ASME CODE COMPONENT(S) AFFECTED

| Valve | Description | Class | Category | Unit |
|---|---|---|---|---|
| RV-2-02-071A | ADS/Safety Relief Valve A | 1 | B/C | 2 |
| RV-2-02-071B | ADS/Safety Relief Valve B | 1 | B/C | 2 |
| RV-2-02-071C | ADS/Safety Relief Valve C | 1 | B/C | 2 |
| RV-2-02-071G | ADS/Safety Relief Valve G | 1 | B/C | 2 |
| RV-2-02-071K | ADS/Safety Relief Valve K | 1 | B/C | 2 |
| RV-3-02-071A | ADS/Safety Relief Valve A | 1 | B/C | 3 |
| RV-3-02-071B | ADS/Safety Relief Valve B | 1 | B/C | 3 |
| RV-3-02-071C | ADS/Safety Relief Valve C | 1 | B/C | 3 |
| RV-3-02-071G | ADS/Safety Relief Valve G | 1 | B/C | 3 |
| RV-3-02-071K | ADS/Safety Relief Valve K | 1 | B/C | 3 |

## APPLICABLE CODE EDITION AND ADDENDA

The applicable code edition and addenda is the ASME OM Code, 2001 Edition through 2003 Addenda. The new interval begins on August 15, 2008, and will conclude on August 14, 2018.

## APPLICABLE CODE REQUIREMENTS

Mandatory Appendix I, Section I-3410(d) ("Class 1 Main Steam Pressure Relief Valves With Auxiliary Actuating Devices"), requires that:

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

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request 01A-VRR-2**
**Main Steam Safety Relief Valves (SRVs) with Automatic Depressurization System (ADS) Functions**
**(Continued)**
**Page 2 of 5**

**REASON FOR REQUEST**

Exelon Generation Company, LLC (EGC) is requesting relief from the identified code requirements on the basis that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality in accordance with 10 CFR 50.55a(a)(3)(ii). Specifically, EGC is requesting relief from the requirements contained in Mandatory Appendix I, Section I-3410(d). This section requires in-situ exercising testing of the ADS Safety Relief Valves (SRVs) at reduced power operation. This in-situ test imposes an unnecessary challenge on the valves and has been linked to valve degradation (e.g., pilot and/or valve leakage). Pilot degradation, while not a concern with respect to the ADS safety function could, if severe enough, lead to SRV set-point drift, spurious actuation, and/or failure to properly re-seat. Such events have occurred at other BWRs with similar SRVs. If any of these valves fail to re-close after testing, the plant would be placed in a LOCA condition requiring plant shutdown in accordance with Technical Specification 3.6.2.1, "Suppression Pool Average Temperature."

As originally stated in NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants", Section 4.3.4, Revision 0, and NUREG-0626, "Generic Evaluation of Feedwater Transients and Small Break Loss-of-Coolant Accidents in GE Designed Operating Plants and Near-Term Operating License Applications", the NRC staff recommends reducing the number of challenges to the ADS valves. NUREG-1482, Revision 1, Section 4.3.2.1, describes how several licensees have determined that in-situ testing of the SRV/SVs can contribute to undesirable seat leakage of the valve during subsequent plant operation.

Recent ASME Code development has recognized that unnecessary challenges to ADS valves should be avoided. Paragraph ISTC-1200 of the ASME OM 2001 Code with OMb-2003 Addenda exempts safety and relief valves from the requirements of ISTC-3700, Valve Position Verification, and ISTC-3500, Valve Testing Requirements.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request 01A-VRR-2**
**Main Steam Safety Relief Valves (SRVs) with Automatic Depressurization System (ADS) Functions**
**(Continued)**
**Page 3 of 5**

In-situ testing of ADS SRVs is not necessary because the remaining ADS and SRV tests provide an acceptable level of quality and safety. These remaining tests and the associated ADS SRV performance requirements provide adequate demonstration of ADS SRV operability as described below:

A. ASME OM Code Appendix I Setpoint/Leakage Testing

These functional tests and inspections, performed on at least 50% of the SRVs each refueling outage, verify that the valves self-actuate to open and close at the required set pressure and that leakage is within specified limits. After as-found testing is completed, disassembly and inspection is performed and the valves are refurbished. Manually exercising of the valves via the solenoid mode (i.e., ADS mode) is performed after refurbishment and as-left set pressure and seat leakage testing is performed.

B. ADS Logic System Functional Test

This test, performed once per 24 months, verifies the ability of the ADS system logic to initiate and sustain automatic operation of the ADS system during design accident conditions. The surveillance tests the logic by simulating Reactor Low Water Level and High Drywell Pressure conditions, times and verifies proper operation of the ADS Bypass time delay relay, and verifies ADS SRV solenoid valve circuit operability.

C. ADS Leak Check

This test, performed each refueling outage, verifies that the ADS instrument nitrogen accumulator leakage is low enough to ensure that there will be sufficient pneumatic pressure for design basis ADS SRVs operation.

D. SRV Cyclic Test

This test, performed each refueling outage, verifies proper operation of the ADS solenoid valves and air operator.

These combined tests described above verify the required ADS critical components performance requirements. This relief request will only eliminate the post-installation stroke test. This ADS SRV function is considered to be extremely reliable based on the simplicity of this aspect of the SRV design and is supported by PBAPS and industry performance history.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request 01A-VRR-2**
**Main Steam Safety Relief Valves (SRVs) with Automatic Depressurization System (ADS) Functions**
**(Continued)**
**Page 4 of 5**

EGC is requesting a proposed alternative in accordance with 10 CFR 50.55a(a)(3)(ii) from the above requirements to extend the test interval for S/N 178 (two (2) months – until the Unit 2 fall outage in 2010), S/N 20 (three (3) months – until the Unit 2 fall outage 2010) and S/N 73 (two (2) months – until the Unit 3 fall outage in 2009). The valves will be replaced in the identified outages.

EGC typically removes and tests either six (6) or seven (7) of thirteen (13) SRV/Safety Valves (SVs) on Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3 every refueling outage, so that all valves are removed and tested every two refueling outages. This methodology supports the ASME OM Code requirements for testing untested Class 1 pressure relief valves. After each valve is removed and tested, the SRV/SVs are overhauled to a like-new condition, and reset to an as-left nominal setpoint plus or minus 1%.

EGC utilizes an ASME Code-certified off-site vendor (Wyle Labs) to perform as-found and as-left testing of the PBAPS SRVs. EGC utilizes an ASME Code-certified off-site vendor (Target Rock Corporation) to perform disassemblies, inspections and refurbishments of the PBAPS SRVs. EGC purchase orders require Target Rock Corporation (TRC) to comply with procedures to disassemble, inspect and refurbish each SRV upon removal from service, independent of the as-found test results.

The TRC procedures identify the critical components that are required to be inspected for wear and defects, and the critical dimensions that are required to be measured during the inspection. If components are found worn or outside of the specified tolerances, the components are either reworked to within the specified tolerances, or replaced. All parts that are defective, outside-of-tolerance, and all reworked/replaced components are identified, and PBAPS is notified in writing of these components by TRC. The SRV is then re-assembled, the as-left test is performed, and the SRV is shipped by Wyle Labs to PBAPS.

At PBAPS, a procedure is used for handling and storage of Safety Related and Augmented Quality equipment (SM-AA-102, "Warehouse Operations"). The procedure requires the storage of SRV/SVs within a fire resistant, tear-resistant, weather-tight and well-ventilated building or equivalent enclosure. The procedure also states that the storage area or enclosure shall not be subject to flooding; the floor shall be paved or equal and well drained. The storage area must be provided with uniform heating and temperature control to prevent condensation and corrosion. Minimum and maximum temperatures are controlled.
Since the PBAPS does not perform setpoint testing of SRVs maintained in a controlled environment for an extended period of time prior to installation, PBAPS has provided the as-found set-pressure test results for SRVs stored in a controlled environment at PBAPS for an extended period of time, placed in service for approximately 4 years (48 months), and then tested. This information is contained in the attached Tables 1, 2 and 3.

**ATTACHMENT 5**
**Valve Relief Requests**
**Valve Relief Request 01A-VRR-2**
**Main Steam Safety Relief Valves (SRVs) with Automatic Depressurization System (ADS) Functions**
**(Continued)**
**Page 5 of 5**

## ALTERNATIVE AND BASIS FOR USE

Performance of tests A through D as described above.

## DURATION OF ALTERNATIVE

This proposed alternative will be utilized for the fourth ten-year interval.

## PRECEDENTS

- A similar relief request was previously approved for the third ten-year interval at the Peach Bottom Atomic Power Station, Units 2 and 3 as Relief Request 01A-VRR-1 in NRC Safety Evaluation Report dated October 1, 1998.
- A similar relief request was approved for Limerick Generating Station, Units 1 and 2 as Relief Request 41-VRR-6, in NRC Safety Evaluation Report dated November 28, 2000.
- A similar relief request was approved for Hope Creek Generating Station as Relief Request V-04, in NRC Safety Evaluation Report dated April 5, 2007.

**ATTACHMENT 6**
**COLD SHUTDOWN JUSTIFICATION INDEX**
**Page 1 of 1**

| **Cold Shutdown Justification No.** | Description |
|---|---|
| 01A-VCS-1 | Main Steam Inboard/Outboard Drain Valve(s) Stroke Time Testing |
| 01A-VCS-2 | Main Steam Isolation Valve(s)s Stroke Time Testing |
| 02-VCS-1 | Recirc Pump Discharge Valve(s)s Stroke Time Testing |
| 06-VCS-1 | Feedwater Long Path Iso. Valve(s)s Stroke Time Testing |
| 07B-VCS-1 | Containment Atmosphere Control CIV Stroke Time Testing |
| 10-VCS-1 | RHR Testable Injection Check Valve(s) Exercise Testing |
| 10-VCS-2 | RHR Shutdown PCIV Stroke Time Testing |
| 10-VCS-3 | RHR Injection Valve(s) Stroke Time Testing |
| 12-VCS-1 | RWCU Containment Isolation Valve(s) Stroke Testing |
| 13-VCS-1 | RCIC Steam Supply Isolation Valve(s) Stroke Time Testing |
| 13-VCS-2 | RCIC Testable Injection Check Valve(s) Exercise Testing |
| 14-VCS-1 | CS Testable Injection Check Valve(s) Exercise Testing |
| 14-VCS-2 | Core Spray Injection Isolation Valve(s) Stroke Time Testing |
| 23-VCS-1 | HPCI Steam Supply Isolation Valve(s) Stroke Time Testing |
| 23-VCS-2 | HPCI Testable Injection Check Valve(s) Exercise Testing |
| 35-VCS-1 | RBCCW Isolation Valve(s) Stroke Time Testing |
| 40B-VCS-1 | Atmosphere Control CIV Exercise Testing |
| 44A-VCS-1 | Chilled Water Drywell Supply & Return CIVs |

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**01A-VCS-1**
**Page 1 of 3**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-01A-074 | Main Steam | 1 | A | 2 |
| MO-2-01A-077 | Main Steam | 1 | A | 2 |
| MO-3-01A-074 | Main Steam | 1 | A | 3 |
| MO-3-01A-077 | Main Steam | 1 | A | 3 |

**Component Function(s):**

Main Steam line header drain inside/outside primary containment isolation valves. As such, it must be capable of closure, if open, to maintain primary containment integrity.

**JUSTIFICATION:**
During operation, these valves are normally closed which is their required safety position for containment isolation (i.e. all valves receive a containment isolation signal). Valves MO-2(3)-01A-074 are located in the drywell and valves MO-2(3)-01A-077 are located in the outboard MSIV room. The drywell and outboard MSIV room are both high radiation areas during operation and access to these areas is limited to emergencies only. In addition, the drywell is inerted with nitrogen and the outboard MSIV room is a high temperature area which results in a limited occupation time for plant personnel. Failure in the open position during testing would compromise primary containment isolation.

**Alternative Frequency:**
In lieu of quarterly exercising, these valves will be exercise and stroke time during cold shutdowns.

**References:**
In IST Interval 3, this Cold Shutdown Justification was identified as 01A-VCS-1

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**01A-VCS-2 (Continued)**
**Page 2 of 3**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| AO-2-01A-080A | Main Steam | 1 | A | 2 |
| AO-2-01A-080B | Main Steam | 1 | A | 2 |
| AO-2-01A-080C | Main Steam | 1 | A | 2 |
| AO-2-01A-080D | Main Steam | 1 | A | 2 |
| AO-2-01A-086A | Main Steam | 1 | A | 2 |
| AO-2-01A-086B | Main Steam | 1 | A | 2 |
| AO-2-01A-086C | Main Steam | 1 | A | 2 |
| AO-2-01A-086D | Main Steam | 1 | A | 2 |
| AO-3-01A-080A | Main Steam | 1 | A | 3 |
| AO-3-01A-080B | Main Steam | 1 | A | 3 |
| AO-3-01A-080C | Main Steam | 1 | A | 3 |
| AO-3-01A-080D | Main Steam | 1 | A | 3 |
| AO-3-01A-086A | Main Steam | 1 | A | 3 |
| AO-3-01A-086B | Main Steam | 1 | A | 3 |
| AO-3-01A-086C | Main Steam | 1 | A | 3 |
| AO-3-01A-086D | Main Steam | 1 | A | 3 |

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**01A-VCS-2 (Continued)**
**Page 3 of 3**

**Component Function(s):**

Main Steam Isolation Valves (MSIV) must be capable of automatic closure upon receipt of any of the Group I isolation signals. It receives its power from the safeguard AC emergency bus and the safeguard DC emergency supply source and is provided with a backup nitrogen air accumulator to ensure isolation times can be satisfied subsequent to a loss of the normal instrument nitrogen supply.

**JUSTIFICATION:**
Exercising these valves during normal operation isolates one line of steam flow to the turbine. Isolation of a main steam header would cause a severe pressure transient in the associated main steam line possibly resulting in a plant trip. Additionally, closure of an MSIV, at power, could potentially result in challenging the setpoint of the MSRV/ADS valves causing inadvertent lifting. To minimize the potential for a plant trip and safety relief valve discharge, reduction in power would be required prior to valve closure. Reducing power level to perform testing is not practical due to the impact on plant operations and power production.

**Alternative Frequency:**
*In lieu of quarterly exercising, these valves will be stroke time and fail safe closed tested on a* Cold Shutdown frequency during conditions which allow for an adequate test to be performed per ISTC-3521(c), which is also in accordance with Tech. Spec. SR 3.6.1.3.9.

**References:**
In IST Interval 3, this Cold Shutdown Justification was identified as 01A-VCS-2

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**02-VCS-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-02-53A | RECIRC | 1 | B | 2 |
| MO-2-02-53B | RECIRC | 1 | B | 2 |
| MO-3-02-53A | RECIRC | 1 | B | 3 |
| MO-3-02-53B | RECIRC | 1 | B | 3 |

**Component Function(s):**
Reactor recirculation pump A and B discharge isolation valves. The valves prevent diversion of LPCI injection flow following a LOCA.

**JUSTIFICATION:**
Closure of either of the recirculation pump discharge valves would reduce flow possibly resulting in reactor water temperature transients and reactivity transients. These transients would reduce control of power distribution and fuel usage. This could lead to decreased fuel reliability and increase the possibility of a fuel element failure. To minimize these potential effects would require a reduction in power, prior to valve closure testing, which is not practical due to the impact on plant operations and power production. Additionally, if these valves failed in the closed position during testing, the plant would be forced to operate at a reduced power level until the plant could be shutdown to facilitate valve repair.

**Alternative Frequency:**

In lieu of quarterly exercising these valves will be stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e).

**References:**

In IST Interval 3, this Cold Shutdown Justification was identified as 02-VCS-1.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**06-VCS-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-06-038A | Feedwater | 1 | A | 2 |
| MO-2-06-038B | Feedwater | 1 | A | 2 |
| MO-3-06-038A | Feedwater | 1 | A | 3 |
| MO-3-06-038B | Feedwater | 1 | A | 3 |

**Component Function(s):**
Feedwater long path recirculation isolation valves. As such, it must be capable of automatic closure, if open, upon receipt of various Group II isolation signals and reactor pressure greater than 600 psig, to maintain primary containment integrity.

**JUSTIFICATION:**
Closure of either of the recirculation pump discharge valves would reduce flow possibly resulting in reactor water temperature transients and reactivity transients. These transients would reduce control of power distribution and fuel usage. This could lead to decreased fuel reliability and increase the possibility of a fuel element failure. To minimize these potential effects would require a reduction in power, prior to valve closure testing, which is not practical due to the impact on plant operations and power production. Additionally, if these valves failed in the closed position during testing, the plant would be forced to operate at a reduced power level until the plant could be shutdown to facilitate valve repair.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e).

**References:**
In IST Interval 3, this Cold Shutdown Justification was identified as 06-VCS-1.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**07B-VCS-1**
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| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| AO-2-07B-2505 | CAD | NC | A | 2 |
| AO-2-07B-2506 | CAD | 2 | A | 2 |
| AO-2-07B-2507 | CAD | 2 | A | 2 |
| AO-2-07B-2511 | CAD | 2 | A | 2 |
| AO-2-07B-2512 | CAD | 2 | A | 2 |
| AO-2-07B-2519 | CAD | NC | A | 2 |
| AO-2-07B-2520 | CAD | NC | A | 2 |
| AO-2-07B-2521A | CAD | NC | A | 2 |
| AO-2-07B-2521B | CAD | NC | A | 2 |
| AO-3-07B-3505 | CAD | NC | A | 3 |
| AO-3-07B-3506 | CAD | 2 | A | 3 |
| AO-3-07B-3507 | CAD | 2 | A | 3 |
| AO-3-07B-3511 | CAD | 2 | A | 3 |
| AO-3-07B-3512 | CAD | 2 | A | 3 |
| AO-3-07B-3519 | CAD | NC | A | 3 |
| AO-3-07B-3520 | CAD | NC | A | 3 |
| AO-3-07B-3521A | CAD | NC | A | 3 |
| AO-3-07B-3521B | CAD | NC | A | 3 |

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**07B-VCS-1 (Continued)**
**Page 2 of 2**

**Component Function(s):**
Primary containment isolation valves must be capable of automatic closure, if open, upon receipt of a Group III isolation signal. The operator for these valves has a device in place to limit the maximum opening angle which ensures the valve is capable of automatic closure against the maximum differential pressure expected to occur during a design basis LOCA.

**JUSTIFICATION:**
This is not practical during plant operation or cold shutdowns when the atmosphere in containment is inerted. The drywell at Peach Bottom Atomic Power Station is inerted during plant operation as required by Technical Specification 3.6.3.2 to protect against a burn or explosion of hydrogen gas generated by the reactor core metal-water reaction as a result of a loss of coolant accident. Entry into the drywell during plant operation or cold shutdowns for the sole purpose of performing these leakage rate tests would require that the drywell be de-inerted. Section 3.1.1.3 of NUREG-1482, Rev. 1, identifies that de-inerting during cold shutdowns for the sole purpose of performing these tests is impractical because the time and effort needed to de-inert, re-inert and replace the lost nitrogen gas could delay the return to power.

During operation these valves are administratively closed which is their required safety position for primary containment isolation. Failure of these valves in the open position during testing would result in a compromise of primary containment isolation capability. The valves are operated just prior to start-up and shutdown for inerting/de-inerting purposes only; at which time they will be exercised and stroke timed, and fail-safe tested.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e).

