Quad Cities Nuclear Power Station
Units 1 & 2

Inservice Testing Program
Third Ten Year Interval
Revision 2

Commercial Service Dates:

Unit 1 – 02/18/73
Unit 2 – 03/10/73

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REVISION LOG

Effective Date	Revision Description	Prepared; IST Program Engineer	Date	Approved; Engr. Programs Supervisor	Date
8/28/01	IST Program Plan Submittal to the NRC, Revision 4. Plan revised to implement the check valve portion of the 1996 Addenda of the ASME OM Code.	B. Phares	8/28/01	[signature]	08.28.01

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1.0 INTRODUCTION

1.1 Purpose

To provide requirements for the performance and administration of assessing the operational readiness of those pumps and valves whose specific functions that are required to:

- Shutdown the reactor to the cold shutdown condition,
- Maintaining the cold shutdown condition, or
- To mitigate the consequences of an accident.

1.2 Scope

The program plan was prepared to meet the requirements of the following subsections of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI (1989 Edition with no Addenda.)

- Subsection IWP, "*Inservice Testing of Pumps in Nuclear Power Plants*"

  ASME Section XI Sub-article IWP-1100 requires pump testing be performed in accordance with the requirements stated in the ASME/ANSI Operations and Maintenance of Nuclear Power Plant Standard, Part 6, 1987 Edition through the 1988 Addenda (OMa –1988).

- Subsection IWV, "*Inservice Testing of Valves in Nuclear Power Plants*"

  ASME Section XI Article IWV-1100 requires valve testing be performed in accordance with the requirements stated in the ASME/ANSI Operations and Maintenance of Nuclear Power Plant Standard, Part 10, 1987 Edition through the 1988 Addenda (OMa –1988).

- ASME OM-Code-1995 Edition, 1996 addenda (including Appendix II) for check valves.

The Quad Cities Nuclear Power Station Pump and Valve Inservice Testing Plan will be in effect through the third 120-month interval.

- Unit One: February 18, 1993 through February 18, 2003
- Unit Two: March 10, 1993 through March 10, 2003

This plan will be updated as required in accordance with 10CFR50.55a(f).

This program plan provides a complete listing of those pumps and valves included in the program per the requirements of:

- OM-1987, Part 1 (OM-1), *"Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices,"*
- OMa-1988, Part 6 (OM-6), *"Inservice Testing of Pumps in Light-Water Reactor Power Plants"*, and
- OMa-1988, Part 10 (OM-10), *"Inservice Testing of Valves in Light-Water Reactor Power Plants"*
- *OMa-1995,1996 Addenda,* *Check valve section of "Inservice Testing of Valves in Light-Water Reactor Power Plants"*

INSERVICE TESTING PLAN FOR PUMPS

2.1 Pump Inservice Testing Plan Description

This program plan meets the requirements of ASME/ANSI Oma-1988, Part 6 (OM-6) with the exception of specific relief requests contained in Attachment 2.

2.2 Pump Plan Table Description

The pumps included in the Quad Cities Nuclear Power Station IST Plan are listed in Attachment 14. The information contained in these tables identifies those pumps required to be tested to the requirements of ASME Section XI, the testing parameters and frequency of testing, and associated relief requests and remarks. The headings for the pump tables are delineated below.

System — The system abbreviation codes for the system containing the pump. A list of pump system codes and descriptions are provided in Attachment 13.

Pump Name — The descriptive name for the pump.

Pump EPN — The unique Equipment Part Number (EPN) for the pump. Each EPN is preceded with a Unit designator for the pump:

0	Unit 0
1	Unit 1
2	Unit 2

Safety Class — The ASME Code classification of the valve

1	Class 1
2	Class 2
3	Class 3
NC	Non-Code, Safety Related
NS	Non-Safety Related

2.2 Pump Plan Table Description (Cont'd)

P&ID	The Piping and Instrumentation Drawing on which the pump is represented.	
P&ID Coor.	The P&ID Coordinate location of the pump.	
Pump Type	The type of pump.	
	C	Centrifugal
	PD	Positive Displacement
	VLS	Vertical Line Shaft
Pump Driver	The type of pump driver.	
	MOTOR	Motor driven
	TURBINE	Steam turbine driven
	GEAR	Gear driven
Test Type	Measured test parameters.	
	PUMP SPEED	Measured only for variable speed pumps.
	DIFFERENTIAL PRESSURE	Calculated from suction and discharge pressures or obtained by direct measurement.
	DISCHARGE PRESSURE	Measured for positive displacement pumps.
	FLOW RATE	Measured using a rate or quantity meter installed in the pump test circuit.
	VIBRATION	Pump bearing vibration.

2.2 Pump Plan Table Description (Cont'd)

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

M3	Quarterly (92 Days)

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

Tech. Pos. — A technical position number is listed when the requirements of the code are not easily interpreted and clarifying information is needed. The technical position is used to document how Code requirements are being implemented at the station. Attachment 9 contains a index of all the Station Technical Positions included in Attachment 10. Station Technical Position numbers are prefixed with "TP". Attachment 11 contains a index of all the Corporate Technical Positions included in Attachment 12. Corporate technical Position numbers are prefixed with "CTP"

Station Technical Position numbers are in the following format:

TP-NNX

Where:
- TP: Technical position identifier.
- NN: The first two numbers of the EPN are used For system dependent Technical Positions. The number 00 is used for Technical Positions applying to more than one system
- X: A unique, sequential alphabetical character Used for identifying multiple Technical Positions on the same system.

Corporate Technical Position numbers are in the following format:

CTPNN-XX

Where
- CTP: Corporate Technical Position identifier.
- NN: The last two numbers of the year the Corporate Technical Position was issued.
- XX: A unique, sequential number used for Identifying multiple Corporate Technical Positions issued during a year.

Notes — *Miscellaneous pump information*

3.0 INSERVICE TESTING PLAN FOR VALVES

3.1 Valve Inservice Testing Plan Description

This plan establishes the test intervals, parameters to be measured and meets the requirements of OM 1, OM-10 and OM-1995/1996 Addenda for check valves with the exception of the specific relief requests contained in Attachment 4.

Where the frequency requirements for valve testing have been determined to be impracticable, Cold Shutdown or Refuel Outage Justifications have been identified and written. These justifications are provided in Attachments 6 and 8 respectively.

3.2 Valve Plan Table Description

The valves included in the Quad Cities Nuclear Station IST Plan are listed in Attachment 12. The information contained in these tables identify those valves that are required to be tested to the requirements of OM 1 and OM-10 and ISTC, the test parameters, frequency of testing, and the associated relief requests. The headings for the valve tables are delineated below.

System — The unique system identifier.

Valve Name — The description of the valve.

Valve EPN — A unique identifier for the valve. Each EPN is preceded with a Unit designator for the valve:

0	Unit 0
1	Unit 1
2	Unit 2

Safety Class — The ASME Class abbreviation.

1	Class 1
2	Class 2
3	Class 3
NC	Non-Code, Safety Related
NS	Non-Safety Related

3.2 Valve Plan Table Description (Cont'd)

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.
Category	The code category (or categories) as defined in paragraph 1.4 of OM-10.

A	Seat Leakage Limited.
B	Seat Leakage Not Required.
C	Self-Actuating Valves.
D	Single Use Valves.
AC	Both Categories A and C.

Size	The nominal pipe size of the valve, in inches.
Valve Type	The valve body style abbreviation.

BAL	Ball Valve
BTF	Butterfly Valve
CK	Check Valve
DAM	Damper
DIA	Diaphragm Valve
GA	Gate Valve
GL	Globe Valve
PLG	Plug Valve
PLT	Pilot Valve
PPT	Poppet Valve
RPD	Rupture Disk
RV	Relief Valve
SCK	Stop Check Valve
SHR	Shear Valve/SQUIB Valve
3W	3-Way Valve
4W	4-Way Valve
XFC	Excess Flow Check Valve

3.2 Valve Plan Table Description (Cont'd)

Act. Type — The actuator type abbreviation.

AO	Air Operator
DF	Dual Function (Self Actuated and Power Operated)
EXP	Explosive Actuator
HO	Hydraulic Operator
M	Manual
MO	Motor Operator
SA	Self-Actuating
SAP	Self-Actuated Pilot
SO	Solenoid Operator

Normal Position — The normal position abbreviation. The valve's position during normal power operation. If the 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
CKL	Closed / Hand Switch Key Locked in Position
LC	Locked Closed
D	De-energized (3-way and 4-way valves)
E	Energized (3-way and 4-way valves)
O	Open
OKL	Open / Hand Switch Key Locked in Position
LO	Locked Open
SYS	System Condition Dependent

3.2 Valve Plan Table Description (Cont'd)

Safety Position — The 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
D	De-energized (3-way and 4-way valves)
E	Energized (3-way and 4-way valves)
D/E	De-energized or Energized
O	Open
O/C	Open or Closed

Test Type — The test type abbreviation.