**References:**
In IST Interval 3, this Cold Shutdown Justification was identified as 07B-VCS-1

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**10-VCS-1**
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| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| AO-2-10-046A | RHR | 1 | A/C | 2 |
| AO-2-10-046B | RHR | 1 | A/C | 2 |
| AO-3-10-046A | RHR | 1 | A/C | 3 |
| AO-3-10-046B | RHR | 1 | A/C | 3 |

**Component Function(s):**
These RHR injection check valves function as RCS pressure isolation valves (PIV) and primary containment isolation valves (CIV). These valves must be capable of opening to provide a path for LPCI flow to the RCS when the upstream motor operated inboard injection valve, (the applicable MO-2(3)-10-025A/B), opens. Upon automatic opening of this applicable LPSI injection MOV, the injection check valve must open when pump pressure overcomes reactor pressure and allow the passage of a minimum flow rate of 18,100 gpm. Also, the valve must be capable of closure, if open, to maintain containment integrity.

**JUSTIFICATION:**
This is not practical during plant operation or cold shutdowns when the atmosphere in containment is inerted. The drywell at Peach Bottom Atomic Power Station is inerted during plant operation as required by Technical Specification 3.6.3.2. Entry into the drywell during plant operation or cold shutdowns for the sole purpose of performing these leakage rate tests would require that the drywell be de-inerted. Section 3.1.1.3 of NUREG-1482, Rev. 1, identifies that de-inerting during cold shutdowns for the sole purpose of performing these tests is impractical because the time and effort needed to de-inert, re-inert and replace the lost nitrogen gas could delay the return to power.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**10-VCS-1 (Continued)**
**Page 2 of 2**

These testable check valves are closed during power operation. At power, these valves protect the low pressure RHR system piping from the high pressure RCS. The valves are located inside primary containment which is not accessible during operation, since containment is inerted with nitrogen and is a high radiation area. In addition, because these valves are required to be operable for primary containment isolation per Technical Specifications (T.S. 3.6.1.3), and are inaccessible during operation, failure to reclose during testing would compromise primary containment isolation capability. Failure to reclose would also create the potential for overpressurization of the RHR system piping due to the loss of one of the two required boundary barrier isolation valves between the RCS and a system of lower pressure design. These adverse conditions would require a plant shutdown to repair the valves.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be open and closed on a Cold Shutdown frequency during conditions which allow for an adequate test to be performed per ISTC-3521(c) and ISTC-3522(b).

**References:**
In IST Interval 3, this Cold Shutdown Justification was identified as 10-VCS-1.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**10-VCS-2**
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| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-10-017 | RHR | 1 | A | 2 |
| MO-2-10-018 | RHR | 1 | A | 2 |
| MO-3-10-017 | RHR | 1 | A | 3 |
| MO-3-10-018 | RHR | 1 | A | 3 |

**Component Function(s):**
RHR shutdown cooling return inside/outside primary containment isolation valves, RCS Pressure Isolation. As such, the valve must be capable of automatic closure, if open, to maintain containment integrity and to isolate the RCS. It will automatically close upon receipt of various Group II isolation signals.

**JUSTIFICATION:**
These valves are interlocked to prevent operation when Reactor Coolant System (RCS) pressure is greater than 75 psig. This interlock is provided to prevent inadvertent overpressurization of the RHR system piping from the high pressure RCS. Because RCS pressure is greater than 75 psig during power operation, these valves cannot be exercised without defeating the associated interlock which could result in overpressurization of the RHR pumps low pressure suction piping.

**Alternative Frequency:**

In lieu of quarterly exercising these valves will be exercised and stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e).

**References:**

In IST Interval 3, this Cold Shutdown Justification was identified as 10-VCS-2.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**10-VCS-3**
**Page 1 of 2**

| VALVE NUMBER | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-10-025A | RHR | 1 | A | 2 |
| MO-2-10-025B | RHR | 1 | A | 2 |
| MO-3-10-025A | RHR | 1 | A | 3 |
| MO-3-10-025B | RHR | 1 | A | 3 |

**Component Function(s):**
RHR injection isolation valves, RCS pressure isolation and primary containment isolation valves. As such, the valves must be capable of closure by remote manual switch actuation, if open, to maintain containment integrity. The valves are also designated as RCS pressure isolation valve (PIV). As such, they perform a passive safety functions in the closed position, during power operation to provide isolation between the high pressure RCS and the low pressure piping of the RHRS. Additionally, these valves must be capable of opening automatically to provide a path for LPCI flow to the RCS. The valves automatically open on receipt of a LPCI initiation signal with a reactor vessel low pressure permissive.

**JUSTIFICATION:**
Motor operated gate valves MO-2(3)-10-025A,B are normally closed during power operation and function as both outboard primary containment isolation valves and Reactor Coolant System (RCS) pressure isolation valves. A pressure isolation valve (PIV) is defined as one of two normally closed valves in series that isolate the RCS from an attached low pressure system and are designated as such in accordance with Generic Letter 87-06 and GL 89-04, Attachment 1, Position 4. For the RHR/LPCI injection line, check valve CHK-2(3)-10-046A,B and motor operated gate valve M0-2(3)-10-025A,B are the two normally closed PIVs that protect the low pressure RHR piping from the RCS.

In order to test MO-2(3)-10-025A,B quarterly, the valve must be opened during power operation resulting in only a single high to low pressure boundary barrier during the test. Additionally, because the valve is required to be operable for primary containment isolation per

Technical Specifications (T.S. 3.6.1.3), failure to reclose subsequent to opening may require a plant shutdown to repair the valve.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**10-VCS-3 (Continued)**
**Page 2 of 2**

**Alternative Frequency:**

In lieu of quarterly exercising these valves will be exercised and stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e).

**References:**

In IST Interval 3, this Cold Shutdown Justification was identified as 10-VCS-3.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**12-VCS-1**
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| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-12-015 | RWCU | 1 | A | 2 |
| MO-2-12-018 | RWCU | 1 | A | 2 |
| MO-2-12-068 | RWCU | 1 | A | 2 |
| MO-3-12-015 | RWCU | 1 | A | 3 |
| MO-3-12-018 | RWCU | 1 | A | 3 |
| MO-3-12-068 | RWCU | 1 | A | 3 |

**Component Function(s):**
RWCU containment isolation valves. As such, it must be capable of automatic closure upon receipt of the following Group II isolation signals: A) reactor low water level, C) RWCU high flow, D) RWCU non-regen.heat exchanger high temperature, and G) SLC system operation. The automatic closure function upon receipt of the Group II "A", "C" and "G" isolation signals is considered safety related. This closure capability maintains containment integrity, isolates the non-safety related RWCU piping subsequent to a line break, and prevents the removal or dilution of sodium pentaborate solution by the RWCU when the SLC system is in operation.

**JUSTIFICATION:**
These valves are normally open during power operation providing a path for RWCU supply and return flow. Stroking these valves at power requires removing the RWCU system from service. Failure of these valves in the closed position would result in an unplanned RWCU system outage and degradation in RCS chemistry. If the valves could not be repaired, the result would be an eventual plant shutdown due to unacceptable RCS chemistry. In addition, MO-2(3)-12-015 is located in the drywell which is not accessible during power full operation, since it is inerted with nitrogen and is a high radiation area. MO-2(3)-12-068 is located in the outboard MSIV room which is a high temperature, high radiation area during full power operation. A reduction in power level and possibly a plant shutdown would be required to facilitate valve repair for restoration of the RWCU system/ to an operable status.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**12-VCS-1 (Continued)**
**Page 2 of 2**

Failure of any of the above valves in the open or partially open position would result in an inoperable primary containment isolation valve. In this event, PBAPS Technical Specifications require isolation of the affected penetration. Again, this would result in a loss of RWCU system function.

This position is consistent with the guidance provided in NUREG 1482, Rev.1, Section 3.1.1, concerning the exercising of valves whose failure would cause a loss of system function.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised and stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e).

**References:**
In IST Interval 3, this Cold Shutdown Justification was identified as 12-VCS-1.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**13-VCS-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-13-015 | RCIC | 1 | A | 2 |
| MO-3-13-015 | RCIC | 1 | A | 3 |

**Component Function(s):**
RCIC steam supply isolation, inboard primary containment isolation valve. As such, the valves must be capable of automatic closure to maintain containment integrity. The valves do not receive an automatic closure signal from PCIS for containment isolation. However, the valves must be capable of automatic closure upon receipt of various Group V RCIC isolation signals.

**JUSTIFICATION:**
These valves are normally open during power operation providing an open flow path for the supply steam to the RCIC turbine. In addition, these valves are located inside primary containment which is not accessible during power operation, since it is inerted with nitrogen and is a high radiation area. Should the valve fail to reopen, subsequent to closure, the RCIC system would be rendered inoperable. This condition would require plant shutdown and entry into primary containment to facilitate valve repair for restoration of the RCIC system to an operable status.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised and stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e).

**References:**
In IST Interval 3, this Cold Shutdown Justification was identified as 13-VCS-1.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**13-VCS-2**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| AO-2-13-022 | RCIC | 1 | A/C | 2 |
| AO-3-13-022 | RCIC | 1 | A/C | 3 |

**Component Function(s):**
These RCIC injection check valves which are also RCS pressure isolation, must be capable of opening when the RCIC pump receives a start signal to provide an injection flow path to the reactor vessel via feedwater line. Also, these valves must be capable of closure subsequent to a RCIC system isolation signal or trip to provide an isolation boundary barrier between the RCS and the low pressure suction piping of the RCIC pump. This function prevents overpressurization of the RCIC pump suction piping due to high pressure leakage across the valve disk.

**JUSTIFICATION:**
These testable check valves are closed during power operation and function as the only Reactor Coolant System (RCS) pressure isolation valve for the RCIC system. Failure to reclose would create the potential for overpressurization of the RCIC system suction piping due to the loss of boundary barrier isolation between the RCS and the RCIC system.. These adverse conditions could require a plant shutdown to repair the valves.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised open and closed on a Cold Shutdown frequency during conditions which allow for an adequate test to be performed per ISTC-3521(c) and ISTC-3522(b).

**References:**
In IST Interval 3, this Cold Shutdown Justification was treated as a Cold Shutdown Justification identified as 13-VCS-2.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**14-VCS-1**
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| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| AO-2-14-013A | Core Spray | 1 | A/C | 2 |
| AO-2-14-013B | Core Spray | 1 | A/C | 2 |
| AO-3-14-013A | Core Spray | 1 | A/C | 3 |
| AO-3-14-013B | Core Spray | 1 | A/C | 3 |

**Component Function(s):**
These Core Spray injection testable check valves function as RCS pressure isolation and primary containment isolation valves must be capable of opening to provide a path for core spray flow when the upstream motor operated inboard injection valve, MO-2(3)-10-12A/B opens. The inboard injection MOV automatically opens on receipt of a CS initiation signal with a reactor vessel low pressure permissive. Upon automatic opening of the applicable MOV, the injection check valve must open when pump pressure overcomes reactor pressure and allow the passage of a minimum flow rate of 6250 gpm. Also, these valves must be capable of closure, if open, upon a loss of CS train operability to maintain containment integrity.

**JUSTIFICATION:**
This is not practical during plant operation or cold shutdowns when the atmosphere in containment is inerted. The drywell at Peach Bottom Atomic Power Station is inerted during plant operation as required by Technical Specification 3.6.3.2 to protect against a burn or explosion of hydrogen gas generated by the reactor core metal-water reaction as a result of a loss of coolant accident. Entry into the drywell during plant operation or cold shutdowns for the sole purpose of performing these leakage rate tests would require that the drywell be de-inerted. Section 3.1.1.3 of NUREG-1482, Rev. 1, identifies that de-inerting during cold shutdowns for the sole purpose of performing these tests is impractical because the time and effort needed to de-inert, re-inert and replace the lost nitrogen gas could delay the return to power.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**14-VCS-1 (Continued)**
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These valves are located inside primary containment which is not accessible during operation, since containment is inerted with nitrogen and is a high radiation area. In addition, because these valves are required to be operable for primary containment isolation per Technical Specifications (T.S. 3.6.1.3), and are inaccessible during operation, failure to reclose during testing would compromise primary containment isolation capability. Failure to reclose would also create the potential for overpressurization of the CS system piping due to the loss of one of the two required boundary barrier isolation valves between the RCS and a system of lower pressure design. These adverse conditions would require a plant shutdown to repair the valves.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised open and closed on a Cold Shutdown frequency during conditions which allow for an adequate test to be performed per ISTC-3521(c) and ISTC-3522(b).

**References:**
In IST Interval 3, this Cold Shutdown Justification was treated as a Cold Shutdown Justification identified as 14-VCS-1.

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**COLD SHUTDOWN JUSTIFICATION**
**14-VCS-2**
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| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-14-012A | Core Spray | 1 | A | 2 |
| MO-2-14-012B | Core Spray | 1 | A | 2 |
| MO-3-14-012A | Core Spray | 1 | A | 3 |
| MO-3-14-012B | Core Spray | 1 | A | 3 |

**Component Function(s):**
Core Spray injection isolation valves, RCS pressure isolation and primary containment isolation. As such, the valves must be capable of closure by remote manual switch actuation to maintain containment integrity when the CS system is unavailable.

Valves must also be capable of automatic actuation to the open position upon system initiation to provide a path for Core Spray injection flow to the vessel.

**JUSTIFICATION:**
Motor operated gate valves MO-2(3)-14-012A,B are normally closed during power operation and function as both outboard primary containment isolation valves and Reactor Coolant System (RCS) pressure isolation valves. A pressure isolation valve (PIV) is defined as one of two normally closed valves in series that isolate the RCS from an attached low pressure system and are designated as such in accordance with Generic Letter 87-06 and GL 89-04, Attachment 1, Position 4. For the Core Spray/LPCI injection line, check valves CHK-2(3)-14-013A,B and motor operated gate valves MO-2(3)-14-012A,B are the two normally closed PIVs that protect the low pressure core spray piping from the RCS.

In order to test MO-2(3)-14-012A,B quarterly, the valve must be opened during power operation resulting in only a single high to low pressure boundary barrier during the test Additionally, because the valve is required to be operable for primary containment isolation per Technical Specifications (T.S. 3.6.1.3), failure to reclose subsequent to opening may require a plant shutdown to repair the valve.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised and stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e).
**References:**
In IST Interval 3, this Cold Shutdown Justification was identified as 14-VCS-2.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**23-VCS-1**
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| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-23-015 | HPCI | 1 | A | 2 |
| MO-3-23-015 | HPCI | 1 | A | 3 |

**Component Function(s):**
HPCI steam supply isolation, inboard primary containment isolation valve. As such, the valves must be capable of automatic closure to maintain containment integrity upon receipt of certain Group IV HPCI isolation signals.

**JUSTIFICATION:**
These valves are normally open during power operation providing an open flow path for the supply steam to the HPCI turbine. In addition, these valves are located inside primary containment which is not accessible during operation, since it is inerted with nitrogen and is a high radiation area. Should the valve fail to reopen, subsequent to closure, the HPCI system would be rendered inoperable. This condition would require plant shutdown and entry into primary containment to facilitate valve repair for restoration of the HPCI system to an operable status.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised and stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e).

**References:**
In IST Interval 3, this Cold Shutdown Justification was identified as 23-VCS-1.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**23-VCS-2**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| AO-2-23-018 | HPCI | 1 | A/C | 2 |
| AO-3-23-018 | HPCI | 1 | A/C | 3 |

**Component Function(s):**
These are the HPCI injection testable check valves which act as RCS pressure isolation valves. These valves must be capable of opening when the HPCI pump receives a start signal to provide an injection flow path to the reactor vessel via feedwater line. The HPCI system has a makeup capacity of 5000 gpm which is sufficient to prevent the reactor vessel water level from decreasing to the level where the core would be uncovered during a worse case postulated small break LOCA. Also, these valves must be capable of closure subsequent to a HPCI system isolation signal or trip to provide an isolation boundary barrier between the RCS and the low pressure suction piping of the HPCI pump. This function prevents overpressurization of the HPCI pump suction piping due to high pressure leakage across the valve disk.

**JUSTIFICATION:**
Failure to reclose would create the potential for overpressurization of the HPCI system suction piping due to the loss of boundary barrier isolation between the RCS and the HPCI system. These adverse conditions would require a plant shutdown to repair the valves.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised open and closed on a Cold Shutdown frequency during conditions which allow for an adequate test to be performed per ISTC-3521(c) and ISTC-3522(b).

**References:**
In IST Interval 3, Cold Shutdown Justification was treated as a Cold Shutdown Justification identified as 23-VCS-2.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**35-VCS-1**
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| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-35-2373 | RBCCW | NC | A | 2 |
| MO-2-35-2374 | RBCCW | NC | A | 2 |
| MO-2-35-3373 | RBCCW | NC | A | 3 |
| MO-2-35-3374 | RBCCW | NC | A | 3 |

**Component Function(s):**
RBCCW to Reactor Recirc pump seal and motor coolers isolation valves. These are inboard and outboard primary containment isolation valves. As such, the valves must be capable of closure by remote manual switch actuation to maintain containment integrity.

**JUSTIFICATION:**
Exercise testing these valves during power operation would cause a loss of cooling water flow to the recirculation pump seal and motor oil coolers. The failure of any one of these valves to reopen, subsequent to closure would result in a complete loss of cooling to the associated recirculation pump, potentially resulting in damage to the pump shaft seals and motor. A damaged recirculation pump shaft seal or motor, necessitating pump shutdown, would require a reduction in reactor power in accordance with Technical Specification 3.4.1.

**Alternative Frequency:**

In lieu of quarterly exercising these valves will be exercised and stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e) when the associated recirculation pump can be removed from service.

**References:**

In IST Interval 3, this Cold Shutdown Justification was identified as 35-VCS-1.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**40B-VCS-1**
**Page 1 of 2**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| AO-2-40B-20452 | Rx Bldg Vent | NC | B | 2 |
| AO-2-40B-20453 | Rx Bldg Vent | NC | B | 2 |
| AO-2-40B-20457 | Rx Bldg Vent | NC | B | 2 |
| AO-2-40B-20458 | Rx Bldg Vent | NC | B | 2 |
| AO-2-40B-20461 | Rx Bldg Vent | NC | B | 2 |
| AO-2-40B-20462 | Rx Bldg Vent | NC | B | 2 |
| AO-2-40B-20463 | Rx Bldg Vent | NC | B | 2 |
| AO-2-40B-20464 | Rx Bldg Vent | NC | B | 2 |
| AO-3-40B-30452 | Rx Bldg Vent | NC | B | 3 |
| AO-3-40B-30453 | Rx Bldg Vent | NC | B | 3 |
| AO-3-40B-30457 | Rx Bldg Vent | NC | B | 3 |
| AO-3-40B-30458 | Rx Bldg Vent | NC | B | 3 |
| AO-3-40B-30461 | Rx Bldg Vent | NC | B | 3 |
| AO-3-40B-30462 | Rx Bldg Vent | NC | B | 3 |
| AO-3-40B-30463 | Rx Bldg Vent | NC | B | 3 |
| AO-3-40B-30464 | Rx Bldg Vent | NC | B | 3 |

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**40B-VCS-1 (Continued)**
**Page 2 of 2**

**Component Function(s):**
Reactor building ventilation supply and exhaust isolation valves must be capable of automatic closure upon receipt of an isolation signal indicating reactor vessel low water level, drywell high pressure, reactor building exhaust, or refuel floor exhaust ventilation duct high radiation. This automatic closure function ensures secondary containment isolation during post-accident conditions thereby preventing the unfiltered release of radioactive contaminants to the outside environment. Closure of this valve is also required to facilitate alignment of the refueling floor area to the standby gas treatment (SBGT) filter trains for secondary containment air filtration and to ensure that the SBGT system will function to maintain the secondary containment at a negative pressure with respect to its surroundings.

**JUSTIFICATION:**
Exercise testing these valves, with the exception of the refuel floor vent supply and exhaust dampers, during power operation would require removal of the associated supply fan from service. This would cause a high temperature condition in the steam tunnel room which is cooled by the reactor building ventilation system. After a supply fan is taken out of service, approximately 20 to 30 minutes would be required to reduce the temperature to an acceptable level in the steam tunnel rooms subsequent to returning the fan to service. If temperatures get high enough, the reactor would eventually scram. In addition, loss of secondary containment integrity would be a violation of Technical Specification 3.6 .4.1.

Exercise testing AO-2(3)0452, AO-2(3)0453, AO-2(3)0461, and AO-2(3)0462, refuel floor vent supply and exhaust dampers, at power would require the refuel floor ventilation isolation dampers to be closed. If these dampers could not be reopened, and at least one exhaust fan restarted, Technical Specification 3.3.6.2 would require the start-up of SBGT within 2 hours. If SBGT were started, the reactor building supply fans would have to be secured. Again, as stated above, this would result in elevated main steam tunnel temperatures and eventual reactor scram.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be stroke time tested and fail safe closed tested on a Cold Shutdown frequency during conditions which allow for an adequate test to be performed per ISTC-3521(c).

**References:**
In IST Interval 3, this Cold Shutdown Justification was treated as a Cold Shutdown Justification identified as 40B-VCS-1.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**44A-VCS-1**
**Page 1 of 2**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-44A-2200A | D/W Chilled Water | NC | A | 2 |
| MO-2-44A-2200B | D/W Chilled Water | NC | A | 2 |
| MO-2-44A-2201A | D/W Chilled Water | NC | A | 2 |
| MO-2-44A-2201B | D/W Chilled Water | NC | A | 2 |
| MO-3-44A-3200A | D/W Chilled Water | NC | A | 3 |
| MO-3-44A-3200B | D/W Chilled Water | NC | A | 3 |
| MO-3-44A-3201A | D/W Chilled Water | NC | A | 3 |
| MO-3-44A-3201B | D/W Chilled Water | NC | A | 3 |

**Component Function(s):**
Chilled water drywell supply and return header containment isolation valves.

**JUSTIFICATION:**
Exercising these valves during power operation could result in a trip of the drywell chillers due to a low flow condition. These chillers supply chilled water to the reactor recirculation motor air coolers and the drywell fan coolers, and if tripped require 30 minutes for restart. Interrupting chilled water flow to the recirc. motor coolers, due to a chiller trip, creates the possibility of overheating and damage to the motors which would result in taking the recirc. pump out of service. Removing a recirc. pump from service would require a reduction in power. Interrupting chill water flow to the drywell fan coolers, due to a chiller trip, could result in an increase in drywell temperatures which would cause an increase in drywell pressure. Normal operating drywell pressure is .50 to .75 psig with a Reactor Protection System trip setpoint of $^{3}$ 2.0 PSIG. Therefore, an increase in drywell temperature could result in a reactor scram.

**ATTACHMENT 7**
**COLD SHUTDOWN JUSTIFICATION**
**44A-VCS-1 (Continued)**
**Page 2 of 2**

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised and stroke time tested closed during cold shutdown if the drywell has been de-inerted for reasons other than Inservice Testing, or during refueling outages per ISTC-3521(c) and ISTC-3521(e) when the associated recirculation pump can be removed from service.

**References:**

In IST Interval 3, this Cold Shutdown Justification was identified as 44A-VCS-1.

**ATTACHMENT 8**
**REFUEL OUTAGE JUSTIFICATION INDEX**
**Page 1 of 1**

| Refueling Outage Justification No. | Description |
|---|---|
| GROJ-1 | CAD Solenoid Valve Stroke Time Testing |
| 01-ROJ-1 | Main Steam Safety/Relief Vacuum Breaker Testing |
| 02G-ROJ-1 | RRC RPV Level Indication Check Valve Exercise Testing |
| 06-ROJ-1 | Feedwater Primary Containment Isolation Valves Exercise Testing |
| 07C-ROJ-1 | CAD Control Valve Fail Safe Testing |
| 07C-ROJ-2 | CAD Supply Valve Exercise Testing |
| 07D-ROJ-1 | CAD Solenoid Valve Stroke Time Testing |
| 11-ROJ-1 | SBLC Injection Check Valve Exercise Testing |
| 13C-ROJ-1 | RCIC Check Valve Exercise Testing |
| 16B-ROJ-1 | Instrument N2 Exercise Testing |
| 16B-ROJ-2 | SGIG Supply Check Valve Exercise |
| 21-ROJ-1 | PASS Check Valve Exercise Testing |
| 23-ROJ-1 | HPCI Check Valve Exercise Testing |
| 36B-ROJ-1 | Instrument Air Supply Check Valve Exercise Testing |
| 36B-ROJ-2 | Instrument Air Supply to CAD System Check Valve Exercise Testing |

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**GROJ-1**
**Page 1 of 7**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| SV-2-07-109 | CAD | NC | A | 2 |
| SV-2-07C-4948A | CAD | NC | B | 2 |
| SV-2-07C-4948B | CAD | NC | B | 2 |
| SV-2-07C-4949A | CAD | NC | A | 2 |
| SV-2-07C-4949B | CAD | NC | A | 2 |
| SV-2-07C-4950A | CAD | NC | B | 2 |
| SV-2-07C-4950B | CAD | NC | B | 2 |
| SV-2-07C-4951A | CAD | NC | A | 2 |
| SV-2-07C-4951B | CAD | NC | A | 2 |

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**GROJ-1 (Continued)**
**Page 2 of 7**

| | | | | |
|---|---|---|---|---|
| SV-2-07D-2671A | CAD | NC | A | 2 |
| SV-2-07D-2671B | CAD | NC | A | 2 |
| SV-2-07D-2671C | CAD | NC | A | 2 |
| SV-2-07D-2671D | CAD | NC | A | 2 |
| SV-2-07D-2671E | CAD | NC | A | 2 |
| SV-2-07D-2978A | CAD | NC | A | 2 |
| SV-2-07D-2978B | CAD | NC | A | 2 |
| SV-2-07D-2978C | CAD | NC | A | 2 |
| SV-2-07D-2978D | CAD | NC | A | 2 |
| SV-2-07D-2978E | CAD | NC | A | 2 |
| SV-2-07D-2978F | CAD | NC | A | 2 |
| SV-2-07D-2978G | CAD | NC | A | 2 |

## ATTACHMENT 9
## REFUELING OUTAGE JUSTIFICATION
## GROJ-1 (Continued)
## Page 3 of 7

| | | | | |
|---|---|---|---|---|
| SV-2-07D-2980 | CAD | NC | A | 2 |
| SV-2-07E-4960A | CAD | NC | A | 2 |
| SV-2-07E-4960C | CAD | NC | A | 2 |
| SV-2-07E-4960D | CAD | NC | A | 2 |
| SV-2-07E-4961A | CAD | NC | A | 2 |
| SV-2-07E-4961B | CAD | NC | A | 2 |
| SV-2-07E-4961C | CAD | NC | A | 2 |
| SV-2-07E-4961D | CAD | NC | A | 2 |
| SV-2-63G-4966A | Drywell Torus Rad Monitor | NC | A | 2 |
| SV-2-63G-4966B | Drywell Torus Rad Monitor | NC | A | 2 |
| SV-2-63G-4966C | Drywell Torus Rad Monitor | NC | A | 2 |
| SV-2-63G-4966D | Drywell Torus Rad Monitor | NC | A | 2 |

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**GROJ-1 (Continued)**
**Page 4 of 7**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| SV-3-07-109 | CAD | NC | A | 3 |
| SV-3-07C-5948A | CAD | NC | B | 3 |
| SV-3-07C-5948B | CAD | NC | B | 3 |
| SV-3-07C-5949A | CAD | NC | A | 3 |
| SV-3-07C-5949B | CAD | NC | A | 3 |
| SV-3-07C-5950A | CAD | NC | B | 3 |
| SV-3-07C-5950B | CAD | NC | B | 3 |
| SV-3-07C-5951A | CAD | NC | A | 3 |
| SV-3-07C-5951B | CAD | NC | A | 3 |
| SV-3-07D-3671A | CAD | NC | A | 3 |
| SV-3-07D-3671B | CAD | NC | A | 3 |
| SV-3-07D-3671C | CAD | NC | A | 3 |
| SV-3-07D-3671D | CAD | NC | A | 3 |

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**GROJ-1 (Continued)**
**Page 5 of 7**

| | | | | |
|---|---|---|---|---|
| SV-3-07D-3671E | CAD | NC | A | 3 |
| SV-3-07D-3978A | CAD | NC | A | 3 |
| SV-3-07D-3978B | CAD | NC | A | 3 |
| SV-3-07D-3978C | CAD | NC | A | 3 |
| SV-3-07D-3978D | CAD | NC | A | 3 |
| SV-3-07D-3978E | CAD | NC | A | 3 |
| SV-3-07D-3978F | CAD | NC | A | 3 |
| SV-3-07D-3978G | CAD | NC | A | 3 |
| SV-3-07D-3980 | CAD | NC | A | 3 |

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**GROJ-1 (Continued)**
**Page 6 of 7**

| | | | | |
|---|---|---|---|---|
| SV-3-07E-5960A | CAD | NC | A | 3 |
| SV-3-07E-5960C | CAD | NC | A | 3 |
| SV-3-07E-5960D | CAD | NC | A | 3 |
| SV-3-07E-5961A | CAD | NC | A | 3 |
| SV-3-07E-5961B | CAD | NC | A | 3 |
| SV-3-07E-5961C | CAD | NC | A | 3 |
| SV-3-07E-5961D | CAD | NC | A | 3 |
| SV-3-63G-5966A | Drywell Torus Rad Monitor | NC | A | 3 |
| SV-3-63G-5966B | Drywell Torus Rad Monitor | NC | A | 3 |
| SV-3-63G-5966C | Drywell Torus Rad Monitor | NC | A | 3 |
| SV-3-63G-5966D | Drywell Torus Rad Monitor | NC | A | 3 |

**Component Function(s):**
These valves are located in the Containment Atmosphere Control and Drywell Torus Radiation Monitoring systems and function to provide a flow path for post-LOCA containment atmospheric dilution.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**GROJ-1 (Continued)**


**Justification:**

These non-Code class solenoid operated valves require the installation of external non-intrusive test equipment (gauss probe and acoustic sensor) to facilitate stroke timing. The valves are located in various locations within the plant, some of which involve ALARA concerns while others include personnel safety concerns (e.g. high temperature areas, and limited access areas due to elevated locations without platforms). The installation of temporary test equipment quarterly and during cold shutdowns is burdensome without a compensating increase in the level of quality and safety. Testing these valves on a refueling cycle basis is deemed adequate in providing assurance of the timely detect valve degradation.

These valves are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, are outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on their safety related function, they are included in the IST program scope as Augmented components.

**Alternate Testing:**

In lieu of quarterly exercising, these valves will be stroke time and fail safe tested on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3521(e).

**References:**

In IST Interval 3, this Refueling Justification was identified as TP-13.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**01-ROJ-1**
**Page 1 of 3**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| VRV-2-02-8096A | Main Steam | 3 | C | 2 |
| VRV-2-02-8096B | Main Steam | 3 | C | 2 |
| VRV-2-02-8096C | Main Steam | 3 | C | 2 |
| VRV-2-02-8096D | Main Steam | 3 | C | 2 |
| VRV-2-02-8096E | Main Steam | 3 | C | 2 |
| VRV-2-02-8096F | Main Steam | 3 | C | 2 |
| VRV-2-02-8096G | Main Steam | 3 | C | 2 |
| VRV-2-02-8096H | Main Steam | 3 | C | 2 |
| VRV-2-02-8096J | Main Steam | 3 | C | 2 |
| VRV-2-02-8096K | Main Steam | 3 | C | 2 |
| VRV-2-02-8096L | Main Steam | 3 | C | 2 |

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**01-ROJ-1 (Continued)**
**Page 2 of 3**

| | | | | |
|---|---|---|---|---|
| VRV-3-02-9096A | Main Steam | 3 | C | 3 |
| VRV-3-02-9096B | Main Steam | 3 | C | 3 |
| VRV-3-02-9096C | Main Steam | 3 | C | 3 |
| VRV-3-02-9096D | Main Steam | 3 | C | 3 |
| VRV-3-02-9096E | Main Steam | 3 | C | 3 |
| VRV-3-02-9096F | Main Steam | 3 | C | 3 |
| VRV-3-02-9096G | Main Steam | 3 | C | 3 |
| VRV-3-02-9096H | Main Steam | 3 | C | 3 |
| VRV-3-02-9096J | Main Steam | 3 | C | 3 |
| VRV-3-02-9096K | Main Steam | 3 | C | 3 |
| VRV-3-02-9096L | Main Steam | 3 | C | 3 |

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**01-ROJ-1 (Continued)**
**Page 3 of 3**

**Component Function(s):**
These Main Steam Safety / Relief valve tailpipe vacuum breaker prevents siphoning water from the suppression pool into the discharge piping as a result of vacuum condition which are created by the condensation of steam within the lines following SRV actuation. These valves opens to draw drywell air into the SRV discharge piping when negative pressure within the line reaches the vacuum breaker setpoint. This allows the water in the SRV discharge piping to fall to the level of the suppression pool. This function reduces the hydro-dynamic loads on the SRV discharge piping and suppression pool during subsequent SRV actuations. Also, these valves prevent flow of SRV discharge steam through the vacuum breaker line. It must remain closed during SRV operation, and reclose during subsequent SRV actuation, to prevent steam release to the drywell freespace. Valve closure capability allows steam discharge to be properly condensed below the suppression pool water level. This function is required for the primary containment pressure suppression system to accommodate the release of both controlled and uncontrolled steam discharges from the SRVs, and to maintain primary containment post-accident peak pressures and temperatures within design limits.

**JUSTIFICATION:**
Testing these vacuum breaker/check valves requires entry into primary containment. During power operation, the containment atmosphere is inert with nitrogen gas limiting access to emergencies only. In addition, high radiation levels during power operation prohibit containment entry. During cold shutdowns when the containment is not de-inerted, testing is not practical for the same reasons as stated above. In the unlikely event that the containment is de-inerted during an unplanned cold shutdown, containment access is limited to those activities necessary to place the plant in a safe condition, or return the plant to power operation.

**Alternative Frequency:**
In lieu of quarterly exercise testing, forward and reverse exercising will be verified on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per and ISTC-3522(c).

**References:**
In IST Interval 3, this Refueling Justification was identified as 01-ROJ-2.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**02G-ROJ-1**
**Page 1 of 2**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-02G-23450A | Rx and Recirc | NC | A/C | 2 |
| CHK-2-02G-23450B | Rx and Recirc | NC | A/C | 2 |
| CHK-2-02G-23451A | Rx and Recirc | NC | A/C | 2 |
| CHK-2-02G-23451B | Rx and Recirc | NC | A/C | 2 |
| CHK-2-02G-23462A | Rx and Recirc | NC | A/C | 2 |
| CHK-2-02G-23462B | Rx and Recirc | NC | A/C | 2 |
| CHK-2-02G-23463A | Rx and Recirc | NC | A/C | 2 |
| CHK-2-02G-23463B | Rx and Recirc | NC | A/C | 2 |
| CHK-3-02G-33450A | Rx and Recirc | NC | A/C | 3 |
| CHK-3-02G-33450B | Rx and Recirc | NC | A/C | 3 |
| CHK-3-02G-33451A | Rx and Recirc | NC | A/C | 3 |
| CHK-3-02G-33451B | Rx and Recirc | NC | A/C | 3 |
| CHK-3-02G-33462A | Rx and Recirc | NC | A/C | 3 |
| CHK-3-02G-33462B | Rx and Recirc | NC | A/C | 3 |
| CHK-3-02G-33463A | Rx and Recirc | NC | A/C | 3 |
| CHK-3-02G-33463B | Rx and Recirc | NC | A/C | 3 |

**Component Function(s):**
These check valves provide a supply path from the Control Rod Drive pumps to the Reactor Pressure Vessel Instrument Condensing Chambers. These valves performs an active safety function in the closed direction to prevent diversion of flow from the sensing line to the backfill system in lieu of being directed to the associated safety related RPV level instrumentation.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**02G-ROJ-1 (Continued)**
**Page 2 of 2**

**Justification:**
Exercise testing of these non-Code class check valves requires system valve isolation and the use of a test rig to introduce flow toward the check valve in the reverse direction. This increases the possibility of air infiltration to the system which could result in ECCS or RPS safety system actuation due to spurious level indications.

During refueling, air infiltration is reduced because the system is backfilled through system head chambers and the CRD system. Backfill of the system could not be performed during normal power operation because of the requirements for availability of the CRD and RPV level system at this time. Additionally, the valve movement required to perform this test increases the risk of a pressure spike on the reference leg which could result in the initiation of a plant transient.

In addition to the plant safety concerns, personnel safety concerns must be considered since the process side of these valves is normally high energy (>500 psig) during normal power operation. Personnel safety risks are considerably minimized when testing is performed during refueling outages.

Extension of the test interval to refueling outages frequency for check valves under these circumstances is acceptable per the NRC as provided in Section 4.1.6 of NUREG 1482, Rev. 1.

These valves are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, are outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on their safety related function, they are included in the IST program scope as an Augmented components.

**Alternative Frequency:**
In lieu of quarterly exercising, these valves will be exercised closed on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3521(e) and ISTC-3522(c).

**References:**
In IST Interval 3, this Refueling Justification was identified as 02G-ROJ-1

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**06-ROJ-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-06-28A(B) | Feedwater | 1 | A, C | 2 |
| CHK-02-06-96A(B) | Feedwater | 1 | A, C | 2 |
| CHK-3-06-28A(B) | Feedwater | 1 | A, C | 3 |
| CHK-03-06-96A(B) | Feedwater | 1 | A, C | 3 |

**Component Function(s):**
Feedwater system inside/outside primary containment isolation valves.

**Justification:**
The only method to verify reverse flow closure of these valves is by leak testing. Since these valves are containment isolation valves, they are leak tested during Appendix J, Type C testing at refueling. In order to leak test CHK-02(3)-028A,B manual valves located inside the primary containment must be opened. During power operation and normally at cold shutdown, the primary containment atmosphere is inerted with nitrogen, limiting access to emergencies only. In addition, during cold shutdown, the condensate system is placed in a short cycle flow path which is used to maintain proper condensate water quality. Since valves CHK-2(3)-06-096A,B must be open to provide a flow path for condensate cleanup, leak testing is not possible. Because leak testing at power is not possible, and is impractical at cold shutdown and could delay plant start-up, these valves will be leak tested at refueling.

Extension of the test interval to refueling outages for check valves verified closed by leak testing has been approved by the NRC in Section 4.1.6 of NUREG 1482, Rev.1.

**Alternate Testing:**
In lieu of quarterly exercising testing these valves in the closed direction, valves will be tested in the close direction on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3521(e) and ISTC-3522(c). Open exercising is demonstrated continuously via feedwater injection to the reactor vessel.