LT	Leakage Rate Test
SC	Exercise Closed
SD	De-energize
SE	Energize
SO	Exercise Open
RT	Relief Valve Test
CC	Exercised Closed – Check Valve[1]
CO	Exercise Open – Check Valve[1]
CP	Partial Exercise Open[1]
DT	Rupture Disk / Explosive Valves
FC	Fail Safe Test Closed
FO	Fail Safe Test Open
PI	Position Indication Test

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

3.2 Valve Plan Table Description (Cont'd)

Test Freq. The test frequency abbreviation.

AJ	Appendix J
CM	Condition Monitoring[1]
CS	Cold Shutdown
M3	Quarterly
M6	Semiannual
OP	Operating Activities[2]
RR	Refuel Outage
SA2	Explosive Charge Sample
SA	Check Valve Disassembly Sample[3]
YX	X Years (X=1,2,...,10)

[1]Frequency is as indicated in the respective Condition Monitoring Plan for that valve group.
[2]Satisfied i.a.w. Exelon IST Program Technical Position. TP-EXE-01-01, Non-Safety Check Valve Exercise Testing By Normal Operations."
[3]Used for check valve disassembly/inspection per ISTC requirements or to indicate Condition Monitoring frequency (refer to respective Condition Monitoring Plan for that valve group).

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

Deferred Just. Deferred Test Justification. This section refers to Cold Shutdown Justifications and Refuel Outage Justifications.

A Cold Shutdown Justification number is listed when the testing frequency coincides with Cold Shutdowns instead of being performed quarterly. Cold Shutdown Justification numbers for valves are prefixed with "CS".

A Refuel Outage Justification number is listed when the testing frequency coincides with Refuel Outages instead of being performed quarterly or during Cold Shutdowns. Refuel Outage Justification numbers for valves are prefixed with "RJ".

3.2 Valve Plan Table Description (Cont'd)

Tech. Pos.

A technical position number is listed when the requirements of the code are not easily interpreted and clarifying information is needed. The technical position is used to document how Code requirements are being implemented at the station. Attachment 9 contains a index of all the Station Technical Positions included in Attachment 10. Station Technical Position numbers are prefixed with "TP". Attachment 11 contains a index of all the Corporate Technical Positions included in Attachment 12. Corporate Technical Position numbers are prefixed with "CTP".

Station Technical Position numbers are in the following format:

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- X: A unique, sequential alphabetical character used for identifying multiple Technical Positions on the same system.

Corporate Technical Position numbers are in the following format:

CTPNN-XX

Where;

- CTP: Corporate Technical Position identifier.
- NN: The last two numbers of the year the Corporate Technical Position was issued.

XX: A unique, sequential number used for identifying multiple Corporate Technical Positions issued during a year

Notes

Miscellaneous valve information

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ATTACHMENT 1

PUMP RELIEF REQUEST INDEX
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Designator	Description	Approval Date
RP-14A	ESS Keep Fill Pump Flow	10/01/99

ATTACHMENT 2

PUMP RELIEF REQUESTS

RELIEF REQUEST: RP-14A

Component Number	System	Code Class
1-1402-57	Core Spray	2
2-1402-57	Core Spray	2

Component Function(s)

The Emergency Core Cooling System (ECCS) keep fill pump is a motor-driven centrifugal pump. This pump must operate to pump water from the suppression chamber to the Core Spray and LPCI pump discharge lines to maintain these lines full to prevent water hammer damage during pump starting. The ECCS keep fill system is also connected to the HPCI and RCIC pump discharge but valves in these lines are normally closed. The ECCS keep fill system pump has a capacity of 50 gpm.

Code Requirements

O&M Part 6 Paragraph 5.2, "Test Procedure"

- The test parameters shown in Table 2 shall be determined and recorded as directed in this paragraph.

O&M Part 6 Paragraph 5.2(d)

- "Pressure, flow rate, and vibration (displacement or velocity) shall be determined and compared with corresponding reference values.

O&M Part 6 Table 2, "Inservice test Parameters"

Basis For Relief

10CFR50.55a(g) (6) (i), "impractical"
10CFR50.55a(a) (3) (ii), "hardship"

Instrumentation is not installed for measuring flow rates. Pump flow varies with system operation and system leakage; therefore, establishing flow rates for testing purposes is not practical. The primary purpose of these pumps is to maintain the Core Spray and LPCI pump discharge lines filled to limit the potential for water hammer upon initiation. System modification to provide test-measuring locations places undue burden on the utility without demonstrating any increase in the level of plant safety. These pumps are in continuous operation and the main ECCS pump discharge headers each have a low-pressure alarm, which continuously monitor the operability of the respective ECCS keep fill system pump. Station Technical Specifications also verify operability of the ECCS keep fill system pumps by verifying flow through a high point vent on a monthly basis.

RELIEF REQUEST: RP-14A

Proposed Alternate Testing

Vibration measurement will be obtained under normal operating conditions and evaluated in accordance with OMa-1988, Part 6. Quad Cities verifies operability of these pumps by pressure maintenance of the ECCS pump discharge lines within allowable pressure limits. In addition, Quad Cities Station monitors the subject pump for degradation by measuring and recording pump inlet pressure, discharge pressure, differential pressure, and vibration with the differential pressure and vibration data trended. These measurements are taken quarterly and provide satisfactory indication of operational readiness as well as the ability to detect potential degradation.

ATTACHMENT 3

VALVE RELIEF REQUEST INDEX
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Designator	Description	Approval Date
RV-00A	Deleted (Converted to TP-00J)	08/31/01
RV-00B	Deleted (Converted to TP-00J)	08/31/01
RV-00C	Closed Coupled Series Check Valves will be Back Flow Tested as a Unit.	11/1/95
RV-03A	Control Rod Drive Scram Inlet and Outlet Valve Exercise Test Frequency	5/3/94
RV-23A	High Pressure Coolant Injection System Exhaust Line Drain Pot to Gland Seal Condenser Solenoid Valve Can Not be Stroke Timed	6/16/99
RV-30B	Main Steam Safety Valve Set Point Testing, Additional Testing Requirements	5/3/94
RV-30C	Main Steam Isolation Valve Technical Specification Stroke Time Limits in Lieu of OMa-1988 Part 10 Stroke Time Limits.	11/1/95

ATTACHMENT 4

VALVE RELIEF REQUESTS

RELIEF REQUEST: RV-00C

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Component Number	System	Code Class	Category
1-1001-131	RHR	2	C
1-1001-132	RHR	NS	C
1-1001-136A	RHR	2	C
1-1001-136B	RHR	2	C
1-1001-137A	RHR	NS	C
1-1001-137B	RHR	NS	C
1-1001-139	RHR	2	C
1-1001-140	RHR	NS	C
1-1402-064A	Core Spray	2	C
1-1402-064B	Core Spray	2	C
1-1402-065A	Core Spray	2	C
1-1402-065B	Core Spray	2	C
2-1001-131	RHR	2	C
2-1001-132	RHR	NS	C
2-1001-136A	RHR	2	C
2-1001-136B	RHR	2	C
2-1001-137A	RHR	NS	C
2-1001-137B	RHR	NS	C
2-1001-139	RHR	2	C
2-1001-140	RHR	NS	C
2-1402-064A	Core Spray	2	C
2-1402-064B	Core Spray	2	C
2-1402-065A	Core Spray	2	C
2-1402-065B	Core Spray	2	C

Component Function(s)

These Core Spray and RHR check valves must close to prevent diversion of injection flow.

RELIEF REQUEST: RV-00C

Code Requirement(s)

ISTC Paragraph 4.5.4, "Valve Obturator Movement"

- "The necessary valve obturator movement during exercise testing shall be demonstrated by performing both an open and a close test."

ISTC Paragraph 4.5.8, "Corrective Action"

- "If a check valve fails to exhibit the required change of obturator position it shall be declared inoperable."

Basis For Relief

10CFR50.55a(a)(3)(i), "acceptable level of quality and safety"
10CFR50.55a(g)(6)(i), "impractical"

Quad Cities has conducted a detailed evaluation of the testability of each of the subject valves. We have concluded that there is no direct or indirect means of verifying that each individual check valve has been exercised to the closed position by either a reverse flow or "seat leakage" type test.

However, these are close coupled check valves in series. Each series can be verified to prevent backflow as a unit. Only one valve in each pair is required to close to perform the intended safety function.

Proposed Alternate Testing

The backflow prevention capability of the subject check valves will be verified by testing each close coupled pair as a unit. If the unit fails the backflow prevention acceptance criteria, **both** valves in the series pair will be repaired or replaced.
This testing follows the guidelines of Draft NUREG-1482, paragraph 4.1.1.

RELIEF REQUEST: RV-03A

Component Number	System	Code Class	Category
1-0305-114	CRD	2	C
1-0305-117-SO	CRD	NC	B
1-0305-118-SO	CRD	NC	B
1-0305-126-CV	CRD	1	B
1-0305-127-CV	CRD	1	B
1-0305-137	CRD	1	C
2-0305-114	CRD	2	C
2-0305-117-SO	CRD	NC	B
2-0305-118-SO	CRD	NC	B
2-0305-126-CV	CRD	1	B
2-0305-127-CV	CRD	1	B
2-0305-137	CRD	1	C

Component Function(s)

The scram discharge check valve (0305-114) opens to discharge reactor coolant from the Control Rod Drive (CRD) above-piston area to the Scram Discharge Volume (SDV).

The scram inlet valve 0305-126-CV opens to discharge the CRD Hydraulic Control Unit (HCU) accumulator into the CRD below-piston area.

The scram outlet valve 0305-127-CV opens to vent the CRD above-piston area and discharge reactor coolant to the SDV.

The scram pilot solenoid valves (0305-117-SO and 305-118-SO) de-energize to stroke the scram inlet and outlet valve to the positions described above.

The drive water check valve (0305-137) closes during a scram to prevent a significant loss of accumulator water to the drive water riser.

A CRD is inserted by creating a DP across the CRD piston with "high" pressure in the below-piston volume and "low" pressure in the above-piston volume. At low reactor pressure ($\leq$ 800 psig), the CRD HCU accumulator is required to insert a CRD within safety analysis time limits.

RELIEF REQUEST: RV-03A

Code Requirement(s)

OM Part 10, Paragraph 4.2.1.1, "Exercising Test Frequency"

- Active Category A and B valves shall be tested nominally every 3 months, except as provided by paragraphs 4.2.1.2, 4.2.1.5, and 4.2.1.7.

OM Part 10, Paragraph 4.2.1.4(b), "Power-Operated Valve Stroke Testing"

- The stroke time of all power operated valves shall be measured to the nearest second.

OM Part 10, Paragraph 4.2.1.9(a), "Corrective Action"

- If a valve fails to exhibit the required change of obturator position or exceeds the limiting values of full stroke time [see paragraph 4.2.1.4(a)], the valve shall be immediately declared inoperable.

ISTC Paragraph 4.5.1, "Exercising Test Frequency"

- Check valves shall be exercised nominally every 3 months, except as provided by paragraphs 4.3.2.2, 4.3.2.3, 4.3.2.4, and 4.3.2.5.

ISTC Paragraph 4.5.4, "Valve Obturator Movement"

- "The necessary valve obturator movement during exercise testing shall be demonstrated by performing both an open and close test".

ISTC Paragraph 4.5.8, "Corrective Action"

- If a check valve fails to exhibit the required change of obturator position it shall be declared inoperable.

RELIEF REQUEST: RV-03A

Basis For Relief

10CFR50.55a(g)(6)(I), "impractical"

As noted in TP-03A, the valve listed in the IST Plan is typical of 177 valves, i.e., one for each of the Control Rod Drives. The scram inlet and outlet valves are power operated valves that full stroke in milliseconds. The scram pilot solenoid valves also stroke in milliseconds.

Quarterly exercising of the subject valves would result in the rapid insertion of one or more Control Rod Drives. Quarterly testing would result in more frequent testing than is required by Technical Specifications to verify operability. Proper operation of each of these valves (4 x 177) is demonstrated during Technical Specification scram testing. The acceptance criteria for these tests are based on each CRD's scram insertion time. If the CRD is inserted within the time limits specified in Technical Specifications, these valves are functioning properly.

Trending the stroke times of the scram inlet and outlet valves, and the scram pilot solenoid valves is impractical and unnecessary because these valves are indirectly stroke timed and no meaningful correlation between the scram insertion time and the stroke time can be obtained. Based on the conservative limits established for CRD scram insertion times, it is unnecessary to trend the stroke times.

Proposed Alternate Testing

The operability of the subject valves will be verified by an indirect test. If the CRD scram insertion time is less than the limits specified in Technical Specifications, then the associated scram inlet and outlet valves are operable.

The test frequency for the subject valves will be based on the frequency of scram insertion time testing, as specified in Technical Specifications.

This Relief Request complies with NRC Generic Letter 89-04, Attachment 1, Position 7.

RELIEF REQUEST: RV-23A

Component Number	System	Code Class	Category
1-2301-032-SO	HPCI	2	B
1-2301-032-SO	HPCI	2	B

Component Function(s)

These solenoid valves function as a backup to the exhaust line drain pot steam trap. During normal operation of the turbine using high quality steam, the drain path from the drain pot to the Torus via the steam trap is adequate to remove condensate from the turbine exhaust line. However, during turbine operation with low pressure and low quality steam (which is seen during HPCI surveillance testing during plant startup and as would be expected during HPCI operation during a small break LOCA), condensate collects in the drain pot faster than it can be drained through the trap. Under these conditions, solenoid valve 1(2)-2301-32 opens automatically to drain to the gland seal condenser upon receipt of a signal from a drain pot level switch when the drain pot level reaches the high-level alarm set point. A high level condition sounds an alarm in the control room.

Code Requirement(s)

OMa-1988, Part 10, Paragraph 4.2.1.4(b), "Power-Operated Valve Stroke Testing"

- "The stroke time of all power-operated valves shall be measured to at least the nearest second."

OMa-1988, Part 10, Paragraph 4.2.1.8(e), "Stroke Time Acceptance Criteria"

- "Valves that stroke in less than 2 sec may be exempted from 4.2.1.8(c) and 4.2.1.8(d) above. In such cases the maximum limiting stroke time shall be 2 sec."

OMa-1988, Part 10, Paragraph 4.2.1.9(b), "Corrective Action"

- "Valves with measured stroke times which do not meet the acceptance criteria of paragraph 4.2.1.8 shall be immediately retested or declared inoperable..."

RELIEF REQUEST: RV-23A

Basis For Relief

10CFR50.55a(g)(6)(i), "impractical"

These valves are not equipped with hand switches or position indicators and the valves are totally enclosed, so valve position cannot be verified by direct observation. Therefore, it is impractical to exercise and stroke time these valves in accordance with Code requirements.

Valve actuation may be indirectly verified by removing the HPCI system from service, filling the drain pot with water until the high level alarm is received, and observing that the high level alarm clears. It is impractical to assign a maximum limiting stroke time to these valves using this test method because the time for the alarm to clear would depend primarily on variables such as the rate of filling and the level of the drain pot when the filling is secured. The steam line drain pot is not equipped with direct level indication; therefore, the time required for the alarm to clear may vary significantly.

Failure of these valves to perform their safety function would be indicated by a drain pot high level alarm during operation with low-pressure steam. Additionally, condensate entrapped in the steam would cause significant fluctuations in exhaust steam header pressure.

Compliance with the quarterly exercising and stroke timing requirements of the Code would require either system modifications to replace these valves with ones of testable design, or to purchase non-intrusive test equipment and develop new test methods and procedures. These alternatives would be burdensome due to the costs involved.

Proposed Alternate Testing

Stroke times will not be measured, and corrective actions based on stroke time will not be implemented.

Because exercising the subject valves without stroke timing provides no measure of valve degradation, a functional verification test is conducted on the drain pot level limit switches and the associated control room annunciators at least once every 92 days. Valve actuation will be indirectly verified by removing the HPCI system from service, filling the drain pot with water until the high level alarm is received, and observing a positive draining of the HPCI drain pot as indicated by a level increase in gland seal condenser and the high level alarm clears.