**References:**
In IST Interval 3, this Refueling Justification was identified as 06-ROJ-1.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**07C-ROJ-1**
**Page 1 of 2**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CV-2-07C-4954 | CAD | NC | B | 2 |
| CV-2-07C-4957 | CAD | NC | B | 2 |
| CV-3-07C-5947A | CAD | NC | B | 3 |
| CV-3-07C-5947B | CAD | NC | B | 3 |
| CV-3-07C-5954 | CAD | NC | B | 3 |
| CV-3-07C-5957 | CAD | NC | B | 3 |

**Component Function(s):**
These valves are located in the Containment Atmosphere Control system and function to provide a flow path for post-LOCA containment atmospheric dilution.

**Justification:**
These non-Code class flow control valves are located in the CAD system supply and return flow paths to and from primary containment. The valves are not provided with position indication or conventional remote manual switches and open in response to system operating conditions during dilution activities. Subsequent to opening, the valves are manually positioned to establish flow at the required rate. Proper functioning of the valves is best demonstrated by observing their ability to control flow during CAD system testing which is performed at least once each operating cycle. Monitoring proper valve operation during CAD system testing provides an adequate means of detecting valve degradation in lieu of performing Code required testing. Additionally, valves used only for system control are identified in the exclusion statement contained in ISTC-1200.

These valves are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, are outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on their safety related function, they are included in the IST program scope as Augmented components.

**Alternate Testing:**
In lieu of quarterly exercising, these valves will be fail safe tested on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3521(e) to ensure they are properly performing their control function.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**07C-ROJ-01 (Continued)**
**Page 2 of 2**

**References:**
In IST Interval 3, this Refueling Justification was identified as TP-10.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**07C-ROJ-2**
**Page 1 of 2**

| **Valve Number** | **System** | **Class** | **Category** | **Unit** |
|---|---|---|---|---|
| CHK-2-07C-40142 | CAD | NC | A, C | 2 |
| CHK-2-07C-40143 | CAD | NC | A, C | 2 |
| CHK-2-07C-40144 | CAD | NC | A, C | 2 |
| CHK-2-07C-40145 | CAD | NC | A, C | 2 |
| CHK-3-07C-50142 | CAD | NC | A, C | 3 |
| CHK-3-07C-50143 | CAD | NC | A, C | 3 |
| CHK-3-07C-50144 | CAD | NC | A, C | 3 |
| CHK-3-07C-50145 | CAD | NC | A, C | 3 |

**Component Function(s):**
These valves are located in the Containment Atmosphere Control system and function to provide a flow path for nitrogen flow to the drywell during post-LOCA conditions.

**Justification:**
These check valves are not equipped with local or remote position indication. The only way to verify closure of these valves is by performing a leak test, or by using a pressurization test method. Both methods require the installation of test equipment.

Extension of the test interval to refueling outages for check valves verified closed by leak testing has been approved by the NRC in Section 4.1.6 of NUREG 1482, Rev.1.

These valves are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, are outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on their safety related function, they are included in the IST program scope as Augmented components.

**Alternate Testing:**
In lieu of quarterly exercising these valves will be exercised in the close direction on a refueling outage frequency during performance of 10CFR50 App. J Type C testing.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**07C-ROJ-02**
**Page 2 of 2**

**References:**
In IST Interval 3, this Refueling Justification was identified as 07C-ROJ-1.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**07D-ROJ-1**
**Page 1 of 2**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| SV-2-07D-2671F | CAD | NC | A | 2 |
| SV-3-07D-3671F | CAD | NC | A | 3 |

**Component Function(s):**
These normally open solenoid operated valve are located in the CACS sample line from the torus high volume purge exhaust line to the CAD/CAC analyzer. The valves have no safety related function in the open position. Their normally open position allows representative sampling of the purge exhaust air to monitor oxygen concentration. This non-safety related function is not required for accident mitigation. These valves perform an active safety function in the closed position to maintain primary containment integrity. They must be capable of automatic closure, if open, upon receipt of a Group III isolation signal.

**Justification:**
SV-2(3)671F are normally open solenoid operated valves located in the CACS sample line from the torus high volume purge exhaust line to the CAD/CAC analyzer. The valves have no safety function in the open position. Their normally open position allows representative sampling of the purge exhaust air to monitor oxygen concentration. This non-safety related function is not required for accident mitigation. The valves perform an active safety function in the closed position to maintain primary containment integrity. They must be capable of automatic closure, if open, upon receipt of a Group III isolation signal. The valves receive power from a safeguard ac emergency power source and fail to the closed position upon loss of power.

Due to their location, testing these valves presents personnel safety and ALARA concerns (i.e., the reactor building on top of the torus is a contaminated area lacking a platform from which to gain access safely). These solenoid operated valves require the installation of external non-intrusive test equipment (gauss probe and acoustic sensor) locally to facilitate stroke timing. The installation of temporary test equipment quarterly and during cold shutdowns is burdensome without a compensating increase in the level of quality and safety. Testing the valves at least once each operating cycle provides adequate assurance of operational readiness.

SV-2(3)671F are exercised during performance of 10 CFR 50 Appendix B leak testing. This testing verifies the valves will perform their required safety function (containment isolation). The valves are also exercised during performance of routine CAD/CAC system testing. This additional testing provides added assurance of operational readiness.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**07D-ROJ-1 (Continued)**
**Page 2 of 2**

These valves are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, are outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on their safety related function, they are included in the IST program scope as Augmented components.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be stroke time tested and fail safe closed tested on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3521(e).

**References:**
In IST Interval 3, this Refueling Justification was identified as 07-ROJ-1.

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**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**11-ROJ-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-11-16 | SBLC | 1 | A, C | 2 |
| CHK-2-11-17 | SBLC | 1 | C | 2 |
| CHK-3-11-16 | SBLC | 1 | A, C | 3 |
| CHK-3-11-17 | SBLC | 1 | C | 3 |

**Component Function(s):**
Standby liquid control injection checks - inside/outside primary containment.

**Justification:**
Verifying forward flow operability requires firing a squib valve and injecting water into the Reactor Coolant System using the standby liquid control pumps. Injection of borated water during operation will result in a reduction in power. Additionally, introduction of relatively colder water into the Reactor Coolant System will cause a thermal cycle (shock) which can result in the premature failure of system components (piping). Since the firing of squib valves requires valve disassembly to replace valve internals, firing should be minimized. Therefore, forward flow testing of the check valves will be performed during SLC injection testing as required by Technical Specifications (T.S. 3.1.7). Also, firing squib valves should be minimized as mentioned above, and replacing squib valve internals at cold shutdown could delay plant start-up.

**Alternative Frequency:**
In lieu of quarterly exercising, open exercise for CHK-2(3)-11-016 and CHK-2(3)-11-017 will be verified on a Refueling Cycle frequency during SBLC injection testing.

**References:**
In IST Interval 3, this Refueling Justification was identified as 11-ROJ-1.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**13C-ROJ-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-13C-38 | RCIC | 2 | C | 2 |
| CHK-2-13C-50 | RCIC | 2 | C | 2 |
| CHK-3-13C-38 | RCIC | 2 | C | 3 |
| CHK-3-13C-50 | RCIC | 2 | C | 3 |

**Component Function(s):**
RCIC Barometric Condenser Vacuum Pump Discharge Check Valve To The Torus. [CHK-2(3)-13C-38].
RCIC Turbine Exhaust Primary Containment Isolation [CHK-2(3)-13C-050].

**Justification:**
These check valves are not equipped with local or remote position indication. The only way to verify closure of these valves is by performing a leak test, or by using a pressurization test method. Both methods require removing RCIC from service to install test equipment.
The RCIC system is a high pressure cooling system which provides an additional margin of safety to the reactor during accidents and transients which do not fully depressurize the reactor. In order to support maximum availability of this reactor cooling safety system, testing will be deferred to refueling outages when the system is not required for reactor coolant injection.
Extension of the test interval to refueling outages for check valves verified closed by leak testing has been approved by the NRC in Section 4.1.6 of NUREG 1482, Rev. 1.

**Alternative Frequency:**
CHK-2(3)-13C-38 has no safety function in the open direction but is implicitly tested quarterly as part of the skid during RCIC surveillance testing. Testing in the close direction will not be performed quarterly.

Open exercising for CHK-2(3)-13C-50 is performed quarterly during the RCIC surveillance test.

In lieu of quarterly exercising, valves will be exercised in the close direction on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3522(c).

**References:**
In IST Interval 3, this Refueling Justification was identified as 13C-ROJ-1.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**16B-ROJ-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-0-16B-11157 | Instrument N2 | NC | C | Common |

**Component Function(s):**
Containment Atmospheric Dilution (CAD) Inerting System Alternating Supply To SGIG System Check Valve.

**Justification:**
The Safety Grade Instrument Gas System (SGIG) is the backup, safety related system to the non-safety related Instrument Air System. The above referenced non-Code class check valve is a non-redundant valve which opens to provide an alternate supply path for nitrogen from the CAD tank through the electric vaporizers to the pneumatic supply of various containment vent and purge valves. This alternate supply path is designed for post accident conditions when the normal supply path may not have the capacity to provide the required nitrogen flow. Verification of forward exercising of CHK-0-16B-11157 requires lowering or isolating instrument air pressure and manually valving out the normal SGIG supply through the atmospheric vaporizer, thereby leaving the alternate supply as the only remaining source of nitrogen to the containment vent and purge valves. Because the SGIG System is a common system, failure of the check valve to open during testing at power would result in a loss of the primary containment vent and purge function for both Units 2 & 3. The SGIG System does not realign automatically to the normal supply path; restoration requires manual valve operation.

This position is consistent with the guidance contained in NURFG 1482, Rev. 1 section 2.4.5.

This valve is located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, is outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on its safety related function, it is included in the IST program scope as an Augmented component.

**Alternative Frequency:**
In lieu of quarterly exercising in the open direction, valve will be exercised in the open direction on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3522(c).

**References:**
In IST Interval 3, this Refueling Justification was identified as TP-6.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**16B-ROJ-2**
**Page 1 of 2**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-16B-23342A, B | SGIG | NC | C | 2 |
| CHK-2-16B-23344A, B, C, D, E, F,G, H, J | SGIG | NC | C | 2 |
| CHK-2-16B-23346 | SGIG | NC | C | 2 |
| CHK-2-16B-23348 | SGIG | NC | C | 2 |
| CHK-2-16B-23350 | SGIG | NC | C | 2 |
| CHK-2-16B-23352 | SGIG | NC | C | 2 |
| CHK-2-16B-23354 | SGIG | NC | C | 2 |
| CHK-2-16B-23356 | SGIG | NC | C | 2 |
| CHK-3-16B-33342A, B | SGIG | NC | C | 3 |
| CHK-3-16B-33344A, B, C, D, E, F,G, H, J | SGIG | NC | C | 3 |
| CHK-3-16B-33346 | SGIG | NC | C | 3 |
| CHK-3-16B-33348 | SGIG | NC | C | 3 |
| CHK-3-16B-33350 | SGIG | NC | C | 3 |
| CHK-3-16B-33352 | SGIG | NC | C | 3 |
| CHK-3-16B-33354 | SGIG | NC | C | 3 |
| CHK-3-16B-33356 | SGIG | NC | C | 3 |

**Component Function(s):**
SGIG system supply check valves to various CAD system air operated valves and valve boot seals.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**16B-ROJ-02 (Continued)**
**Page 2 of 2**

**Justification:**
The Safety Grade Instrument Gas System (SGIG) is the backup, safety related supply source to various air operated valves in the event the non-safety related instrument air system is lost or unavailable. Exercising these non-Code class check valves in the forward direction at power or during cold shutdown would require depressurizing instrument air pressure and establishing the supply path from SGIG as the pneumatic supply source for exercising the associated air operated valves. Depressurizing the instrument air is required to facilitate simultaneously reverse exercising the adjacent instrument air series check valves. This activity is not practical during power operation as the labor intensive activities associated with testing are burdensome without a commensurate increase in the level of valve reliability. Exercising during cold shutdown could delay plant restart should the adjacent instrument air series check valves require disassembly subsequent to failure of their reverse exercise test as a unit. The valves will be exercised in the forward direction, simultaneously with reverse exercising the adjacent instrument air series check valves, during refueling outages.

This valve is located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, is outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on its safety related function, it is included in the IST program scope as an Augmented component.

**Alternative Frequency:**
In lieu of quarterly exercising in the open direction, the valves will be exercised in the open direction, simultaneously with close exercising the adjacent instrument air series check valves on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3522(c).

**References:**
In IST Interval 3, this Refueling Justification was identified as Technical Position TP-7.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**21-ROJ-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-21-40252 | PASS | 2 | C | 2 |
| CHK-3-21-50252 | PASS | 2 | C | 3 |

**Component Function(s):**
These normally closed check valves are in the Post Accident liquid sample return line to the suppression pool check valves is located in a line which penetrates primary containment and is a designated containment isolation valve The line terminates below minimum suppression pool water level which provides a water seal between the containment free space and the outside environment.

**Justification:**
These check valves are not equipped with local or remote position indication. The only way to verify closure of these valves is by performing a leak test, or by using a pressurization test method. Both methods require the installation of test equipment.

Extension of the test interval to refueling outages frequency for check valves under these circumstances is acceptable per the NRC as provided in Section 4.1.6 of NUREG 1482, Rev.1.

The testing of these valves is considered beyond the scope of 10 CFR 50.55.a due to its categorization of "C" which indicates that seat leakage is inconsequential to the valve performing its design safety function. This is consistent with the NRC's recommendation and discussion provided in NUREG-1482, Rev. 1, Section 4.4.1. However, because the valve provides a backup isolation capability to the suppression pool water seal, it shall be included in the IST program as Category "C" and tested pursuant to the requirements of ISTC during refueling outages.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised closed on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3522(c).

**References:**
In IST Interval 3, this Refueling Justification was identified as 21-ROJ-1.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**23-ROJ-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-23C-56 | HPCI | 2 | C | 2 |
| CHK-2-23C-65 | HPCI | 2 | C | 2 |
| CHK-3-23C-56 | HPCI | 2 | C | 3 |
| CHK-3-23C-65 | HPCI | 2 | C | 3 |

**Component Function(s):**
HPCI Turbine Exhaust Drain To Suppression Pool Check Valve[CHK-2(3)-23C-56].
HPCI Turbine Exhaust Primary Containment Isolation [CHK-2(3)-23C-65].

**Justification:**
These check valves are not equipped with local or remote position indication. The only way to verify closure of these valves is by performing a leak test, or by using a pressurization test method. To perform either of these tests, 1) the system must be blocked which renders the HPCI system inoperable, and 2) test equipment must be installed. For these reasons, quarterly testing during power operation is not practicable, and testing during cold shutdown could delay plant startup due to the necessity of utilizing temporary test equipment.

The HPCI system is designed to pump water into the reactor while it is fully pressurized and provides emergency core cooling in the event of a small break LOCA which does not cause a rapid depressurization of the reactor. In order to support maximum availability of this ECCS, testing will be deferred until refueling when the system is not required for high pressure coolant injection capability and no impact exists on plant startup activities.

Extension of the test interval to refueling outages for check valves verified closed by leak testing has been approved by the NRC in Section 4.1.6 of NUREG 1482, Rev.1.

**Alternative Frequency:**
In lieu of quarterly exercising, these valves will be in the close direction on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3522(c).

**References:**
In IST Interval 3, this Refueling Justification was identified as 23-ROJ-1.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**36B-ROJ-1**
**Page 1 of 1**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-36B-87A, B, C, D | Instrument Air | NC | A, C | 2 |
| CHK-3-36B-87A, B, C, D | Instrument Air | NC | A, C | 3 |

**Component Function(s):**
Main steam isolation valve accumulator makeup supply check valves.

**Justification:**
These non-Code class check valves are located in the instrument air supply lines to the MSIV accumulators. Reverse exercising verification requires isolating and venting the associated instrument air supply header and observing the accumulator pressure. Since pressure indication is not provided for the accumulators, a test gauge must be installed on a test connection which is located inside the steam tunnel. The steam tunnel is a high radiation and high temperature area during power operation and access is limited to emergencies only. Therefore, quarterly testing during power operation is not practicable and testing during cold shutdown could delay plant startup due to the necessity of utilizing temporary equipment.

Extension of the test interval to refueling outages for check valves verified closed by leak testing has been approved by the NRC in Section 4.1.6 of NUREG 1482 Rev.1.

This valve is located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, is outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on its safety related function, it is included in the IST program scope as an Augmented component.

**Alternative Frequency:**
In lieu of quarterly exercising in the close direction, valves will be exercised in the close direction o on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3521(e) and ISTC-3522(c).

**References:**
In IST Interval 3, this Refueling Justification was identified as TP-8.

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**36B-ROJ-2**
**Page 1 of 2**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2(3)-36B-4(5)4688 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)4689 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)4692 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)4693 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)4694 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)4695 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)4747 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)4749 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)4751 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)4753 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)6591 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)6594 | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)6598A, B, C, D, E, F,G, H, J | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)6599A, B, C, D, E, F,G, H, J | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)6607A, B | Instrument Air | NC | C | 2, 3 |
| CHK-2(3)-36B-4(5)6608A, B | Instrument Air | NC | C | 2, 3 |

**ATTACHMENT 9**
**REFUELING OUTAGE JUSTIFICATION**
**36B-ROJ-2**
**Page 2 of 2**

**Component Function(s):**
Instrument air supply check valves to various CAD system air operated valves and valve boot seals.

**Justification:**
These non-Code class check valves are located in instrument air supply lines to various air operated valves in the CAD system. The valves are installed as a series pair and must be capable of closure in the event the non-safety related instrument air system is lost or unavailable. Plant design does not provide test taps for individual valve testing. However, the valves can be tested as a unit by depressurizing the upstream instrument air piping while simultaneously applying pressure from the SGIG system. This activity is not practical during power operation as the labor intensive activities associated with testing are burdensome without a commensurate increase in the level of valve reliability. Exercising during cold shutdown could delay plant restart should the series check valves require disassembly subsequent to failure of their reverse exercise test as a unit. The instrument air series check valves will be exercised in the reverse direction simultaneously with forward exercising the adjacent SGIG supply check valve during refueling outages.

These valves are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, is outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on the safety related function of each valve, valves are included in the IST program scope as Augmented components.

**Alternative Frequency:**
In lieu of quarterly exercising in the close direction, valves will be exercised as a unit in the close direction on a Refueling Cycle frequency during conditions which allow for an adequate test to be performed per ISTC-3522(c).

**References:**
In IST Interval 3, this Refueling Justification was identified as TP-9.

## ATTACHMENT 10
## STATION TECHNICAL POSITION INDEX
## Page 1 of 1

| **Technical Position No.** | **Description** |
|---|---|
| TP-1 | Bi-directional Testing of Check Valves with Non Safety Positions |
| TP-2 | Passive Valves without Test Requirements |
| TP-3 | Fail Safe Testing of Valves |
| TP-4 | Manual Valve Exercise Frequency |
| TP-5 | Check Valves in Regular Use |
| TP-6 | Categorization of IST Pumps (Group A or B) |
| TP-7 | Check Valve Condition Monitoring |
| TP-8 | Check Valve Sample Disassembly and Inspection |
| TP-9 | Thermal Relief Valves |
| TP-10 | Classification of Skid Mounted Components |
| TP-11 | Motor Operated Valve OMN-1 Code Case Position |
| TP-12 | Testing of Power Operated Valves with Both Active and Passive Safety Functions. |
| TP-13 | Exercising Service Water Valves |
| TP-14 | ECW Component Testing |
| TP-15 | Exercising High Pressure Service Valves (HPSW) |
| TP-16 | Remote Position Indication |
| TP-17 | Containment Isolation Check Valve Exercise Testing |
| TP-18 | ADS and MSIV Accumulator Supply Check Valve Exercise Testing |
| TP-19 | Backup Instrument N2 to ADS Exercise Testing |

## ATTACHMENT 11
## STATION TECHNICAL POSITIONS

**Attachment 11**
**Technical Position TP-1**
**Page 1 of 3**

## Bi-directional Testing of Check Valves with Non-Safety Positions

### Purpose

The purpose of this Technical Position is to establish the station position for the verification of the non-safety direction exercise testing of check valves by normal plant operations.

### Applicability

This Technical Position is applicable to those valves which are included in the Inservice Testing Program that are required to be exercised tested in their non-safety related direction of flow. This position applies to those check valves required to be tested in accordance with Subsection ISTC (ASME OM Code 2001 Edition through 2003 Addenda) and Appendix II. This Technical Position does not apply to testing of the safety function (direction) of check valves included in the Inservice Testing Program.

### Background

The ASME OM Code 2001 Edition through 2003 Addenda section ISTC-3550, "Valves in Regular Use", states:

> "Valves that operate in the course of plant operation at a frequency that would satisfy the exercising requirements of this Subsection need not be additionally exercised, provided that the observations otherwise required for testing are made and analyzed during such operation and recorded in the plant record at intervals no greater than specified in ISTC-3510."

Section ISTC-3510 requires that check valves shall be exercised nominally every 3 months with exceptions (for extended periods) referenced.

Section ISTC-5221(a)(2) states:

> "Check valves that have a safety function in only the open direction shall be exercised by initiating flow and observing that the obturator has traveled to either the full open position or to the position required to perform its intended function(s) (see ISTC-1100), and verify closure."

**Attachment 11**
**Technical Position TP-1 (Continued)**
**Page 2 of 3**

Section ISTC-5221(a)(3) states:

"Check valves that have a safety function in only the close direction shall be exercised by initiating flow and observing that the obturator has traveled [to] at least the partially open position,[3] and verify that on cessation or reversal of flow, the obturator has traveled to the seat."

"[3] The partially open position should correspond to the normal or expected system flow."

Normal and/or expected system flow may vary with plant configuration and alignment. Peach Bottom Operations staff is trained in recognizing normal plant conditions. For check valves that have a non-safety related function in the open position, Operator judgment has been deemed acceptable in determining whether or not the normal or expected flow rates for plant operation has been obtained. For check valves that have a non-safety related function in the closed position, Operator judgment is also deemed acceptable in determining whether or not flow has subsidence has occurred resulting in obturator travel to the closed position.

Section 2.1, " Compliance Considerations" of NUREG 1482, Rev.1 states:

"Sections 4.05 or 5.5 of the Standard Technical Specifications, as applicable, together with the corresponding plant-specific technical specifications, state that IST of ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with the OM Code and applicable addenda as required by 10 CFR 50.55a."

Section 2.2.3, "Testing of Non-Code Components" of NUREG 1482, Rev.1 states:

"An IST program is also a reasonable vehicle to periodically demonstrate the operability of pumps and valves that are not covered by the Code. Thus, if a licensee chooses to include non-Code components in its ASME Code IST program (or some other licensee-developed testing program) and, as a result, is unable to meet certain Code provisions, the regulations (10 CFR 50.55a) do not require the licensee to submit a relief request to the NRC...

Therefore, while 10 CFR 50.55a delineates the testing requirements for ASME Code Class 1, 2, and 3 pumps and valves, licensees should not limit their inservice testing to only those pumps and valves that are covered by 10 CFR 50.55a...

Licensees may implement deviations from the Code for non-Code components without NRC review and approval, and need not document such deviations as "relief requests." Nonetheless, a notation in the licensee's IST program document would help to identify the deviations and clarify that they relate to non-Code components."

**Attachment 11**
**Technical Position TP-1 (Continued)**
**Page 3 of 3**

**Position**

Peach Bottom will verify the non-safety position of ASME Class 1, 2 and 3 check valves included in the Inservice Testing Program. Peach Bottom will not verify the non-safety position of non ASME Class 1, 2 and 3 check valves included in the Inservice Testing Program as Augmented components. In lieu of a dedicated surveillance to perform the non-safety direction testing, the following alternate verifications may be performed as follows:

1. An appropriate means shall be determined which establishes the method for determining the open/closed non-safety function of the check valve during normal operations. The position determination may be by direct indicator, or by other positive means such as changes in system pressure, flow rate, level, temperature, seat leakage, etc. This determination shall be documented in the respective Condition Monitoring Plan for the specific check valve group. For check valves included in the Inservice Testing Program and not included in the Condition Monitoring Plan, this determination shall be documented in the IST Bases Document for the specific check valve group.

2. Observation and analysis of plant processes that a check valve is satisfying its non-safety direction function may be used. For an example, consider a check valve that has a safety function only in the closed direction and normally provides a flow path to maintain plant operations. If this check valve does not open to pass flow when required, an alarm or indication would identify a problem to the operator. The operator would respond by taking the appropriate actions. A Condition Report would then be generated for the abnormal plant condition which would identify the check valve failure.

3. Observation and analysis of plant logs and other records may be an acceptable method for verifying a check valves non-safety direction function verification during normal plant operations.

The open/closed non-safety function shall be recorded at a frequency as required by ISTC-3510, which is nominally every 3 months, (with exceptions as allowed), in plant records such as the Peach Bottom Station Operating Logs, Electronic Rounds, chart recorders, automated data loggers, etc. The safety function direction testing requires a Quality Record in the form of a surveillance test. Records as indicated above in 1 through 3 are satisfactory only for the non-safety direction testing. A Condition report shall be generated for any issues regarding check valve operability.

**Justification**

This Technical Position establishes the acceptability of the methods used in determining the ability of a valve to satisfy its non-safety function. Through normal plant system operation and Operator actions, a valve's non-safety function is verified through either observation or analysis of plant records and logs. Additionally, the recording of parameters which demonstrate valve position will take place at a frequency to meet the frequency requirements of ISTC-3510. These actions collectively demonstrate the non-safety position of Inservice Testing Program check valves in regular use as required by ISTC-3550.

**Attachment 11**
**Technical Position TP-2**
**Page 1 of 1**

## Passive Valves Without Test Requirements

### Purpose

The purpose of this Technical Position is to establish the station position for valves which perform a passive safety function for which there is no testing required in accordance with ISTC.

### Applicability

This Technical Position is applicable to valves that perform a passive function in accordance with ISTA-2000 and do not have inservice testing requirements per Table ISTC-3500-1. This position is typical of Category B, passive valves that do not have position indication.

'An example is a manual valve which must remain in its normal position during an accident, to perform its intended function.'

Typically, manual valves that perform a safety function are locked in their safety position and administratively controlled by Peach Bottom site procedures. These valves would be considered passive. If they do not have remote position indicating systems and are categorized as B, they would not be subjected to any test requirements in accordance with Table ISTC-3500-1.

### Position

The Peach Bottom Inservice Testing Program, Valve Tables - Attachment 15, will not list valves that meet the following criteria.

- The valve is categorized B (seat leakage in the closed position is inconsequential for fulfillment of the valves' required function(s)) in accordance with ISTC-1300.
- The valve is considered passive (valve maintains obturator position and is not required to change obturator position to accomplish the required function(s)) in accordance with ISTA-2000.
- The valve does not have a remote position indicating system which detects and indicates valve position.

### Justification

Valves that meet this position will not be listed in the Peach Bottom Inservice Testing Program, Valve Tables - Attachment 15, however, the basis for categorization and consideration of active/passive functions shall be documented in the IST Program Basis Document.

**Attachment 11**
**Technical Position TP-3**
**Page 1 of 1**

## Fail Safe Testing of Valves

### Purpose

The purpose of this Technical Position is to establish the station position for fail safe testing of valves in conjunction with stroke time exercising or position indication testing.

### Applicability

This Technical Position is applicable to valves with fail-safe actuators required to be tested in accordance with ISTC-3560.

### Background

The ASME OM Code 2001 Edition through 2003 Addenda section ISTC-3560 requires;

> "Valves with fail-safe actuators shall be tested by observing the operation of the actuator upon loss of valve actuating power in accordance with the exercising frequency of ISTC-3510."

Section ISTC-3510 states;

> "Active Category A, Category B, and Category C check valves shall be exercised nominally every 3 months..."

### Position

In cases where the valve operator moves the valve to the open or closed position following de-energizing the operator electrically, by venting air, or both, the resultant valve exercise will satisfy the fail safe test requirements and an additional test specific for fail safe testing will not be performed.

Peach Bottom will also use remote position indication as applicable to verify proper fail-safe operation, provided that the indication system for the valve is periodically verified in accordance with ISTC-3700.

### Justification

Fail Safe Testing tests the ability of the fail safe mechanism of the valves to go to its fail safe position. Whether or not the actuation of this fail safe mechanism is due to Operator Action or failure of either the valves air or electric power source, the resultant action of the valve will be the same. Therefore, the verification of a valve's fail safe ability can be taken credit for with the performance of either a stroke time exercising or position indication test.

**Attachment 11**
**Technical Position TP-4**
**Page 1 of 2**

## Manual Valve Exercise Frequency

### Purpose

The purpose of this Technical Position is to establish the station position for the frequency of exercising those manual valves which are required to be exercised.

### Applicability

This Technical Position is applicable to the manual valves included in the Inservice Testing Program.

### Background

The ASME OM Code 2001 Edition through 2003 Addenda section ISTC-3540 states;

> "Manual valves shall be full-stroke exercised at least once every 5 years, except where adverse conditions[2] may require the valve to be tested more frequently to ensure operational readiness."
>
> [2]Harsh service environment, lubricant hardening, corrosive or sediment laden process fluid, or degraded valve components are some examples of adverse conditions.

In 10CFR 50.55a(b)(3)(vi), the NRC stated the following with regards to manual valve exercise frequency;

> "Manual valves must be exercised on a 2-year interval rather that the 5-year interval specified in paragraph ISTC-3540 of the 1999 Addenda through the latest edition and addenda incorporated by reference in paragraph (b)(3) of this section, provided that adverse conditions do not require more frequent testing."

Which as written, includes the 2001/2003 Addenda of the ASME Code.

**Attachment 11**
**Technical Position TP-4 (Continued)**
**Page 2 of 2**
**Position**

Peach Bottom will perform exercising of manual valves within the scope of the IST Program at a frequency not to exceed 2 years.

**Justification**

The NRC Rule Change has been adopted for the frequency of exercising manual valves at least once every 2 years. This interval is more frequent than required by the Edition of the Code used by Peach Bottom, therefore no other justification is required.

**Attachment 11**
**Technical Position TP-5**
**Page 1 of 2**

## Check Valves in Regular Use

### Purpose

The purpose of this Technical Position is to establish the station position for check valves that are in regular use during normal plant operations.

### Applicability

This Technical Position is applicable to check valves that are capable of being demonstrated to be open during routine operations.

### Background

The ASME OM Code 2001 Edition through 2003 Addenda section ISTC-3550, "Valves in Regular Use", states:

> "Valves that operate in the course of plant operation at a frequency that would satisfy the exercising requirements of this Subsection need not be additionally exercised, provided that the observations otherwise required for testing are made and analyzed during such operation and recorded in the plant record at intervals no greater than specified in ISTC-3510."

Section ISTC-3510 requires that check valves shall be exercised nominally every 3 months with exceptions (for extended periods) referenced.

Normal and/or expected system flow may vary with plant configuration and alignment. The open "safety function" of a check valve typically requires a specified design accident flow rate. For these subject valves, the normal system flow is above the design accident flow rates. Since the Peach Bottom Operations staff is trained so as to be able to recognize normal plant conditions, Operator judgment has been deemed acceptable for the purpose of determining check valve open demonstration by observing either normal or expected flow rates for the plant operating condition.

### Position

Peach Bottom will verify the open position of these subject check valves by observing plant logs, computer systems, strip chart recorders, etc., during normal plant operations. The open/closed safety function shall be recorded at a frequency as required by ISTC-3510, which is nominally every 3 months, (with exceptions as provided), in plant records such as Peach Bottom Operating Logs, Electronic Rounds, chart recorders, automated data loggers, etc.

**Attachment 11**
**Technical Position TP-5 (Continued)**
**Page 2 of 2**

## Justification

When normal plant systems operation and operator actions which provide sufficient observational evident of the check valves ability to fulfill its safety function as defined above are available, these operational observations may be used to satisfy the valves open safety function verification. These operational observations when observed and recorded at a frequency which satisfies the frequency prescribed by ISTC-3510 are deemed sufficient for the purpose of the Inservice Testing Program and are judged to meet the requirements of ISTC-3550.

**Attachment 11**
**Technical Position TP-6**
**Page 1 of 3**

## Categorization of IST Pumps (Group A or B)

## Position

The Peach Bottom Atomic Power Station has categorized the pumps which are required to be included in the Inservice Testing Program[a] as either Group A and/or B in accordance with the requirements of ISTB-2001/2003 Addenda.

Group A pumps are pumps that are operated continuously or routinely during normal operation, cold shutdown, or refueling operations. The following pumps are categorized as Group A at the Peach Bottom Atomic Power Station:

| Pump Component # | Class | Group | Type | Function |
|---|---|---|---|---|
| 2AP035 | 2 | A | Centrifugal | RHR Pump "2A" |
| 2AP042 | 3 | A | Vertical Line Shaft | HPSW Pump "2A" |
| 2BP035 | 2 | A | Centrifugal | RHR Pump "2B" |
| 2BP042 | 3 | A | Vertical Line Shaft | HPSW Pump "2B" |
| 2CP035 | 2 | A | Centrifugal | RHR Pump "2C" |
| 2CP042 | 3 | A | Vertical Line Shaft | HPSW Pump "2C" |
| 2DP035 | 2 | A | Centrifugal | RHR Pump "2D" |
| 2DP042 | 3 | A | Vertical Line Shaft | HPSW Pump "2D" |
| 3AP035 | 2 | A | Centrifugal | RHR Pump "3A" |
| 3AP042 | 3 | A | Vertical Line Shaft | HPSW Pump "3A" |
| 3BP035 | 2 | A | Centrifugal | RHR Pump "3B" |
| 3BP042 | 3 | A | Vertical Line Shaft | HPSW Pump "3B" |
| 3CP035 | 2 | A | Centrifugal | RHR Pump "3C" |
| 3CP042 | 3 | A | Vertical Line Shaft | HPSW Pump "3C" |
| 3DP035 | 2 | A | Centrifugal | RHR Pump "3D" |
| 3DP042 | 3 | A | Vertical Line Shaft | HPSW Pump "3D" |

[a] – Pumps classified as “Skid Mounted” per ISTB-1200(c) are not required to be tested in accordance with ISTB, so are therefore not assigned a “Group”.

**Attachment 11**
**Technical Position TP-6 (Continued)**
**Page 2 of 3**

Group B pumps are those pumps in standby systems that are not operated routinely except for testing. The following pumps are categorized as Group B at the Peach Bottom Atomic Power Station:

| Pump Component # | Class | Group | Type | Function |
|---|---|---|---|---|
| 0AP057 | 3 | B | Vertical Line Shaft | ESW Pump "A" |
| 0AP163[a] | 3 | B | Centrifugal | ESW Booster Pump "A" |
| 0BP057 | 3 | B | Vertical Line Shaft | ESW Pump "B" |
| 0BP163[a] | 3 | B | Centrifugal | ESW Booster Pump "B" |
| 0OP186[a] | 3 | B | Vertical Line Shaft | Emergency Cooling Water Pump |
| 20P033 | 2 | B | Centrifugal | HPCI Booster Pump |
| 20P036 | 2 | B | Centrifugal | RCIC Pump |
| 20P038 | 2 | B | Centrifugal | HPCI Pump |
| 2AP037 | 2 | B | Centrifugal | CS Pump "2A" |
| 2AP040 | 2 | B | Positive Displacement | Standby Liquid Control Pump A |
| 2BP037 | 2 | B | Centrifugal | CS Pump "2B" |
| 2BP040 | 2 | B | Positive Displacement | Standby Liquid Control Pump B |
| 2CP037 | 2 | B | Centrifugal | CS Pump "2C" |
| 2DP037 | 2 | B | Centrifugal | CS Pump "2D" |
| 30P033 | 2 | B | Centrifugal | HPCI Booster Pump |
| 30P036 | 2 | B | Centrifugal | RCIC Pump |
| 30P038 | 2 | B | Centrifugal | HPCI Pump |
| 3AP037 | 2 | B | Centrifugal | CS Pump "3A" |
| 3AP040 | 2 | B | Positive Displacement | Standby Liquid Control Pump A |
| 3BP037 | 2 | B | Centrifugal | CS Pump "3B" |
| 3BP040 | 2 | B | Positive Displacement | Standby Liquid Control Pump B |
| 3CP037 | 2 | B | Centrifugal | CS Pump "3C" |
| 3DP037 | 2 | B | Centrifugal | CS Pump "3D" |

a – These pumps are classified as “Augmented” in the IST Program, but will treated as Group B based upon their function.

**Attachment 11**
**Technical Position TP-6 (Continued)**
**Page 3 of 3**

The following summarizes the Group A, B, and Comprehensive Pump Test requirements as specified by the ASME OM Code Subsection ISTB.

Group A Pump Tests – Group A tests are performed quarterly for each pump categorized as A. The following inservice test parameters are measured for each Group A pump test:

- Speed (if pump is variable speed)
- Differential Pressure
- Discharge Pressure, (for positive displacement pumps)
- Flow Rate
- Vibration

Group B Pump Tests – Group B tests are performed quarterly for each pump categorized as B. The following inservice test parameters are measured for each Group B pump test.

- Speed (if pump is variable speed)
- Differential Pressure(1)
- Flow Rate(1)

(1) For positive displacement pumps, only flow rate shall be measured or determined, for all other pumps, either differential pressure or flow rate shall be measured or determined.

Comprehensive Pump Tests – Comprehensive pump tests are performed biennially for all pumps in the Inservice Testing Program. The following inservice test parameters are measured for each Comprehensive pump test:

- Speed (if pump is variable speed)
- Differential Pressure
- Discharge Pressure, (for positive displacement pumps)
- Flow Rate (The ISTB Design Flow for the comprehensive pump test shall be defined as the System's Accident Condition Flow for a single pump)
- Vibration

The following instrument accuracy requirements apply to each test type:

| Parameter | Group A | Group B | Comprehensive |
|---|---|---|---|
| Pressure | +/- 2.0% | +/- 2.0% | +/- 0.5% |
| Flow Rate | +/- 2.0% | +/- 2.0% | +/- 2.0% |
| Speed | +/- 2.0% | +/- 2.0% | +/- 2.0% |
| Vibration | +/- 5.0% | +/- 5.0% | +/- 5.0% |
| Differential Pressure | +/- 2.0% | +/- 2.0% | +/- 0.5% |

**Attachment 11**
**Technical Position TP-7**
**Page 1 of 6**

## Check Valve Condition Monitoring

### Purpose
The purpose of this Technical Position is to document the Peach Bottom's position on establishing and implementing a Check Valve Condition Monitoring Program in accordance with mandatory Appendix II of the ASME OM Code 2001 Edition through 2003 Addenda. The Condition Monitoring Program specified in Appendix II provides certain flexibility in establishing test types, examinations, and preventive maintenance activities along with their associated intervals, when justified based on check valve performance and operating condition.