RELIEF REQUEST: RV-30B

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Component Number	System	Code Class	Category
1-0203-003A	Main Steam	1	C
1-0203-004A	Main Steam	1	C
1-0203-004B	Main Steam	1	C
1-0203-004C	Main Steam	1	C
1-0203-004D	Main Steam	1	C
1-0203-004E	Main Steam	1	C
1-0203-004F	Main Steam	1	C
1-0203-004G	Main Steam	1	C
1-0203-004H	Main Steam	1	C
2-0203-003A	Main Steam	1	C
2-0203-004A	Main Steam	1	C
2-0203-004B	Main Steam	1	C
2-0203-004C	Main Steam	1	C
2-0203-004D	Main Steam	1	C
2-0203-004E	Main Steam	1	C
2-0203-004F	Main Steam	1	C
2-0203-004G	Main Steam	1	C
2-0203-004H	Main Steam	1	C

Component Function(s)

Valve 0203-003A is a dual function Safety/Relief valve manufactured by Target Rock. The remaining valves are simple safety valves. These Main Steam Safety Valves are used to terminate an abnormal pressure increase in the Reactor Vessel and the Reactor Coolant Pressure Boundary (i.e., they provide overpressure protection).

Code Requirement(s)

0M Part 1, Paragraph 1.3.3.1.e, "Valves Not Meeting Acceptance Criteria"

- For valves which fail ..., additional valves shall be set pressure tested on the basis of two additional valves to be tested for each valve failure ...

RELIEF REQUEST: RV-30B
(Page 2 of 2)

Basis For Relief

10CFR50.55a(a)(3)(ii), "hardship"

In accordance with Technical Specifications, at least half of the subject valves are tested and rebuilt during each refueling outage. This accelerated maintenance schedule provides a high level of assurance that these safety valves will perform their safety function.

Quad Cities does not have the facilities required to perform set-point tests on large relief and safety valves. These valves are unbolted from their mounting flanges, decontaminated, and shipped to an off-site test facility. Because of the lengthy period required for removal, transportation, testing and re-installation, the removal and testing of additional valves due to sample expansion would delay unit start-up from refueling outages by at least several days. This represents a significant hardship.

The sample expansion requirements of OM Part 1 would require two additional valves be tested if one valve failed its set-point test. Since the dual function safety/relief valve is tested each outage, and no less than four of the remaining valves are tested during each outage, the valves already being tested represent an increased sample expansion. Therefore, based on the sample expansion requirements already being met for one valve, and the hardship associated with pulling additional valves, no additional valves will be tested if only one valve fails the set-point test.

Proposed Alternate Testing

The dual function safety/relief valve, and at least half of the eight (8) safety valves, will be tested, rebuilt and reset in accordance with Technical Specification during each reactor refueling outage. If only one of the eight (8) safety valves fails its set-point test, additional safety valves will not be tested. If more than one safety valve fails, the sample expansion criteria of OM Part 1, Paragraph 1.3.3.1.5 will be implemented for every additional failed valve.

RELIEF REQUEST: RV-30C

Component Number	System	Code Class	Category
1-0203-001A-AO	Main Steam	1	A
1-0203-001B-AO	Main Steam	1	A
1-0203-001C-AO	Main Steam	1	A
1-0203-001D-AO	Main Steam	1	A
1-0203-002A-AO	Main Steam	1	A
1-0203-002B-AO	Main Steam	1	A
1-0203-002C-AO	Main Steam	1	A
1-0203-002D-AO	Main Steam	1	A
2-0203-001A-AO	Main Steam	1	A
2-0203-001B-AO	Main Steam	1	A
2-0203-001C-AO	Main Steam	1	A
2-0203-001D-AO	Main Steam	1	A
2-0203-002A-AO	Main Steam	1	A
2-0203-002B-AO	Main Steam	1	A
2-0203-002C-AO	Main Steam	1	A
2-0203-002D-AO	Main Steam	1	A

Component Function(s)

The main steam isolation valves open to admit reactor steam to the turbine. They close to provide containment and reactor isolation.

Code Requirement(s)

OM Part 10,Paragraph 4.2.1.8(d), "Stroke Time Acceptance Criteria"

- "Other power-operated valves with reference stroke times less than or equal to 10 sec shall exhibit no more than ±50% change in stroke time when compared to the reference value."

Basis For Relief

10CFR50.55a(a)(3)(i), "acceptable level of quality and safety"

The OM Part 10 Code requirement bases the stroke time acceptance criteria on a fixed reference value taken from a baseline test. However, Technical Specification 3.7.D/4.7.D, "Primary Containment Isolation Valves" and Technical Specification 3.6.M/4.7.M, "Main Steam Isolation Valves establishes an invariable acceptable stroke time range for the MSIVs of $\geq$ 3.0 seconds to $\leq$ 5.0 seconds. This fixed range is more conservative and consistent than that required by

RELIEF REQUEST: RV-30C

Basis For Relief (Cont'd)

OM Part 10, since the range is not dependant on a baseline value that may vary by as much as ±1 second.

Proposed Alternate Testing

Technical Specification 3.7.D/4.7.D and 3.6.M/4.6.M establishes an acceptable stroke time range for the MSIVs of 3.0 seconds $\leq T_{MSIV} \leq$ 5.0 seconds. Quad Cities will utilize this range for evaluating an acceptable MSIV stroke time in lieu of establishing an acceptance band based on MSIV stroke time reference values. Quad Cities have also established additional limitations on stroke time based on reactor power levels to ensure that the Technical Specification limits are always met. Any MSIV that fails to meet the Technical Specification limits will be considered inoperable and corrective actions will be in accordance with the Technical Specifications.

ATTACHMENT 5

COLD SHUTDOWN JUSTIFICATION INDEX

(Page 1 of 1)

Designator	Description	Approval Date
CS-00A	RHR and Core Spray Injection Check Valves Open Exercise Testing	10/01/99
CS-02A	Reactor Recirculation Pump Suction and Discharge Valve Closure Time Testing	10/01/99
CS-03A	CRD Charging Water Check Valve Closure Testing	10/01/99
CS-03B	CRD Air and Scram Dump Valve Exercise Testing	10/01/99
CS-10A	RHR Shutdown Cooling Suction Primary Containment Valve Time Testing	10/01/99
CS-13A	RCIC Suppression Chamber Suction Check Valve Closure Testing	10/01/99
CS-23B	HPCI Suppression Chamber Suction Check Valve and Keep Fill Supply Check Valve Closure Testing.	10/01/99
CS-30A	Outboard MSIV Fail Safe Testing	10/01/99
CS-30B	MSIV Exercise Testing	9/14/98
CS-37A	RBCCW Primary Containment Isolation Valve Time Testing	10/01/99

ATTACHMENT 6

COLD SHUTDOWN JUSTIFICATIONS

COLD SHUTDOWN JUSTIFICATION: CS-00A

(Page 1 of 1)

Component Number	System	Code Class	Category
1-1001-068A	RHR	1	A/C
1-1001-068B	RHR	1	A/C
1-1402-009A	Core Spray	1	A/C
1-1402-009B	Core Spray	1	A/C
1-2901-010	Safe Shutdown Makeup	1	C
2-1001-068A	RHR	1	A/C
2-1001-068B	RHR	1	A/C
2-1402-009A	Core Spray	1	A/C
2-1402-009B	Core Spray	1	A/C
2-2901-010	Safe Shutdown Makeup	1	C

Component Function(s)

These Residual Heat Removal (RHR), Core Spray, and Safe Shutdown Makeup (SSMP) injection check valves must open when the associated System is required to inject water into the reactor vessel.

Justification

Injection of cold water from the Contaminated Condensate Storage Tanks and/or Suppression Chamber would produce reactivity excursions. This cold water would create a thermal shock to various Class 1 piping systems especially causing concerns at the weld joints. Providing there is inadequate thermal mixing in the reactor vessel, there is a possibility that the cold water could reach the reactor vessel nozzles and reactor vessel internals. By minimizing the number of injections into the reactor vessel, the thermal cycling of weld joints and reactor components and the resulting piping stresses would be reduced. In addition, the RHR and Core Spray check valves cannot be exercised open during normal operation via a full flow test because the system injection motor operated valves can only be opened at reactor pressures less than 325 psig.

The RHR check valves will be stroked by their air operators and the Core Spray and SSMP Check Valves will be tested by a full flow injection test during Cold Shutdowns.