### Applicability
This Technical Position is applicable to certain valves or groups of valves as permitted by ISTC-5222, Condition Monitoring Program.

### Background
10CFR50.55a was revised 11/22/99 to endorse the ASME OMa-1995 Edition with 1996 Addenda with modifications. These modifications have been incorporated into the 2003 Addenda of the 2001 Edition of the ASME OM Code. This edition of the ASME OM Code provides provisions to implement a check valve condition monitoring program for selected valves or groups of valves in accordance with mandatory Appendix II. Peach Bottom's Inservice Testing Program for the 4th Ten Year Interval has been developed in accordance with the ASME OM Code 2001 Edition through 2003 Addenda. This edition of the Code provides an alternative in section ISTC-5222, Condition Monitoring Program, to the testing requirements of ISTC-3510, ISTC-3520, ISTC-3550 and ISTC-5221. This section specifies that the program shall be implemented in accordance with Appendix II, Check Valve Condition Monitoring Program.

### Position
Peach Bottom Atomic Power Station will implement a Check Valve Condition Monitoring program for selected valves or groups of valves in accordance with ISTC-5222 and Appendix II. The following guidelines will be adhered to for administering this program. Additionally, if the Appendix II program is discontinued for a valve or group of valves, then the requirements of ISTC-3510, ISTC-3520, ISTC-3550, and ISTC-5221 shall be implemented.

**Attachment 11**
**Technical Position TP-7 (Continued)**
**Page 2 of 6**

## 1. Purpose

The purpose of the Check Valve Condition Monitoring Program is to improve check valve performance and to optimize testing, examination, and preventive maintenance activities in order to maintain the continued acceptable performance of a select valve or group of valves.

## 2. Scope

The Peach Bottom Atomic Power Station Check Valve Condition Monitoring Program will be applied to individual check valves or groups of check valves which are either candidates for improved performance or candidates which will be monitored for improved valve performance.

a. Candidates for improved valve performance are those check valves which may exhibit one or more of the following attributes:

   i. The valve(s) exhibits an unusually high failure rate during inservice testing or operations;

   ii. The valve(s) can not be exercised under normal operating conditions or during shutdown;

   iii. The valve(s) exhibits unusual, abnormal, or unexpected behavior during exercising or operations.

b. Candidates for monitoring for improved valve performance using optimization techniques, examination, and preventive maintenance activities are those check valves with documented acceptable performance that:

   i. Have had their performance improved under this program;

   ii. Cannot be exercised or are not readily exercised during normal operating condition or during shutdown;

   iii. Can only be disassembled and examined; or

   iv. It is decided that all of the associated activities of the valve or group will be optimized.

**Attachment 11**
**Technical Position TP-7 (Continued)**
**Page 3 of 6**

3. **Groupings**

For valves which are grouped together the following valve attributes shall be considered:

a. Valves shall be of the same manufacturer, design, size, service media, materials of construction, and orientation.

b. Maintenance and modification history shall be reviewed.

c. Test history and results shall be reviewed.

d. System design shall be considered to determine potential flow instabilities, degree of disassembly, and the need for tolerance and dimensional measurements

4. **Analysis**

An analysis of the test and maintenance history shall be performed to establish the basis for specifying inservice testing, examination, and preventive maintenance activities. This analysis shall include the following:

a. Identify any common failure mode or corrective maintenance patterns.

b. Analyze these common patterns to determine their significance and to identify potential failure mechanisms:

   i. Determine if certain preventive maintenance activities would mitigate the failure or maintenance patterns;

   ii. Determine if certain condition monitoring activities are possible and effective in monitoring for these failure mechanisms;

   iii. Determine if periodic disassembly and examination would be an effective method in monitoring for these failure mechanisms.

   iv. Determine if the valve grouping is required to be changed.

**Attachment 11**
**Technical Position TP-7 (Continued)**
**Page 4 of 6**

## 5. Condition Monitoring Activities

Valve obturator movement during applicable test or examination activities shall be sufficient to determine the bidirectional functionality of the moving parts. A full open exercise test, or an open test to the position required to perform its intended function is not required for this assessment.

a. Performance Improvement Activities

i. If sufficient information is not available or the results of the analysis performed in 4 above are not conclusive, an interim period not to exceed 5 years or 2 refueling outages, whichever is less, shall be established to determine the cause of the failure or maintenance patterns. The following activities shall be performed at sufficient intervals over the interim period.

1. Identify interim tests (e.g. nonintrusive) to assess the performance of the valve of group of valves.
2. Identify interim examinations to evaluate potential degradation mechanisms.
3. Identify other types of analysis to be performed which will assess check valve condition.
4. Identify which of these activities will be performed on each valve.
5. Identify the interval of each activity.

ii. Identify attributes that will be trended. Trending and evaluation of existing data must be used as the bases to reduce or extend the time interval between tests or examinations.

iii. Complete or revise the condition monitoring test plans to document the check valve program performance improvement activities and their associated frequencies.

iv. Perform these activities at their assigned intervals until:

1. Sufficient information is obtained to permit an adequate analysis.
2. Until the end of the interim period (2 refueling outages or 5 years, whichever is less).

**Attachment 11**
**Technical Position TP-7 (Continued)**
**Page 5 of 6**

v. After performance, a review shall be performed for each trended attribute along with results for each activity to determine if changes to the program are required. If changes are required, the program shall be revised before the next performance of the activity.

b. Optimization of Condition Monitoring Activities

i. If sufficient information is available to assess the performance adequacy of the check valve or group, then the following activities shall be performed:

1. Identify appropriate preventive maintenance activities including the intervals that are required to maintain the continued acceptable performance of the check valve or group of check valves.

2. Identify the applicable examination activities including the interval that will be used to periodically assess the condition of each check valve or group of check valves.

3. Identify the applicable test activities including intervals that will be used to periodically verify the acceptable performance of each check valve or group of check valves.

4. Identify which of these activities will be performed on each valve in the group.

5. Identify the interval of each activity. Interval extensions shall be limited to one fuel cycle per extension. Intervals shall not exceed the maximum interval shown in Table II-4000-1. All valves in a group sampling plan must be tested or examined again, before the interval can be extended again, or until the maximum interval would be exceeded.

**Attachment 11**
**Technical Position TP-7 (Continued)**
**Page 6 of 6**

ii. Identify attributes that will be trended. Trending and evaluation of existing data must be used to reduce or extend the time interval between tests or examinations.

iii. Revise the condition monitoring plans to document the optimized condition monitoring program activities and associated intervals for each activity.

iv. Continue performance of these activities at their associated intervals.

v. Review the results of the performance of each activity to determine if changes to the optimized condition monitoring program are required. Changes to IST intervals must consider plant safety and be supported by trending and evaluating both generic and plant-specific performance data to ensure the component is capable of performing its intended function(s) over the entire interval.

6. **Corrective Maintenance**

If corrective maintenance is performed on a check valve, the analysis used to formulate the basis of the condition-monitoring activities for that valve and its associated valve group shall be reviewed to determine if any changes are required.

7. **Documentation**

The condition monitoring program shall be documented in IST Manager or equivalent forms. The plan for each check valve or group of check valves shall be documented in the Condition Monitoring Tab and shall contain as a minimum the following information:

a. The list of valves in each group including the group basis.

b. Date the valve or group of valves was evaluated for inclusion or exclusion from the condition monitoring program.

c. Safety function of valve or valve group.

d. Analysis/justification which forms the basis for the program.

e. Identification of the failure or maintenance patterns for each valve

f. Condition monitoring activities including the trended attributes and the bases for the associated intervals for each valve or valve group.

**Attachment 11**
**Technical Position TP-8**
**Page 1 of 2**

## Check Valve Sample Disassembly and Inspection

### Purpose
The purpose of this Technical Position is to document position of Peach Bottom's Check Valve Sample Disassembly and Inspection Program.

### Applicability
This Technical Position is applicable check valves that require disassembly and inspection as an alternate method of verifying check valve stroke capabilities and operational readiness.

Disassembly and Inspection Program will utilized in lieu of the Check Valve Conditioning Monitoring Program, upon approval of each component associated with the Conditioning Monitoring Program, Peach Bottom's Check Valve Sample Disassembly and Inspection Program will discontinue and will be replaced by the Check Valve Conditioning Monitoring Program

### Background
The IST Program requires valves to be exercised to the position(s) required to fulfill their safety function(s). In addition, valves with remote position indication shall have their position indication verified. The Code does not restrict position indication to active valves.

### Position
The check valves in the table below require disassembly and inspection as an alternate method of verifying check valve stroke capabilities and operational readiness. To minimize the number of required check valve disassemblies during refueling outages, a Check Valve Sample Disassembly and Inspection Program is implemented.

Valve groups include those valves that are of the same design manufacturer, size, model number, and materials of construction; have the same service condition (i.e., water/condensate or steam); and have the same valve orientation (i.e., horizontal or vertical mounted).

At each disassembly, the stroke capability and condition of the valve shall be verified by ensuring disc freedom of movement and by inspection of the internals to verify that the valve is structurally sound with no loose or corroded parts.

If the disassembled valve is binding, or failure of the valve internals is observed (loose or corroded parts), the valve shall be refurbished as necessary and the remaining valves in the group shall be disassembled, inspected, and manually full-stroke exercised during the same refueling/system outage. For groups which contain valves from both units, an operability determination shall be performed to justify deferring the disassembly and inspection of valves in the operating unit until the next refueling/system outage.

**Attachment 11**
**Technical Position TP-8 (Continued)**
**Page 1 of 2**

| Valve No. | Group | No. of Valves | Disassembly and Inspection Frequency |
|---|---|---|---|
| CHK-2-10-019A, B, C, D | 1 | 4 | 1 Valve Each Refueling Outage |
| CHK-2-14-066A, B, C, D | 2 | 4 | 1 Valve Each Refueling Outage |
| CHK-2(3)-10-2(3)1577A, B | 3 | 4 | 1 Valve Each Refueling Outage |
| CHK-2-14A-29036A, B<br>CHK-2-14A-29011A, B | 4 | 4 | 2 Valves Each Refueling Outage |
| CHK-3-14A-39036A, B<br>CHK-3-14A-39011A, B | 4a | 4 | 2 Valves Each Refueling Outage |
| CHK-2(3)-14-2(3)9051A, B | 5 | 4 | 1 Valve Each Refueling Outage |
| CHK-2-14-22(3)A, B, C, D | 6 | 8 | 2 Valves Each Refueling Outage |
| CHK-2(3)-13B-029 | 7 | 2 | 1 Valve E/O* Refueling Outage |
| CHK-2(3)-10-2(3)1541 | 8 | 2 | 1 Valve E/O* Refueling Outage |
| CHK-2(3)-23B-062 | 9 | 2 | 1 Valve E/O* Refueling Outage |
| CHK-3-10-019A, B, C, D | 10 | 4 | 1 Valve Each Refueling Outage |
| CHK-3-14-066A, B, C, D | 11 | 4 | 1 Valve Each Refueling Outage |
| CHK-3-14-22(3)A, B, C, D | 12 | 8 | 2 Valves Each Refueling Outage |
| CHK-2-23B-61<br>CHK-3-23B-61 | 13 | 2 | 1 Valve Each Refueling Outage |

* Denotes groupings comprised from one valve per unit, where individual disassembly and inspections are performed every other (E/O) refueling outage.

**Justification**
Section ISTC-5221(c) states:

> "If the test methods of ISTC-5221(a) and ISTC-5221(B) are impracticable for certain check valves, or if sufficient flow can not be achieved or verified, a sample disassembly examination program shall be used to verify valve obturator movement. If maintenance is performed on one of these valves that could affect its performance, the postmaintenance testing shall be conducted in accordance with ISTC-5221(c)(4).
>
> The sample disassembly examination program shall group check valves of similar design, application, and service condition and require a periodic examination of one valve from each group. The details and bases of the sampling program shall be documented and recorded in the test plan. "

**History**
Disassembly and Inspection Program for check valves was used during the 3rd IST 10 Year Interval.

**Attachment 11**
**Technical Position TP-9**
**Page 1 of 2**

## Thermal Relief Valves

**Purpose**
The purpose of this Technical Position is to establish the station position on the method and frequency of testing of valves that can be classified as Thermal Relief Valves.

**Applicability**
This Technical Position is applicable to the following valves at Peach Bottom Atomic Power Station.

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| RV-2-10-040 | RHR | 2 | C | 2 |
| RV-2-10-072A | RHR | 2 | C | 2 |
| RV-2-10-072B | RHR | 2 | C | 2 |
| RV-2-10-072C | RHR | 2 | C | 2 |
| RV-2-10-072D | RHR | 2 | C | 2 |
| RV-2-10-23425 | RHR | 1 | C | 2 |
| RV-2-20A-23429 | Radwaste | NC | C | 2 |
| RV-3-10-40 | RHR | 2 | C | 2 |
| RV-3-10-072A | RHR | 2 | C | 3 |
| RV-3-10-072B | RHR | 2 | C | 3 |
| RV-3-10-072C | RHR | 2 | C | 3 |
| RV-3-10-072D | RHR | 2 | C | 3 |
| RV-3-10-23425 | RHR | 1 | C | 2 |
| RV-3-20A-33429 | Radwaste | NC | C | 3 |

**Attachment 11**
**Technical Position TP-9 (Continued)**
**Page 2 of 2**

**Background**
When this technical position for thermal relief valves was first drafted, the position was based upon 10CFR50.55a(b) endorsement of Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code", as issued on June 2003. This Reg. Guide contains a list of ASME Code Cases which either in full or in part, are allowed by the NRC to be used by licensees, without the submittal of a request for relief from the NRC. Table 1 of the Reg Guide 1.197 contains a list of Code Cases that can be adopted by the utility with out conditions or modifications, which includes Code Case OMN-2, Rev. 0, "Thermal Relief Valve Code Case", 1998 Edition.

Code Case OMN-2 states in part:

> "It is the opinion of the Committee that in lieu of the requirements specified in ASME OM Code 1995, paragraphs I 1.3.5(a), (b), and (c) testing for Class 2 and Class 3 pressure relief devices whose only overpressure protection function is to protect isolated components from fluid expansion caused by changes in fluid temperature shall be performed once every ten years on each device unless performance data indicates that more frequent testing is needed to assure device function. In lieu of test, the Owner may replace these devices every ten years unless performance data indicates more frequent replacement is needed to assure device function."

However, in the current edition of the ASME Code 2001/2003 Addenda, Mandatory Appendix I, "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Nuclear power Plants", section I-1390 has been created which removes the need for OMN-2. This section states:

> "Test shall be performed on all Class 2 and 3 relief devices used in thermal relief application every 10 years, unless performance data indicate more frequent testing is necessary. in lieu of tests the Owner may replace the relief devices at a frequency of every 10 years, unless performance data indicate more frequent replacement are necessary."

Additionally, section I-1390 of ASME Code 2001/2003 Addenda, Mandatory Appendix I for Class 1 Thermal Relief Valves state:

> "Test shall be performed in accordance with I-1320, Test Frequencies, Class 1 Pressure Relief Valves."

**Position**
Peach Bottom Atomic Power Station will treat those valves designated as thermal relief valves per the requirements of I-330 and I-1390 in that they will be replaced on a 5 year and 10 year frequency for Class 1 and Class 2&3 Thermal Relief Valves unless performance data indicates more frequent replacement being necessary.

**History**
None

**Attachment 11**
**Technical Position TP-10**
**Page 1 of 7**

## Classification of Skid Mounted Components

### Purpose

The purpose of this technical position is to clarify requirements for classification of various skid mounted components, and to clarify the testing requirements of these components.

### Background

The ASME Code allows classification of some components as skid mounted when their satisfactory operation is demonstrated by the satisfactory performance of the associated major components. Testing of the major component is sufficient to satisfy Inservice Testing requirements for skid mounted components. In section 3.4 of NUREG 1482 Rev 1, the NRC supports the designation of components as skid mounted:

> "The staff 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 if the licensee documents this approach in the IST Program. This is acceptable for both Code class components and non-Code class components tested and tracked by the IST Program."

In the 1996a addenda to the ASME OM Code (endorsed by 10CFR50.55(a) in October 2000), the term skid-mounted was clarified by the addition of ISTA paragraph 1.7:
ISTA 1.7 Definitions

> *Skid mounted components and component sub assemblies* – components integral to or that support operation of major components, even though these components may not be located directly on the skid. In general, these components are supplied by the manufacturer of the major component. Examples include: diesel skid-mounted fuel oil pumps and valves, steam admission and trip throttle valves for high-pressure coolant injection or Auxiliary Feedwater turbine-driven pumps, and solenoid-operated valve provided to control the air-operated valve.

**Attachment 11**
**Technical Position TP-10 (Continued)**
**Page 2 of 7**

This definition was further clarified in the 2001/2003 Addenda Editions of the ASME OM Code:

ISTA-2000 DEFINITIONS

*Skid mounted pumps and valves* – pumps and valves integral to or that support operation of major components, even though these components may not be located directly on the skid. In general, these pumps and valves are supplied by the manufacturer of the major component. Examples include:

(a) diesel fuel oil pumps and valves;
(b) steam admission and trip throttle valves for high-pressure coolant injection pumps;
(c) steam admission and trip throttle valves for Auxiliary Feedwater turbine driven pumps;
(d) solenoid-operated valves provided to control an air-operated valve.

Additionally the Subsections pertaining to pumps (ISTB) and valves (ISTC) includes exclusions/exemptions for skid mounted components;

ISTB-1200(c) Exclusions

Skid-mounted pumps that are tested as part of the major component and are justified by the Owner to be adequately tested.

ISTC-1200 Exemptions

Skid-mounted valves are excluded from this Subsection provided they are tested as part of the major component and are justified by the Owner to be adequately tested.

**Position**
The 2001/2003 Addenda ASME OM Code definition of skid mounted will be used for classification of components in the Peach Bottom Atomic Power Station Inservice Testing Program. In addition, for a component to be considered skid mounted:

The major component associated with the skid mounted component must be surveillance tested at a frequency sufficient to meet ASME Code test frequency for the skid mounted component, unless otherwise justified by Peach Bottom.

Satisfactory operation*, of the skid mounted component must be demonstrated by satisfactory operation of the major component.

**Attachment 11**
**Technical Position TP-10 (Continued)**
**Page 3 of 7**

The IST Bases Document should describe the bases for classifying a component as skid mounted, and the IST Program Plan should reference this technical position for the component.

* - as defined by the utility

**Justification**

Recognition and classification of components as skid mounted eliminates the need for the redundant testing of the sub component(s) as the testing of major (parent) component satisfactory demonstrates operation of the "skid mounted" component(s).

**Resultant Discussion**

Skid Mounted Pumps

In recognition of this Technical Position on skid mounted components, pumps classified as Skid Mounted need not be classified as either Group A or Group B as the acceptable performance of the skid mounted pump is based upon the acceptable performance of the major component to which it gives support, not the manner in which it operators. The frequency at which this skid mounted pump's ability to function in support of its major component will be verified is quarterly, as a minimum. This frequency is chosen so as to not be greater than the minimum test frequency associated with an IST pump that is not classified as skid mounted.

If the frequency associated with the testing of the skid mounted pump is ever determined to be greater than quarterly, that evaluation/justification will be provided in that specific pump basis.