COLD SHUTDOWN JUSTIFICATION: CS-02A

(Page 1 of 1)

Component Number	System	Code Class	Category
1-0202-005A-MO	Reactor Recirculation	1	B
1-0202-005B-MO	Reactor Recirculation	1	B
1-0202-009A-MO	Reactor Recirculation	1	B
2-0202-005A-MO	Reactor Recirculation	1	B
2-0202-005B-MO	Reactor Recirculation	1	B
2-0202-009A-MO	Reactor Recirculation	1	B

Component Function(s)

Valves 0202-005A and 0202-005B are the Reactor Recirculation (RR) pump discharge isolation valves. Valve 0202-009A is the Recirculation Loop cross-tie bypass whose primary purpose is to stay open during operation to equalize temperature and pressure in the cross-tie area of the recirculation loop. The RR pump discharge isolation valve and the crests bypass valve must close upon receipt of a Residual Heat Removal Low Pressure Coolant Injection (LPCI) mode (Loop Selection Logic) signal. Closure of the RR pump discharge isolation valve and the cross-tie bypass valve ensures that LPCI flow is directed to the reactor core, rather than being diverted out a RR system line break.

Justification

Valves 0202-005A and 0202-005B cannot be exercised closed during normal operation because one loop of the Reactor Recirculation system would have to be secured prior to performing the test. Single loop operation is limited by Technical Specifications and should be avoided because coolant flow imbalances may lead to neutron flux oscillations and requires a significant (30%) extended load reduction for the sole purpose of performing this exercise test.

Valve 0202-009A cannot be exercised closed during normal operation because differential pressures and temperatures may be created in the piping between the 0202-006A and 0202-006B valves causing undesirable stresses.

These valves will be exercised closed during cold shutdowns when the reactor recirculation system can be secured.

COLD SHUTDOWN JUSTIFICATION: CS-03A
(Page 1 of 1)

Component Number	System	Code Class	Category
1-0305-115	CRD	1	A/C
2-0305-115	CRD	1	A/C

Component Function(s)

The Control Rod Drive (CRD) charging water header check valves (typical of 177) must close when each CRD scram inlet valve (0305-126 -FCV) opens and discharges the CRD Hydraulic Control Unit (HCU) accumulator into the CRD under-piston area to insert a control rod. If this CRD charging water header check valve does not close, CRD HCU scram drive flow may be diverted to the charging water header.

Justification

These valves cannot be exercised closed during normal operation since the CRD pumps that are required for operation would have to be secured, and accumulator pressure monitored, to verify valve closure. If the CRD pumps are secured, cooling water to the CRD seals would be interrupted and the seals may be damaged.

The valves will be exercised closed during cold shutdowns when the CRD pumps can be secured.

COLD SHUTDOWN JUSTIFICATION: CS-03B

(Page 1 of 1)

Component Number	System	Code Class	Category
1-0302-019A-SO	CRD	NC	B
1-0302-019B-SO	CRD	NC	B
1-0302-020A-SO	CRD	NC	B
1-0302-020B-SO	CRD	NC	B
1-0302-025A-SO	CRD	NC	B
1-0302-025B-SO	CRD	NC	B
1-0302-181A-SO	CRD	NC	B
1-0302-181B-SO	CRD	NC	B
1-0302-182A-SO	CRD	NC	B
1-0302-182B-SO	CRD	NC	B
2-0302-019A-SO	CRD	NC	B
2-0302-019B-SO	CRD	NC	B
2-0302-020A-SO	CRD	NC	B
2-0302-020B-SO	CRD	NC	B
2-0302-025A-SO	CRD	NC	B
2-0302-025B-SO	CRD	NC	B
2-0302-181A-SO	CRD	NC	B
2-0302-181B-SO	CRD	NC	B
2-0302-182A-SO	CRD	NC	B
2-0302-182B-SO	CRD	NC	B

Component Function(s)

The Control Rod Drive Scram Air Header has multiple vent paths to ensure reliability in case scram action is necessary. 0302-020A, 0302-020B, 0302-019A and 0302-019B are the Scram Dump Valves and Scram Dump Backup valves respectively. Valves 0302-025A, 0302-025B, 0302-026, 0301-122, 0302-181A, 0302-181B, 0302-182A and 0302-182B are vent valves for the Anticipated Transient Without Scram/Alternate Rod Injection (ATWS/AIR) system. These valves must energized (open for the check valves) to provide a vent path to depressurize the Scram Air Header.

Justification

These valves cannot be exercised or fail safe tested during normal operation because their actuation could lead to an unplanned rapid insertion of all control rods and the closure of the scram discharge volume vent and drain valves. Valves 0302-019A, 0302-019B, 0302-020A and 0302-020B are in series and do not have individual position indication, the only positive method of determining that these valves open is to actuate both the A and B scram logic. The actuation of a single AIR/ATWS valve would result in the depressurization of the entire scram air header. The valves will be exercised and fail safe tested during cold shutdowns when the CRDs are not required.

COLD SHUTDOWN JUSTIFICATION: CS-10A

(Page 1 of 1)

Component Number	System	Code Class	Category
1-1001-047-MO	RHR	1	A
1-1001-050-MO	RHR	1	A
2-1001-047-MO	RHR	1	A
2-1001-050-MO	RHR	1	A

Component Function(s)

These normally closed valves are Primary Containment Isolation Valves (PCIVs) and Pressure Isolation Valves (PIVs) for the Residual Heat Removal (RHR) Shutdown Cooling mode suction line. These valves are required to close for isolation purposes.

Justification

These valves cannot be exercised closed during normal operation. These normally closed valves must be exercised open prior to closure timing. These valves cannot be opened during normal operation due to an interlock that prevents the opening of the valves when the reactor pressure is greater than 100 psig.

These valves will be exercised and timed closed during cold shutdowns when the reactor pressure is less than 100 psig and when Shutdown Cooling can be secured.

COLD SHUTDOWN JUSTIFICATION: CS-13A

(Page 1 of 1)

Component Number	System	Code Class	Category
1-1301-027	RCIC	NS	C
2-1301-027	RCIC	NS	C

Component Function(s)

The RCIC Suppression Chamber Suction Check valve must close to prevent the draining of the RCIC piping into the Suppression Chamber when the pump suction is aligned to the Suppression Chamber and the RCIC pump is idle.

Justification

The test to verify valve closure is performed by opening the RCIC system high point vent to verify the RCIC system can maintain fill when the RCIC suction is aligned to the Suppression Chamber. The high point vent is located in the MSIV room, which is a high temperature and high radiation area during reactor operation. The ALARA and personnel safety aspects make it impractical to perform during power operation.

This justification is in accordance with the position detailed in NUREG 1482, Response to Comment 2.4.5-1, "Deferring Valve Testing to Cold Shutdown or Refueling Outages."

The subject check valves will be exercised closed during Cold Shutdowns.

COLD SHUTDOWN JUSTIFICATION: CS-23B

(Page 1 of 1)

Component Number	System	Code Class	Category
1-2301-039	HPCI	2	C
1-2301-075	HPCI	2	C
1-2301-039	HPCI	2	C
1-2301-075	HPCI	2	C

Component Function(s)

The HPCI Suppression Chamber Suction Check valve closes to prevent the draining of HPCI piping into the Suppression Chamber when the pump suction is aligned to the Suppression Chamber and the HPCI pump is idle. The HPCI Keep Fill Supply Check Valve opens to maintain the HPCI system piping full when the HPCI suction is aligned to the Suppression Chamber.

Justification

Verification that the HPCI system can maintain fill when the HPCI suction is aligned to the Suppression Chamber verifies both the closure of the HPCI Suppression Chamber Suction Check Valve and the opening capability of the HPCI Keep Fill Supply Check Valve. HPCI system fill is verified by observing flow from the HPCI system high point vent. This high point vent is located in the MSIV room, which is a high temperature and high radiation area during reactor operation. The ALARA and personnel safety aspects make it impractical to perform during power operation.

This justification is in accordance with the position detailed in NUREG 1482, Response to Comment 2.4.5-1, "Deferring Valve Testing to Cold Shutdown or Refueling Outages."

The subject check valves will be verified open during Cold Shutdown periods when personnel can safely enter the MSIV room.

COLD SHUTDOWN JUSTIFICATION: CS-30A

(Page 1 of 2)

Component Number	System	Code Class	Category
1-0203-002A-AO	Main Steam	1	A
1-0203-002A-AP2	Main Steam	NC	B
1-0203-002B-AO	Main Steam	1	A
1-0203-002B-AP2	Main Steam	NC	B
1-0203-002C-AO	Main Steam	1	A
1-0203-002C-AP2	Main Steam	NC	B
1-0203-002D-AO	Main Steam	1	A
1-0203-002D-AP2	Main Steam	NC	B
2-0203-002A-AO	Main Steam	1	A
2-0203-002A-AP2	Main Steam	NC	B
2-0203-002B-AO	Main Steam	1	A
2-0203-002B-AP2	Main Steam	NC	B
2-0203-002C-AO	Main Steam	1	A
2-0203-002C-AP2	Main Steam	NC	B
2-0203-002D-AO	Main Steam	1	A
2-0203-002D-AP2	Main Steam	NC	B

Component Function(s)

The main steam isolation valves open to admit reactor steam to the turbine. They close to provide reactor containment and reactor coolant system isolation.