**Attachment 11**
**Technical Position TP-10 (Continued)**
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The following IST pumps have been classified as skid mounted;

| **Pump ID** | **Class** | **Type** | **Function** |
|---|---|---|---|
| 0AP060 | NC | Centrifugal | E1 EDG Fuel Oil Transfer Pump "A" |
| 0AP165 | NC | Centrifugal | E1 EDG Jacket Coolant Standby Circ Pump |
| 0AP172 | NC | Centrifugal | E1 EDG Lube Oil Standby Circ Pump |
| 0AP380 | NC | Centrifugal | E1 EDG Air Coolant Engine Driven Pump |
| 0AP381 | NC | Centrifugal | E1 EDG Jacket Coolant Engine Driven Pump |
| 0AP382 | NC | Centrifugal | E1 EDG Lube Oil Engine Driven Pump |
| 0AP383 | NC | Centrifugal | E1 EDG Shaft Driven Fuel Oil Pump "A" |
| 0BP060 | NC | Centrifugal | E2 EDG Fuel Oil Transfer Pump "B" |
| 0BP165 | NC | Centrifugal | E2 EDG Jacket Coolant Standby Circ Pump |
| 0BP172 | NC | Centrifugal | E2 EDG Lube Oil Standby Circ Pump |
| 0BP380 | NC | Centrifugal | E2 EDG Air Coolant Engine Driven Pump |
| 0BP381 | NC | Centrifugal | E2 EDG Jacket Coolant Engine Driven Pump |
| 0BP382 | NC | Centrifugal | E2 EDG Lube Oil Engine Driven Pump |
| 0BP383 | NC | Positive Disp | E2 EDG Shaft Driven Fuel Oil Pump "B" |
| 0CP060 | NC | Centrifugal | E3 EDG Fuel Oil Transfer Pump "C" |
| 0CP165 | NC | Centrifugal | E3 EDG Jacket Coolant Standby Circ Pump |
| 0CP172 | NC | Centrifugal | E3 EDG Lube Oil Standby Circ Pump |
| 0CP380 | NC | Centrifugal | E3 EDG Air Coolant Engine Driven Pump |
| 0CP381 | NC | Centrifugal | E3 EDG Jacket Coolant Engine Driven Pump |
| 0CP382 | NC | Centrifugal | E3 EDG Lube Oil Engine Driven Pump |

**Attachment 11**
**Technical Position TP-10 (Continued)**
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| | | | |
|---|---|---|---|
| 0CP383 | NC | Positive Disp | E3 EDG Shaft Driven Fuel Oil Pump "C" |
| 0DP060 | NC | Centrifugal | E4 EDG Fuel Oil Transfer Pump "D" |
| 0DP165 | NC | Centrifugal | E4 EDG Jacket Coolant Standby Circ Pump |
| 0DP172 | NC | Centrifugal | E4 EDG Lube Oil Standby Circ Pump |
| 0DP380 | NC | Centrifugal | E4 EDG Air Coolant Engine Driven Pump |
| 0DP381 | NC | Centrifugal | E4 EDG Jacket Coolant Engine Driven Pump |
| 0DP382 | NC | Centrifugal | E4 EDG Lube Oil Engine Driven Pump |
| 0DP383 | NC | Centrifugal | E4 EDG Shaft Driven Fuel Oil Pump "D" |
| 20P033 | NC | Centrifugal | HPCI Booster Pump |
| 30P033 | NC | Centrifugal | HPCI Booster Pump |

<u>Skid Mounted Valves</u>

In recognition of this Technical Position on skid mounted components, only those parameters necessary for a specific valve to function in support of it's safety related major component need be considered when evaluating the ability of the major components test ability to verify the required function of the skid mounted valve. (e.g. If a skid mounted check valve has a non-safety related open function, the major component testing need not consider verification of the open non-safety function, as would have been required if the check valve were not classified as skid mounted.)

The frequency at which this skid mounted valves ability to function in support of its major component will be verified quarterly, as a minimum. This frequency is chosen so as to not be greater than the minimum test frequency associated with a non-skid mounted IST valve. If the frequency associated with the testing of a skid mounted valve is determined to be greater than quarterly, that evaluation/justification will be provided in that specific valves basis.

**Attachment 11**
**Technical Position TP-10 (Continued)**
**Page 6 of 7**

The following IST valves have been classified as skid mounted;

| Valve Component # | Class | Type | Function |
|---|---|---|---|
| AO-0-33-0241A | 3 | Globe | E1 EDG Coolers ESW Outlet Iso Vlv |
| AO-0-33-0241B | 3 | Globe | E2 EDG Coolers ESW Outlet Iso Vlv |
| AO-0-33-0241C | 3 | Globe | E3 EDG Coolers ESW Outlet Iso Vlv |
| AO-0-33-0241D | 3 | Globe | E4 EDG Coolers ESW Outlet Iso Vlv |
| AO-0-52C-7231A | NC | Dia | E1 EDG Air Start Valve (Flex-Flow) |
| AO-0-52C-7231B | NC | Dia | E2 EDG Air Start Valve (Flex-Flow) |
| AO-0-52C-7231C | NC | Dia | E3 EDG Air Start Valve (Flex-Flow) |
| AO-0-52C-7231D | NC | Dia | E4 EDG Air Start Valve (Flex-Flow) |
| AO-0-52C-7232A | NC | Dia | E1 EDG Air Start Valve (Flex-Flow) |
| AO-0-52C-7232B | NC | Dia | E2 EDG Air Start Valve (Flex-Flow) |
| AO-0-52C-7232C | NC | Dia | E3 EDG Air Start Valve (Flex-Flow) |
| AO-0-52C-7232D | NC | Dia | E4 EDG Air Start Valve (Flex-Flow) |
| CHK-0-52D-10090A | NC | Check | E1 D/G Shaft Driven Fuel Oil Pump Disch Chk Vlv |
| CHK-0-52D-10090B | NC | Check | E2 D/G Shaft Driven Fuel Oil Pump Disch Chk Vlv |
| CHK-0-52D-10090C | NC | Check | E3 D/G Shaft Driven Fuel Oil Pump Disch Chk Vlv |
| CHK-0-52D-10090D | NC | Check | E4 D/G Shaft Driven Fuel Oil Pump Disch Chk Vlv |
| CHK-0-52D-10091A | NC | Check | E1 D/G DC Motor Driven Fuel Oil Pump Disch Chk Vlv |
| CHK-0-52D-10091B | NC | Check | E2 D/G DC Motor Driven Fuel Oil Pump Disch Chk Vlv |
| CHK-0-52D-10091C | NC | Check | E3 D/G DC Motor Driven Fuel Oil Pump Disch Chk Vlv |

**Attachment 11**
**Technical Position TP-10 (Continued)**
**Page 7 of 7**

| Valve Component# | Class | Type | Function |
|---|---|---|---|
| CHK-0-52D-10091D | NC | Check | E4 D/G DC Motor Driven Fuel Oil Pump Disch Chk Vlv |
| CHK-0-52D-10092A | NC | Check | Shaft Driven Fuel Oil Pump "A" Suction Supply Chk Vlv ( Foot Valve) |
| CHK-0-52D-10092B | NC | Check | Shaft Driven Fuel Oil Pump "B" Suction Supply Chk Vlv ( Foot Valve) |
| CHK-0-52D-10092C | NC | Check | Shaft Driven Fuel Oil Pump "C" Suction Supply Chk Vlv ( Foot Valve) |
| CHK-0-52D-10092D | NC | Check | Shaft Driven Fuel Oil Pump "D" Suction Supply Chk Vlv ( Foot Valve) |
| RV-0-52D-0571A | NC | Relief | E1 D/G Shaft Driven Fuel Oil Pump Disch Relief Vlv |
| RV-0-52D-0571B | NC | Relief | E2 D/G Shaft Driven Fuel Oil Pump Disch Relief Vlv |
| RV-0-52D-0571C | NC | Relief | E3 D/G Shaft Driven Fuel Oil Pump Disch Relief Vlv |
| RV-0-52D-0571D | NC | Relief | E4 D/G Shaft Driven Fuel Oil Pump Disch Relief Vlv |
| CHK-2-03A-13114* | 1 | Check | CRD Scram Outlet Check Valve |
| CHK-2-03A-13115* | 1 | Check | CRD Accumulator Charging Header Check Valve |
| CHK-2-03A-13138 | 1 | Check | CRD Cooling Water Supply Check Valve |
| CV-2-03A-13126* | 1 | Globe | Inlet Scram Isolation Valve |
| CV-2-03A-13127* | 1 | Globe | Outlet Scram Isolation Valve |
| CHK-2-13C-38 | 2 | Check | Barometric Cond Vacuum Pump Discharge Check |
| HO-2-13C-4495 | NC | Globe | RCIC Turbine Governor Valve |
| HO-2-23C-4512 | NC | Globe | HPCI Turbine Control Valve |
| HO-2-23C-4513 | NC | Angle | HPCI Turbine Stop Valve |
| MO-2-13C-4487 | NC | Globe | RCIC Turbine Trip Throttle Valve |
| CHK-3-03A-13114* | 1 | CHK | CRD Scram Outlet Check Valve |
| CHK-3-03A-13115* | 1 | Check | CRD Accumulator Charging Header Check Valve |
| CHK-3-03A-13138* | 1 | Check | CRD Cooling Water Supply Check Valve |
| CV-3-03A-13126* | 1 | GL | Inlet Scram Isolation Valve |
| CV-3-03A-13127* | 1 | GL | Outlet Scram Isolation Valve |
| HO-3-13C-5495 | NC | Globe | RCIC Turbine Governor Valve |
| HO-3-23C-5512 | NC | Globe | HPCI Turbine Control Valve |
| HO-3-23C-5513 | NC | Angle | HPCI Turbine Stop Valve |
| MO-3-13C-5487 | NC | Globe | RCIC Turbine Trip Throttle Valve |
| CHK-3-13C-38 | 2 | Check | Barometric Cond Vacuum Pump Discharge Check |

* - (Typical for 185 Units, labeled AA through HC)

**History**

None

## Motor Operated Valve OMN-1 Code Case Position

**Purpose**
The purpose of this Technical Position is to establish and document how the stations will utilizes ASME Code Case OMN-1, Rev. 1, for the Inservice Testing of their active motor operated valves.

**Applicability**
This Code Case position is applicable to all active motor operated valves which are tested per the Peach Bottom Atomic Station Inservice Testing Program, unless otherwise justified.

**Background**
American Society of Mechanical Engineers (ASME) OM Code 2001 through 2003 Addenda, Subsection ISTC, requires periodic testing of motor operated valves (MOVs).

In lieu of utilizing ASME OM Code ISTC requirements for the testing of MOVs in the Peach Bottom Atomic Station IST Program, Peach Bottom will utilize Code Case OMN-1, "Alternative Rules for Preservice and Inservice Testing of Certain Electric Motor-Operated Valve Assemblies in Light Water Reactor Power Plants", as published in the ASME OMb Code-2006 Addenda. Use of this Code Case will replace stroke time testing and position indication testing of applicable MOVs in the IST Program.

The implementation of OMN-1 will reconcile and consolidate the Peach Bottom MOV testing program developed under Generic Letters (GL) 89-10 , "Safety Related Motor Operated Valve Testing and Surveillance," and 96-05 , "Periodic Verification of Design Basis Capability of Safety Related Motor Operated Valves," with the IST Program and eliminate unnecessary testing that provides minimal information about MOV operational readiness. Peach Bottom has commitment to the performance of MOV Periodic Verification Testing as described in their response to GL 96-05. Peach Bottom has also participated in the Joint Owners Group (JOG) Program for MOV Periodic Verification. Application of this program was originally described in Topical Report MPR-1807, Rev. 2 and endorsed by the NRC in an October 1997 Safety Evaluation. Peach Bottom is currently utilizing MPR-2524-A, "Joint Owners' Group (JOG) Motor Operated Valve Periodic Verification Program Summary", (November 2006) for their MOV Program guidance. Many of the MOV Program activities will be used to meet OMN-1 requirements. The Nuclear Regulatory Commission (NRC) in a September 22, 1999 Federal Register Notice (64 FR 51370), issued a Final Rule on 10 CFR Part 50, "Industry Codes and Standards; Amended Requirements." The Federal Register Notice revised, in part, the IST requirements for MOVs. In the final rule, the NRC amended its regulations to incorporate by reference the 1995 Edition and 1996 Addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants. The final rule also permits the use of alternate rules for IST of MOVs as described in ASME Code Case OMN-1, Rev. 0, in lieu of certain provisions of Subsection ISTC.

**Attachment 11**
**Technical Position TP-11 (Continued)**
**Page 2 of 6**

The final rule publication noted that the NRC will favorably consider a request by a licensee to apply Code Case OMN-1, Rev. 0, for MOVs provided the following commitments are met.

1. The adequacy of the diagnostic test interval for each valve must be evaluated and adjusted as necessary but not later than 5 years or three refueling outages (whichever is longer) from initial implementation of ASME Code Case OMN-1.

2. When extending the exercise test intervals for high risk MOVs beyond a quarterly frequency, licensees shall ensure that the potential increase in core damage frequency and risk associated with the extension is small and consistent with the intent of the Commission's Safety Goal Policy Statement.

3. When implementing Code Case OMN-1, the benefits of performing a particular test should be balanced against the potential adverse effects placed on the valves or systems caused by this testing. For example, potential component (valve or pump) damage or system availability concerns may outweigh benefits of dynamic testing for some MOVs.

These above provisions, as taken from Reg. Guide 1.192 (June 2003-current) were applicable to the initial revision of OMN-1, and have essentially been incorporated into Revision 1 of OMN-1, which is the version that Peach Bottom is implementing.

**Position**
Peach Bottom Atomic Station will utilize the requirements of Code Case OMN-1 ASME OMb Code, 2006 Addenda, for the IST of all Active MOVs in the IST Program in lieu of stroke time testing and position indication testing. Relief Request GVRR-1 has been submitted to the NRC to ask for the ability to utilize the OMN-1 ASME OMb Code, 2006 Addenda.

Exceptions:

The following IST MOV's which are scoped into the IST Program and classified as Augmented will not be tested to the requirements of OMN-1, but will continue to be tested to the requirements of ASME OM ISTC.

| | |
|---|---|
| MO-2-30-2233A | SW Pump Bay Inlet Sluice Gate "A" |
| MO-2-30-2233B | SW Pump Bay Inlet Sluice Gate "B" |
| MO-3-30-3233A | SW Pump Bay Inlet Sluice Gate "A" |
| MO-3-30-3233B | SW Pump Bay Inlet Sluice Gate "B" |

These valves classified as Augmented as they are originally designed as non-Code Class Valves, were optionally incorporated into the IST Program due to their recognized importance being that they must function to satisfy a "Special Event" requirement as defined within the UFSAR. (i.e. loss of Conowingo Pond).

**Position Indication Testing**

ISTC-3700 defines the requirements associated with the performance of Position Indication Testing (PIT) for valves with position indication, in the IST Program. The verification of the Motor Operated Valves Position Indication System as performed under the rules of OMN-1 shall be utilized in lieu of the requirements of ISTC-3700.

OMN-1 section 3.3(e) states that remote position indication shall be verified locally during inservice testing or maintenance activities. OMN-1 does not go into the same depth as ISTC-3700 does when describing how position indication testing is performed. ISTC-3700 describes how the verification of a valves position indication system is made by through either local observation or the observation of other measured parameters such as flow or pressure. Methods for verifying position indication under OMN-1 will continue to be performed utilizing the guidance provided by ISTC-3700. Position Indication Testing will be performed at a frequency as prescribed by OMN-1.

In OMN-1, the term "Inservice Testing" is recognized as those activities associated with the dynamic/static testing which is performed as a result of the MOV Program Testing requirements. MOV exercising which is performed at a frequency of at least once per refueling cycle, as required by OMN-1, section 3.6.1 is not considered an "Inservice Test", and therefore does not constitute the need for the performance of a Position Indication Test.

In addition, "Maintenance Activities" as prescribed within OMN-1 section 3.3(e) are interpreted to included only those maintenance activities which could have an affect on the position indication function of the valve. For example, surface cleaning (dusting), stem lube, or other similar non-intrusive maintenance activities do not constitute a need for the performance of a PIT. This is not to say that if during the performance of any non-intrusive maintenance that actions will not be taken to correct observed problems. (e.g. loss of indication, dual indication, etc)

**Attachment 11**
**Technical Position TP-11 (Continued)**
**Page 4 of 6**

**Risk-Informed MOV IST**

The revision 1 to OMN-1, has greatly expanded the section on "Risk-Informed MOV Inservice Testing". In OMN-1's initial revision, section 3.7 simply stated that risk based criteria for MOV testing is permissible and provided a list of criteria to be considered. In OMN-1, Rev. 1, section 3.7 goes so far as to specify that each MOV shall be categorized as either a High Risk, or Low Risk component. This criteria does not match the three tier risk ranking criteria currently utilized by Peach Bottoms MOV Program.

Peach Bottom utilizes, as does many other utilities who participated in the Joint Owners Group (JOG) a three tier Risk Ranking criteria that was developed during the initial GL 89-10 and 96-05 process as described in the JOG document NEDC-32264A, Rev. 2. Utilization of Code Case OMN-1 ASME OMb Code, 2006 Addenda, does not require that Peach Bottoms risk ranking approach be back fitted or modified. OMN-1 allows for the Owner to simply determine whether an Intermediately Risk Ranked valve should individually be designated as either a high or low risk MOV. Peach Bottom Atomic Station will treat those MOV's, which are risk ranked as medium under the current MOV risk ranking criteria as "Low", unless otherwise designated by the sites' Expert Panel.

This approach is deemed acceptable as following a review of those MOV's that are assigned a Medium Risk Ranking in the MOV Program (i.e. Summer 2007), it is found that all of these valves also have a high margin. Per the current MOV Program frequency criteria, both Medium and Low Risk MOVs with High Margins are assigned the same test frequency of 6 cycles. Therefore the adoption of OMN-1 for IST will not result in a change to the currently employed MOV Program testing frequency.

**Normal Exercising Requirements**

OMN-1 section 3.6.1 states that all MOVs within the scope of this Code Case shall be full-cycle exercised at least once per refueling cycle with the maximum time between exercises to be no greater than 24 months. This paragraph goes on to state that if a full-stroke exercising of an MOV is not practical during plant operation or cold shutdown, full-stroke exercising shall be performed during the plant's refueling outage. At Peach Bottom for MOVs which are capable of being full stroke exercised during operation, this will be achieved through taking credit for the performance of normally performed test procedures, documented system line-up configuration changes and documented preventative maintenance work instruction results, when applicable. MOV's for which it is only practical to full stroke exercise during cold shutdown conditions, these valves will be exercised during cold shutdown using guidance as provided by ISTC-3521(f), with the exception that that such exercise is not required if the time period since the previous full stroke exercise is less that 24 months instead of 3 months.

**Attachment 11**
**Technical Position TP-11 (Continued)**
**Page 5 of 6**

MOV's for which it is only practical to full stroke exercise during refueling conditions will be exercised during refueling, prior to leaving the refueling condition.

OMN-1 section 3.6.2 also states that the Owner shall consider more frequent exercising requirements for MOVs that are classified as having a high risk significance, are located in harsh or adverse environmental conditions, or exhibit abnormal operational/design/maintenance conditions characteristics. At PBAPS when more frequent exercising requirements are deemed necessary, the reason for the more frequent exercising requirement will be documented in the valves basis.

A full cycle exercise test is defined as taking the valve from it's fully closed to fully open, back to fully closed position. (or visa-versa, full open to fully closed to fully open position) Valves which are normally in a throttled position, taken from their throttled position to either a full open or closed position and then back to their throttled position, does not constitute a full cycle exercise.