Valves in the 0203-001-AP2 and 0203-002-AP2 series are 2-Way Air Pilot Valves with air pilot operators that must fail open during a loss-of-instrument air event. When these valves open, the Main Steam Isolation valve will close.

COLD SHUTDOWN JUSTIFICATION: CS-30A

Justification

A true fail safe test of these valves can only be performed BY simulating a loss of instrument air by locally venting the MSIV accumulator and verifying the valve changes position.

The 2-Way air pilot valves are exercised each time the associated Main Steam Isolation Valve (MSIV) is closed. The 2-Way air pilot valves provide a secondary vent path independent of the main 4-Way air pilot valve. So it is extremely difficult to determine whether the MSIV closed with actuator air exhausting through both the 4-Way air pilot and the subject 2-Way air pilot, or though the 4-Way air pilot alone.

A loss-of-instrument air event must be simulated by locally venting the MSIV accumulator to provide conclusive evidence that the 2-way air pilot valve was exercised open.

A true fail safe test of these valves can only be performed by locally venting the MSIV accumulator and observing the valve closure. This cannot be performed without significantly reducing reactor power. Also, the accumulators are located in the MSIV room, which is a high temperature, high humidity, and high radiation area. The ALARA and personnel safety aspects make it impractical to perform during power operation.

These valves will be fail safe tested during cold shutdowns when entry into the MSIV room is permitted.

COLD SHUTDOWN JUSTIFICATION: CS-30B

(Page 1 of 2)

Component Number	System	Code Class	Category
1-0203-001A-AO	Main Steam	1	A
1-0203-001A-AP4	Main Steam	NC	B
1-0203-001B-AO	Main Steam	1	A
1-0203-001B-AP4	Main Steam	NC	B
1-0203-001C-AO	Main Steam	1	A
1-0203-001C-AP4	Main Steam	NC	B
1-0203-001D-AO	Main Steam	1	A
1-0203-001D-AP4	Main Steam	NC	B
1-0203-002A-AO	Main Steam	1	A
1-0203-002A-AP4	Main Steam	NC	B
1-0203-002B-AO	Main Steam	1	A
1-0203-002B-AP4	Main Steam	NC	B
1-0203-002C-AO	Main Steam	1	A
1-0203-002C-AP4	Main Steam	NC	B
1-0203-002D-AO	Main Steam	1	A
1-0203-002D-AP4	Main Steam	NC	B
2-0203-001A-AO	Main Steam	1	A
2-0203-001A-AP4	Main Steam	NC	B
2-0203-001B-AO	Main Steam	1	A
2-0203-001B-AP4	Main Steam	NC	B
2-0203-001C-AO	Main Steam	1	A
2-0203-001C-AP4	Main Steam	NC	B
2-0203-001D-AO	Main Steam	1	A
2-0203-001D-AP4	Main Steam	NC	B
2-0203-002A-AO	Main Steam	1	A
2-0203-002A-AP4	Main Steam	NC	B
2-0203-002B-AO	Main Steam	1	A
2-0203-002B-AP4	Main Steam	NC	B
2-0203-002C-AO	Main Steam	1	A
2-0203-002C-AP4	Main Steam	NC	B
2-0203-002D-AO	Main Steam	1	A
2-0203-002D-AP4	Main Steam	NC	B

COLD SHUTDOWN JUSTIFICATION: CS-30B

Component Function(s)

The main steam isolation valves (MSIVs) are normally open to provide a steam flow path from the reactor through containment to the turbine. This is not a safety-related function.

The MSIVs have a closed safety function to provide reactor containment and reactor coolant system isolation on a Group 1 Primary Containment Isolation Signal.

The 4-Way Air pilot has a safety function to actuate to its fail-safe position that allows the closure of the MSIV. This function is verified by the closure of the MSIV.

Justification

It is impractical to full-stroke exercise these valves to the closed position on a quarterly (nominal 92 days) frequency during plant operation. The MSIVs have the capability and are being partial stroked at least once per quarter during the Tech. Spec. MSIV scram sensor channel functional test requirements.

As identified in UFSAR section 6.2.6.3.1, "MSIV Testing", the performance of a full-stroke exercise to the closed position of individual MSIVs can be performed during power operation if reactor power is reduced sufficiently (< 75% power) to avoid a scram as a result of primary system pressure spikes and reactor power fluctuations.

NUREG-1482 "Guidelines for Inservice Testing at Nuclear Power Plants", Section 2.4.5, "Deferring Valve Testing to Cold Shutdown or Refueling Outages" identifies "impractical conditions justifying test deferrals" as those conditions that could result in unnecessary challenges to safety systems, place undue stress on components, cause unnecessary cycling of equipment, or unnecessarily reduce the life expectancy of the plant systems and components. Section 2.4.5 also identified that any testing that could cause a plant trip or require a power reduction can be considered as an example of impractical conditions. The note at the end of NUREG-1482, Section 4.2.4, "Main Steam Isolation Valves" also identified that the revised standard technical specification bases for MSIV surveillance requirements states that "MSIVs should not be exercised at power, since even a partial stroke exercise increases the risk of a valve closure when the unit is generating power."

No reduction from high power levels (>75% power) will be made specifically to accomplish this testing. The MSIV's will be full-stroke timed during Cold Shutdowns. In addition, these valves will be partially stroked closed at least once per quarter.

COLD SHUTDOWN JUSTIFICATION: CS-37A

(Page 1 of 1)

Component Number	System	Code Class	Category
1-3702-MO	RBCCW	NC	A
1-3703-MO	RBCCW	NC	A
1-3706-MO	RBCCW	NC	A
2-3702-MO	RBCCW	NC	A
2-3703-MO	RBCCW	NC	A
2-3706-MO	RBCCW	NC	A

Component Function(s)

These valves are Primary Containment Isolation Valves (PCIVs) on the Reactor Building Closed Cooling Water (RBCCW) supply and return lines to the drywell. These valves must close to provide primary containment isolation.

Justification

These normally open valves cannot be closed during normal operation, because the RBCCW system supplies cooling water to both Reactor Recirculation (RR) pumps, the RR pump motor bearing coolers, and the drywell air coolers. Interrupting the cooling water supply to the RR pump or motor bearings for even a short time could result in damage to the pump bearings.

The valves will be exercised closed during cold shutdown periods when the component cooling water is not required.

ATTACHMENT 7

REFUEL OUTAGE JUSTIFICATION INDEX
(Page 1 of 2)

Designator	Description	Approval Date
RJ-00A	Excess Flow Check Valve Testing	10/01/99
RJ-00B	RHR, CS, and RVLIS Check Valve Seat Leakage Testing	10/01/99
RJ-07A	TIP Purge Check Valve Closure Testing	10/01/99
RJ-10A	Condensate Transfer to RHR Check Valve Closure Testing	10/01/99
RJ-11A	SBLC Primary Containment Check Valve Closure Testing	10/01/99
RJ-13A	RCIC Turbine Exhaust & Vacuum Pump Check Valve Closure Testing	10/01/99
RJ-13B	RCIC Injection Check Valve Open Testing	10/01/99
RJ-14A	Condensate Transfer to ESS Fill Line Check Valve Closure Testing	10/01/99
RJ-23A	HPCI Drain Pot Drain Line Check Valve Closure Testing	10/01/99
RJ-23B	HPCI Injection Check Valve Open Testing	10/01/99
RJ-24A	CAM H2/O2 Analyzer Check Valve Closure Testing	10/01/99
RJ-30A	Main Steam Safety Relief Valve Discharge Line Vacuum Breaker Exercise Testing	5/3/94
RJ-30B	MSIV AC/DC Solenoid Valve Exercise Testing	5/3/94
RJ-30C	Inboard MSIV Fail Safe Testing	10/01/99
RJ-32A	Feedwater Primary Containment Isolation Check Valve Closure Testing	10/01/99

REFUEL OUTAGE JUSTIFICATION INDEX

Designator	**Description**	**Approval Date**
RJ-37A	RBCCW Supply to the Drywell Primary Containment Isolation Check Valve Closure Testing	10/01/99
RJ-43A	Clean Condensate Supply to Drywell Primary Containment Isolation Check Valve Closure Testing	10/01/99
RJ-46A	Service Air to Drywell Primary Containment Isolation Check Valve Closure Testing	10/01/99
RJ-47A	MSIV and Safety Relief Valve Air Actuator Accumulator Check Valve Closure Testing	9/25/96
RJ-47B	Instrument Air to Drywell Primary Containment Isolation Check Valve Closure Testing	10/01/99

ATTACHMENT 8

REFUEL OUTAGE JUSTIFICATIONS

REFUEL OUTAGE JUSTIFICATION: RJ-00A

(Page 1 of 1)

Component Number	System	Code Class	Category
All Excess Flow Check Valves	Various	1	A/C

Component Function(s)

The excess flow check valves limit flow (leakage) from failed instrument lines connected to the Reactor Coolant Pressure Boundary (RCPB). These valves must close in the event of an instrument or instrument line failure outside of primary containment.

Justification

Excess Flow Check Valves are tested in accordance with the Technical Specifications, Updated Final Safety Analysis Report, and ComEd Corporate Position TP-CWE-IST-98-02. These valves must close in the event of an instrument or instrument line failure outside of containment.

Excess flow check valves will be exercised closed during the excess flow check valve leakage test that is conducted during the Reactor Vessel Inservice Leak or Hydrostatic test performed at the end of each reactor refueling outage.

REFUEL OUTAGE JUSTIFICATION: RJ-00B

(Page 1 of 2)

Component Number	System	Code Class	Category
1-0263-944A	Reactor Recirculation	1	A/C
1-0263-944B	Reactor Recirculation	1	A/C
1-0263-945A	Reactor Recirculation	1	A/C
1-0263-945B	Reactor Recirculation	1	A/C
1-0263-947A	Reactor Recirculation	1	A/C
1-0263-947B	Reactor Recirculation	1	A/C
1-0263-948A	Reactor Recirculation	1	A/C
1-0263-948B	Reactor Recirculation	1	A/C
1-1001-068A	RHR	1	A/C
1-1001-068B	RHR	1	A/C
1-1402-009A	Core Spray	1	A/C
1-1402-009B	Core Spray	1	A/C
2-0263-944A	Reactor Recirculation	1	A/C
2-0263-944B	Reactor Recirculation	1	A/C
2-0263-945A	Reactor Recirculation	1	A/C
2-0263-945B	Reactor Recirculation	1	A/C
2-0263-947A	Reactor Recirculation	1	A/C
2-0263-947B	Reactor Recirculation	1	A/C
2-0263-948A	Reactor Recirculation	1	A/C
2-0263-948B	Reactor Recirculation	1	A/C
2-1001-068A	RHR	1	A/C
2-1001-068B	RHR	1	A/C
2-1402-009A	Core Spray	1	A/C
2-1402-009B	Core Spray	1	A/C

Component Function(s)

Valves 0263-944A/B, 0263-945A/B, 0263-947A/B, and 0263-948A/B are the Reactor Vessel Level Indication Back Fill check valves that must close to provide assurance that vessel level instrumentation integrity is adequately maintained in the event of CRD system depressurization. The basis for the check valve leakage shall be the maximum leakage, which ensures that the loss of water inventory from the reference leg piping over an acceptable time period is limited to a 6" level change. This ensures that adequate vessel level indication is provided to the operator for assessing plant operating conditions.

Check valves 1001-068A/B, LPCI Injection Check Valves and 1402-009A/B, Core Spray Injection Check Valves are Pressure Isolation Valves that are required to close to isolate the reactor pressure boundary from low pressure piping systems.

REFUEL OUTAGE JUSTIFICATION: RJ-00B

Justification

The LPCI and Core Spray check valves can only be exercised closed by performing a seat leakage test. These valves are located in the drywell and thus cannot be lined up to exercise during power operation or cold shutdowns when the drywell is inerted.

These valves cannot be exercised closed during Cold Shutdown, because there are no external means of determining disk position and the only ways to verify that the valve is closed is by leak testing. To perform leak testing, the system must be taken out-of-service and a drywell entry is necessary to perform the leakage test. It is impractical to de-inert the drywell for the sole purpose of performing leakage testing. Also, due to the short duration of Cold Shutdowns, the time to set up test equipment, perform the test, and analyze the results may result in a delay in plant start-up and is not practical.

The Reactor Vessel Level Indication Back Fill check valves also can only be exercised closed by performing a seat leakage test. This test entails the pressurization of portions of the Reactor Vessel Level Indication Back Fill system on instrument racks containing sensitive equipment. Seat leakage past a test boundary valve or inadvertent jarring of sensitive instruments could cause a transient on the operating unit and is therefore impractical. Additionally, exercise testing during short duration cold shutdowns would impose a significant hardship on Quad Cities due to the time to set up test equipment, perform the test, and analyze the results that may result in a delay in plant start-up and is not practical.

The subject valves will be tested during each refueling outage.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

REFUEL OUTAGE JUSTIFICATION: RJ-07A

Component Number	System	Code Class	Category
1-0743	TIP	NC	A/C
2-0743	TIP	NC	A/C

Component Function(s)

These check valves are Primary Containment Isolation Valves (PCIV) for the Traversing In-Core Probe (TIP) system nitrogen purge lines.

Justification

These check valves cannot be exercised closed during normal (power) operation, because the TIP system must be purged continuously.

Certified personnel using specialized test equipment can only perform radiography. The plant does not maintain certified radiography personnel and the radiography equipment permanently on-site and must contract out this service. It is neither practical nor cost-effective for the station to maintain a radiography crew on-site solely for the purpose of verifying closure of these check valves every quarter.

These check valves cannot be exercised closed during Cold Shutdown, because there are no external means of determining disk position and the only ways to verify that the valve is closed is by leak testing or by radiography.

To perform leak testing, the system must be taken out-of-service and a drywell entry is necessary to perform the leakage test. It is impractical to de-inert the drywell for the sole purpose of performing leakage testing. Also, due to the short duration of Cold Shutdowns, the time for the radiography personnel to arrive on-site, set up test equipment, perform the test, and analyze the results may result in a delay in plant start-up and is not practical.

The subject check valves will be verified closed during each refueling outage by:

1. Local Leak Rate Testing in accordance with Appendix J or

2. Radiography during or within two weeks prior to each reactor refueling outage. At this time, Radiography personnel and equipment are available to support planned reactor refueling outage activities.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

REFUEL OUTAGE JUSTIFICATION: RJ-10A

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Component Number	System	Code Class	Category
1-1001-131	RHR	2	C
1-1001-136A	RHR	2	C
1-1001-136B	RHR	2	C
1-1001-139	RHR	2	C
2-1001-131	RHR	2	C
2-1001-136A	RHR	2	C
2-1001-136B	RHR	2	C
2-1001-139	RHR	2	C

Component Function(s)

These check valves are the Condensate Makeup Transfer supply valves to RHR. These valves must close to prevent diversion of RHR flow from into the Condensate Makeup Transfer system during safety related modes of RHR operation.

Justification

These check valves are close coupled in series with non-safety related check valves (included in the IST augmented scope). Each check valve series are verified quarterly to prevent backflow as a unit (See Relief Request RV-00C). Only one valve in each pair is required to close to perform the intended safety function. However, there is no direct or indirect means of verifying that each individual check valve has been exercised to the closed position by either a reverse flow or "seat leakage" type test. Verification of individual valve closure is possible using non-intrusive testing techniques such as radiography.

Certified personnel using specialized test equipment can only perform radiography. The plant does not maintain certified radiography personnel and the radiography equipment permanently on-site and must contract out this service. It is neither practical nor cost-effective for the station to maintain a radiography crew on-site solely for the purpose of verifying closure of these check valves.

The burden of testing these check valves during normal power operation or cold shutdown periods is not commensurate with a corresponding increase in quality and safety.

Due to the short duration of Cold Shutdowns, the time needed for the contracted radiography personnel to arrive on-site, install test equipment, perform the test, and analyze the results may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical.

REFUEL OUTAGE JUSTIFICATION: RJ-10A

Justification (Cont'd)

In addition to the quarterly reverse flow test of each check valve series, a non-intrusive test will be performed on the subject valves on a sampling basis with one valve being verified closed by radiography during or within two weeks prior to each reactor refueling outage. At this time radiography personnel and equipment are available on-site to support planned reactor refueling outage activities.

These check valves will be exercised closed each refueling outage.