**Preventative Maintenance Activities**
As stated in Relief Request GVRR-1, in reference to OMN-1 section 3.3(b), preventative maintenance activities such as stem lubrication and periodic MOV verification testing are currently typically scheduled to coincided with the performance of the MOV's Periodic Verification Test. These test are scheduled to be performed following the performance of the valves As Found test.

If scheduling practices in the future should change, a period of at least (3) months should exist between activities that could affect the as found testing results and the performance of as found testing.

**Testing Frequency of LSSCs**
Section 3.7.2.2(c) allows for the relaxation of section 3.3.1(b) requirements when it comes to groups or individual LSSC's that have insufficient data for determining an appropriate test interval in accordance with Section 6.4.4. Instead of applying an inservice testing frequency of once every 2 refueling cycles or 3 years, which ever is longer, Section 3.7.2.2(c) allows for a testing frequency of once every 3 refueling cycles or 5 years, which ever is longer for valves without sufficient data. Currently all MOVs in the Peach Bottom MOV Program have sufficient data as to allow for the determination of an appropriate test interval. If in the future, modification or replacement results in insufficient data for appropriate testing interval to be determined, Peach Bottom will follow the guidance provided in OMN-1 when applicable.

If scheduling practices in the future should change, a period of at least (3) months should exist between activities that could affect the as found testing results and the performance of as found testing.

**Attachment 11**
**Technical Position TP-11 (Continued)**
**Page 6 of 6**

**Operability Determination**
The practice for the determination of MOV Operability will be that as follows:

The MOV Verification Test which is conducted utilization the corporate MIDAS computer program for the determination of acceptance criteria is performed with a pre-determined acceptance 'Target' which is presented in the individual valves work instructions. If the initial MOV Verification Test results meet that predetermined Target, the valve can be declared functionally operable. If the MOV's Verification Test results fall outside of the pre established test criteria, the MOV Engineer or their designee shall evaluate the results and determine whether the MOV can be declared functionally operable.

Once the MOV has been determined to be functionally operable, Operations may classify the MOV as operable so as to support plant operability requirements.

If the MOV can not be deemed functionally operable, the valve can not be classified as operable.

**Attachment 11**
**Technical Position TP-12**
**Page 1 of 1**

# Testing of Power Operated Valves with Both Active and Passive Safety Functions

## Purpose
The purpose of this Technical Position is to establish the testing requirements for power operated valves which have both an active and passive safety function.

## Applicability
This Technical Position is applicable to power operated valves which have an active safety function in one direction while performing a passive safety function in the other direction.

## Background
The IST Program requires valves to be exercised to the position(s) required to fulfill their safety function(s). In addition, valves with remote position indication shall have their position indication verified. The Code does not restrict position indication to active valves.

## Position
Several valves included in the plant are designed to perform passive safety functions during accident conditions, and then based on plant accident response, are designed to change positions to perform another (active) function. Once in their final position, there exist no conditions (for certain valves) in which they would be required to be placed in their original passive position.

These valves are typically emergency core cooling system valves, which require changing position during different phases of the accident. After the original passive safety function (e.g. provide flow path) is performed, the valves are repositioned to perform the active safety function (e.g. provide containment isolation or to allow injection from another water source). The valves are not required to return to their original position.

Power operated valves with passive functions in one direction and active in the other, will be exercised and stroke timed to only their active position. If these valves have position indication, the position indication verification will include verification of both positions.

## Justification
Code Interpretation 01-02 (response to inquiry OMI 99-07) addressed this issue.

Question: If a valve has safety functions in both the open and closed positions and is maintained in one of these positions, but is only required to move from the initial position to the other and is not required to return to the initial position, is stroke timing in both directions required?

Reply: No

## History
None

**Attachment 11**
**Technical Position TP-13**
**Page 1 of 1**

## Exercising Service Water Valves

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-30-2233A | Service Water | NC | B | 2 |
| MO-2-30-2233B | Service Water | NC | B | 2 |
| MO-3-30-3233A | Service Water | NC | B | 3 |
| MO-3-30-3233B | Service Water | NC | B | 3 |

**Component Function(s):**
These normally open motor operated sluice gate are located at the intake structure and allows communication between the Conowingo Pond and the applicable pump suction bay. When open, these sluice gate function to provide suction supply from the Conowingo Pond to the applicable ESW and HPSW pumps as well as the SW pumps and the diesel driven fire pump.

When closed, these sluice gates allow for the closed loop operation of the emergency heat sink in the case of Special Event "Loss of Conowingo Pond". This function in the closed position is considered an augmented function. (i.e. not a safety function) The emergency heat sink is not credited in any analyzed design basis accident or transient, and functions solely during the "Loss of Conowingo Pond" special event. For this reason these valves have been classified as "Augmented" in the IST program scope.

**JUSTIFICATION:**
Exercise testing these valves at power would result in an operational hardship for a valve that is classified as augmented. Engineering Judgment has then deemed it acceptable to only operated these valve on a once every 2 year frequency in lieu of quarterly.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be exercised closed tested on a once every 2 year frequency during conditions which allow for an adequate test to be performed per ISTC-3521(c).

**Attachment 11**
**Technical Position TP-14**
**Page 1 of 2**

## ECW Component Testing

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| 0AP163 | ECW | 3 | B | C |
| 0BP163 | ECW | 3 | B | C |
| 00P186 | ECW | 3 | B | C |
| CHK-0-48-504A | ECW | 3 | C | C |
| CHK-0-48-504B | ECW | 3 | C | C |
| CHK-0-48-506 | ECW | 3 | C | C |
| MO-0-48-0841 | ECW | 3 | B | C |

**Component Function(s):**

The ESW booster pumps are required to operate in support of the ESW and ECW systems when aligned to the emergency heat sink.

The ECW pump provides a reliable backup source of cooling water in the event both ESW pumps fail to achieve adequate discharge pressure.

**JUSTIFICATION:**

Pump testing under design conditions requires closing motor operated valve MO-33-0498 which functions as the ESW return to Conowingo Pond isolation valve. Closing this valve during power operation, with a subsequent failure to reopen, would render the ESW system inoperable. Testing shall be deferred to at least once each year when river temperature is adequate to provide heat removal to the safety related equipment dependent upon ESW without reliance on the support of the ESW booster pumps when ESW is aligned to the emergency heat sink. (Reference Design Analysis PM-0989)

**Attachment 11**
**Technical Position TP-14 (Continued)**
**Page 2 of 2**

The above pumps are included in the IST Program as Augmented components. As such, they do not perform a design basis safety related function. They are required to operate when aligned to the emergency heat sink during a "Loss of Conowingo Pond" special event. The emergency heat sink has insufficient capacity to support continued operation for 30 days without makeup during post-accident conditions. In addition, neither the emergency heat sink nor any of its associated components are credited in any design basis accident. Also, providing a reliable backup source of cooling water in the event both ESW pumps fail to achieve adequate discharge pressure would require failure of both ESW pumps, each of which have 100% capacity to supply the heat load demands during post-accident conditions.

**Alternative Frequency:**
Pumps and associated valves shall be tested at least once annually.

**References:**
In IST Interval 3, this Technical Position was identified as TP-01.

**Attachment 11**
**Technical Position TP-15**
**Page 1 of 1**

## Exercising High Pressure Service Valves (HPSW)

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| MO-2-32-2486 | HPSW | 3 | B | 2 |
| MO-3-32-3486 | HPSW | 3 | B | 3 |

**Component Function(s):**
Provide isolation of HPSW return to the normal heat sink for alignment to the ECT.

**JUSTIFICATION:**
The function of these valves is to isolate the HPSW System discharge to create a closed loop system for emergency heat sink operation. The valves are the only power operated valves for each Unit in the HPSW System single discharge line to the Conowingo Pond. When the valves are in their normal full open position, the HPSW System is aligned in its normal configuration to support RHR heat exchanger operation. Exercising the valves to the closed position, quarterly during power operation, with a subsequent failure to reopen, would render the associated Unit's HPSW system inoperable. Exercising the valves to the closed position during cold shutdown would impact the normal shutdown cooling mode of RHR system operation. Testing shall be deferred to a frequency of at least once every 2 years.

These valves are included in the IST Program as Augmented components. They are required to operate when aligned to the emergency heat sink during a "Loss of Conowingo Pond" special event. The emergency heat sink has insufficient capacity to support continued operation for 30 days without makeup during post-accident conditions. In addition, neither the emergency heat sink nor any of its associated components are credited in any design basis accident.

**Alternative Frequency:**
In lieu of quarterly exercising these valves will be full stroke exercised tested and stroke timed at least once every 2 years. Exercising these valves to the closed position does not render the HPSW system inoperable since HPSW is a manual system required to be in service within 10 minutes following a design basis accident. Therefore, this testing will be performed during power operation or cold shutdown when closure will not impact RHR system operation.

**References:**
In IST Interval 3, this Technical Position was identified as TP-02.

**Attachment 11**
**Technical Position TP-16**
**Page 1 of 2**

**Remote Position Indication**

| Valve | Description | Class | Category | Unit |
|---|---|---|---|---|
| SV-2-07-104A | TIP Guide Tube Assembly "A" Iso Vlv | NC | A | 2 |
| SV-2-07-104B | TIP Guide Tube Assembly "B" Iso Vlv | NC | A | 2 |
| SV-2-07-104C | TIP Guide Tube Assembly "C" Iso Vlv | NC | A | 2 |
| SV-2-16-8100 | Instr N2 CPSR "A" &"B" Suction Supply Iso Vlv from Drywell | NC | A | 2 |
| SV-2-16A-8130A | Backup N2 Supply Iso Vlv to RV-71A,B&C | NC | A | 2 |
| SV-2-16A-8130B | Backup N2 Supply Iso Vlv to RV-71G&K | NC | A | 2 |
| SV-2-63G-8101 | Primary Containment Rad Monitoring Sample Supply Iso Vlv | NC | A | 2 |
| SV-3-07-104A | TIP Guide Tube Assembly "A" Iso Vlv | NC | A | 3 |
| SV-3-07-104B | TIP Guide Tube Assembly "B" Iso Vlv | NC | A | 3 |
| SV-3-07-104C | TIP Guide Tube Assembly "C" Iso Vlv | NC | A | 3 |
| SV-3-16-9100 | Instr N2 CPSR "A" &"B" Suction Supply Iso Vlv from Drywell | NC | A | 3 |
| SV-3-16A-9130A | Backup N2 Supply Iso Vlv to RV-71A,B&C | NC | A | 3 |
| SV-3-16A-9130B | Backup N2 Supply Iso Vlv to RV-71G&K | NC | A | 3 |
| SV-3-63G-9101 | Primary Containment Rad Monitoring Sample Supply Iso Vlv | NC | A | 3 |

**Component Function(s):**
Described above.

**Attachment 11**
**Technical Position TP-16 (Continued)**
**Page 2 of 2**

**JUSTIFICATION:**
The design of these non-Code class solenoid operated valves does not permit local observation of the valve stem and requires other positive means for proper verification of position indication. Position indication verification is performed in conjunction with seat leakage testing in accordance with the PBAPS Primary Containment Leak Rate Test (PCLRT) Program. Remote position indication verification every 2 years is burdensome without a compensating increase in the level of quality and safety. Performing position indication verification at the frequency required by Option B provides adequate assurance that valve position is properly reflected by position indicators.

These valves are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, are outside the scope of 10 CFR 50.55a(f)(4)(ii) and ASME OM Code 2001 Edition through 2003 Addenda. However, based on their safety related function, they are included in the IST program scope as Augmented components.

**Alternative Frequency:**
In lieu of Remote Position Indication verification once every 2 years, These valves will have their remote position indication verified in conjunction with seat leakage testing per the frequency specified by the PBAPS PCLRT Program.

**References:**
In IST Interval 3, this Technical Position was identified as TP-02.

**Attachment 11**
**Technical Position TP-17**
**Page 1 of 2**

**Containment Isolation Check Valve Exercise Testing**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-07B-40095A,B | Various | NC | A, C | 2 |
| CHK-2-07D-40140 | Various | NC | A, C | 2 |
| CHK-2-07F-41504 | Various | NC | A, C | 2 |
| CHK-2-16-23202A,B | Various | NC | A, C | 2 |
| CHK-2-16-23261 | Various | NC | A, C | 2 |
| CHK-3-07B-50095A,B | Various | NC | A, C | 3 |
| CHK-3-07D-50140 | Various | NC | A, C | 3 |
| CHK-3-07F-51504 | Various | NC | A, C | 3 |
| CHK-3-16-33202A,B | Various | NC | A, C | 3 |
| CHK-3-16-33261 | Various | NC | A, C | 3 |

**Component Function(s):**
Provide containment isolation for various systems.

**Attachment 11**
**Technical Position TP-18 (Continued)**
**Page 2 of 2**

**JUSTIFICATION:**
These non-Code class check valves perform a safety function in the closed direction as containment isolation valves. The only means available to exercise these check valves in the closed direction is by leak testing. PBAPS currently performs leak rate testing at the frequency allowed by the PCLRT Program. Reverse exercising these check valves by performing seat leakage testing at the frequency allowed by Option B provides adequate assurance the valve is properly closing. Performing seat leakage testing, to satisfy reverse exercising requirements, at a frequency greater than that allowed by Option B is burdensome without a commensurate increase in assurance of reverse flow closure capability.

These valves are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, are outside the scope of 10 CFR 50.55a(f)(4)(ii) and 2001 OM Code through the 2003 Addenda. However, based on their safety related function, they are included in the IST program scope as Augmented components.

**Alternative Frequency:**
These check valves will be exercised in the closed direction during the performance of leak rate testing in accordance with frequency specified by the PBAPS PCLRT Program.

**References:**
In IST Interval 3, this Technical Position was identified as TP-04.

**Attachment 11**
**Technical Position TP-18**
**Page 1 of 2**

## ADS and MSIV Accumulator Supply Check Valve Exercise Testing

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-16A-23205A, B, C, G, K | Instrument N2 and Backup N2 to ADS | NC | C | 2 |
| CHK-2-16-82A, B, C, D | Instrument N2 and Backup N2 to ADS | NC | C | 2 |
| CHK-2-16-257A, B, C, G, K | Instrument N2 and Backup N2 to ADS | NC | C | 2 |
| CHK-2-16-23299A, B | Instrument N2 and Backup N2 to ADS | NC | C | 2 |
| CHK-3-16A-33205A, B, C, G, K | Instrument N2 and Backup N2 to ADS | NC | C | 3 |
| CHK-3-16-82A, B, C, D | Instrument N2 and Backup N2 to ADS | NC | C | 3 |
| CHK-3-16-257A, B, C, G, K | Instrument N2 and Backup N2 to ADS | NC | C | 3 |
| CHK-3-16-33299A, B | Instrument N2 and Backup N2 to ADS | NC | C | 3 |

**Component Function(s):**
ADS Valve Accumulator Nitrogen Supply Check Valves [CHK-2(3)-16A-2(3)3205A,B,C,G,K, CHK-2(3)-16-257A,B,C,G,K, and CHK-2(3)-16-2(3)3299A,B,]
MSIV Accumulator Nitrogen Supply Check Valves [CHK-2(3)-16-82A,B,C,D].

**Attachment 11**
**Technical Position TP-19 (Continued)**
**Page 2 of 2**

**JUSTIFICATION:**
These non-Code class check valves are not equipped with local or remote position indication. The only way to verify these valves have exercised to their safety positions is by performing a leak test or by using a pressurization test method. Both methods require the installation of test equipment.

Verification of reverse exercising is performed by isolating the associated instrument nitrogen header and venting the upstream side of the check valve while pressure is applied to the downstream side of the valve. To verify forward exercising requires lowering the pressure in the associated ADS accumulator with the nitrogen supply isolated, then opening the nitrogen supply and observing that ADS accumulator pressure increases. Since installed pressure indication is not provided for the ADS accumulators, a test gauge must be installed on a test connection located inside the primary containment. These valves are located inside the primary containment and testing requires entering the containment. During power operation and cold shutdown, the containment atmosphere is normally inerted with nitrogen limiting access to emergencies only. In addition, high radiation levels during power operations prohibit containment entry.

These valves are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, are outside the scope of 10 CFR 50.55a(f)(4)(ii) and 2001 OM Code through the 2003 Addenda. However, based on their safety related function, they are included in the IST program scope as Augmented components.

**Alternative Frequency:**
In lieu of quarterly exercising in the open and close directions, check valves CHK-2(3)-16A-2(3)3205A, B, C, G, K, and CHK-2(3)-16-2(3)3299A, B will be exercised in the open and close directions, as required, at least once every 2 years.

In lieu of quarterly exercising in the close direction, check valves CHK-2(3)-16-82A, B, C, D and CHK-2 (3)-16-257A, B, C, G, K will be exercised in the close direction, as required, at least once every 2 years.

**References:**
In IST Interval 3, this Technical Position was identified as TP-04.

**Attachment 11**
**Technical Position TP-19**
**Page 1 of 2**

**Backup Instrument N2 to ADS Exercise Testing**

| Valve Number | System | Class | Category | Unit |
|---|---|---|---|---|
| CHK-2-16A-23300 | Backup N2 to ADS | NC | C | 2 |
| CHK-3-16A-33300 | Backup N2 to ADS | NC | C | 3 |
| HV-2-16A-23161 | Backup N2 to ADS | NC | B | 2 |
| HV-3-16A-33161 | Backup N2 to ADS | NC | B | 3 |

**Component Function(s):**
Connection for long term nitrogen supply to the ADS valves.

**JUSTIFICATION:**
These non-Code class valves are located outside the reactor building in the outside fill connection for long term backup nitrogen supply to the ADS valves. They must be capable of opening to allow flow from an additional nitrogen source which may be connected if backup instrument nitrogen is required beyond a 7 day period. This capability supports ADS operation for 100 days post-LOCA to satisfy design requirements for ECCS operability.

CHK-2(3)-16A-2(3)3300 are not equipped with local or remote position indication. The only way to verify these valves have exercised to their safety positions is by connecting an outside pressure source to the upstream tailpiece and demonstrating that the valves are capable of passing air flow. Forward exercising these check valves by utilizing an outside pressure source is burdensome without a compensating increase in the level of valve reliability when performed more frequently than once per operating cycle.

HV-2(3)-16A-2(3)3161 are exercised to their safety position in conjunction with the testing of CHK-2(3)-16A-2(3)300. Due to the simplicity of manual valve design, the limited number of failure modes, and historical data which demonstrates high reliability, exercising on a quarterly basis is considered burdensome without a commensurate increase in the level of quality and safety.

**Attachment 11**
**Technical Position TP-19 (Continued)**
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CHK-2(3)-16A-2(3)300 and HV-2(3)-16A-2(3)3161 are located outside the Code class boundaries as defined on the ISI color coded boundary drawings and therefore, are outside the scope of 10 CFR 50.55a(f)(4)(ii) and 2001 OM Code through the 2003 Addenda. However, based on their safety related function, they are included in the IST program scope as Augmented components.

**Alternative Frequency:**
In lieu of quarterly exercising in the open direction, valves will be exercised in the forward direction once per operating cycle.

**References:**
In IST Interval 3, this Technical Position was identified as TP-12.

**ATTACHMENT 12**
**Page 1 of 1**

None

## ATTACHMENT 13
## INSERVICE TESTING PUMP TABLE
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Reference PIMS CRL

**ATTACHMENT 14**
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None

# ATTACHMENT 15
# INSERVICE TESTING VALVE TABLE
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Reference PIMS CRL