The non-safety Open exercise test for these valves: 1(2)-1001-131, 1(2)-1001-132, 1(2)-1001-136A(B), 1(2)-1001-137A(B), 1(2)-1001-139 and 1(2)-1001-140 is performed ever refuel outage by obtaining flow out of system vent while condensate make-up is supplying the system keep fill.

REFUEL OUTAGE JUSTIFICATION: RJ-11A

Component Number	System	Code Class	Category
1-1101-015	SBLC	1	A/C
1-1101-016	SBLC	1	A/C
2-1101-015	SBLC	1	A/C
2-1101-016	SBLC	1	A/C

Component Function(s)

These check valves are the Primary Containment Isolation Valves (PCIVs) for the Standby Liquid Control (SBLC) system.

These valves must open for the SBLC pumps to inject sodium pentaborate in sufficient quantity and concentration to overcome the maximum positive reactivity at full power conditions with no control rod movement.

These valves must close to isolate the reactor vessel and primary containment from the Standby Liquid Control System.

JUSTIFICATION

Any exercise test of these valves is complicated because they are isolated from the main part of the SBLC system by explosive actuated valves (1106A and 1106B). The explosive actuated valves maintain a leak tight physical barrier between the poison in the SBLC system and reactor water.

An exercise test to the open position during normal operation via a full flow test can not be performed because the injection of cold demineralized water would produce reactivity excursions. This cold water would create a thermal shock to various Class 1 piping systems especially causing concerns at the weld joints. Providing there is inadequate thermal mixing in the reactor vessel, there is a possibility that the cold water could reach the reactor vessel nozzles and reactor vessel internals. By minimizing the number of injections into the reactor vessel, the thermal cycling of weld joints and reactor components and the resulting piping stresses would be reduced. Because of these reasons, Quad Cities decided to minimize the number of cold water injections.

The test connection downstream of the explosive actuated valves can be used during Cold Shutdown to part stroke open the subject valves. The test connection is not large enough for a full flow test; a full stroke test can only be performed during Reactor Refueling using the SBLC pumps.

REFUEL OUTAGE JUSTIFICATION: RJ-11A

(Page 2 of 2)

Justification (Cont.)

These valves will be exercised partially open during Cold Shutdown and full stroke exercised open at Reactor Refueling during the SBLC reactor vessel injection surveillance.

These valves cannot be exercised closed without performing a reverse flow/leak test or by verifying closed by radiography. These tests are impractical to perform during normal operation or Cold Shutdown. These check valves do not have position indication, and valve 1101-015 is inside the drywell, which is normally inerted (inaccessible).

The subject check valves will be exercised closed during refueling outages by:

1. Local Leak Rate Testing in accordance with Appendix J or

2. Radiography during each reactor refueling outage. At this time, Radiography personnel and equipment are available to support planned reactor refueling outage activities.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing" and NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

REFUEL OUTAGE JUSTIFICATION: RJ-13A

Component Number	System	Code Class	Category
1-1301-040	RCIC	NC	A/C
1-1301-041	RCIC	NC	A/C
1-1301-055	RCIC	NC	A/C
1-1301-064	RCIC	NC	A/C
2-1301-040	RCIC	NC	A/C
2-1301-041	RCIC	NC	A/C
2-1301-055	RCIC	NC	A/C
2-1301-064	RCIC	NC	A/C

Component Function(s)

Check valves 1301-040 and 1301-055 are Primary Containment Isolation Valves (PCIV) on the RCIC vacuum pump discharge line to the Suppression Pool (Torus).

Check valves 1301-041 and 1301-064 are Primary Containment Isolation Valves (PCIV) on the RCIC turbine (1303) exhaust line to the Torus.

Justification

Since the subject valves are check valves with no position indication, they cannot be verified to be closed without performing a reverse flow/leak test or by verifying closure using radiography.

These valves are each located in a limited access area approximately 20 ft above floor level and require the erection of scaffolding to obtain access to the test taps. This scaffolding is required to be erected in the general vicinity of a Core Spray pump. The erection of scaffolding places an added risk to the Core Spray system.

This test would also require taking a non-redundant system (RCIC) Out-Of-Service (OOS) for an extended period of time.

During operation, the OOS would disable the auto-initiation function to protect the safety of the test personnel. If during the test, RCIC was needed to inject due to a loss of reactor feed water pumps, the time it would take to return the system to its operating configuration would prevent the system from fulfilling its design function. This delay in system actuation would result in an additional burden to the Control Room operators while trying to recover from the loss of feed water event.

REFUEL OUTAGE JUSTIFICATION: RJ-13A

Justification (Cont'd)

Certified personnel using specialized test equipment can only perform radiography. The plant does not maintain certified radiography personnel and the radiography equipment permanently on-site and must contract out this service. It is neither practical nor cost-effective for the station to maintain a radiography crew on-site solely for the purpose of verifying closure of these check valves every quarter.

The burden of testing of these check valves on a quarterly frequency vice a Cold Shutdown or Refuel frequency is not commensurate with a corresponding increase in quality and safety.

To perform Local Leak Rate testing during Cold Shutdowns, the time taken install test equipment and perform the test may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical. Also, due to the short duration of Cold Shutdowns, the time needed for the contracted radiography personnel to arrive on-site, install test equipment, perform the test, and analyze the results may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical.

The subject check valves will be exercised closed during each refueling outage by:

1. Local Leak Rate Testing in accordance with Appendix J or

2. Radiography during or within two weeks prior to each reactor refueling outage. At this time, Radiography personnel and equipment are available to support planned reactor refueling outage activities.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

REFUEL OUTAGE JUSTIFICATION: RJ-13B

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Component Number	System	Code Class	Category
1-1301-050	RCIC	NS	C
2-1301-050	RCIC	NS	C

Component Function(s)

These check valves must open to inject water into the reactor vessel during RCIC injection.

Justification

These check valves cannot be exercised open during normal power operation via a full flow test because the injection of cold water from the Contaminated Condensate Storage Tanks would produce reactivity excursions. Performing this test would require a reduction in reactor power to avoid exceeding fuel thermal limits upon the injection of cold water into the reactor. This cold water would also create a thermal shock to various Class 1 piping systems especially causing concerns at the weld joints of the RCIC & Reactor Feedwater line interface. Providing there is inadequate thermal mixing in the reactor vessel, there is a possibility that the cold water could reach the reactor vessel nozzles and reactor vessel internals. By minimizing the number of injections into the reactor vessel, the thermal cycling of weld joints and reactor components and the resulting piping stresses would be reduced.

Because of these reasons, Quad Cities decided to minimize the number of cold water injections and determined it is impractical to perform this test during reactor startup after every Cold Shutdown.

The full flow injection test will be performed immediately prior to or immediately following every refueling outage when sufficient steam is available to operate the system at low reactor power levels to avoid excessive thermal shocks and reactivity excursions.

The non- safety Closed exercise test for the 1(2)–1301-050 shall be performed using radiography during each refuel outage.

REFUEL OUTAGE JUSTIFICATION: RJ-14A

(Page 1 of 1)

Component Number	System	Code Class	Category
1-1402-071	Core Spray	2	C
2-1402-070	Core Spray	2	C

Component Function(s)

These check valves are in the Condensate Makeup Transfer supply line to ESS Keep Fill. These valves must close to prevent backflow of the ESS Keep Fill system to the non-safety related Condensate Transfer system piping.

Justification

Since the subject valves are check valves with no position indication, they cannot be tested without performing a non-intrusive test to verify closure such as radiography.

Certified personnel using specialized test equipment can only perform radiography. The plant does not maintain certified radiography personnel or the radiography equipment permanently on-site and must contract out this service. It is neither practical nor cost-effective for the station to maintain a radiography crew on-site solely for the purpose of verifying closure of these check valves.

The burden of testing of these check valves on a quarterly frequency vice a Cold Shutdown or Refuel frequency is not commensurate with a corresponding increase in quality and safety.

Due to the short duration of Cold Shutdowns, the time needed for the contracted radiography personnel to arrive on-site, install test equipment, perform the test, and analyze the results may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical.

The subject check valves will be verified closed by radiography during or within two weeks prior to each reactor refueling outage. At this time, radiography personnel and equipment are available to support planned reactor refueling outage activities.

REFUEL OUTAGE JUSTIFICATION: RJ-23A

Component Number	System	Code Class	Category
1-2301-034	HPCI	2	A/C
1-2301-045	HPCI	2	C
1-2301-071	HPCI	2	A/C
1-2301-074	HPCI	2	C
2-2301-034	HPCI	2	A/C
2-2301-045	HPCI	2	C
2-2301-071	HPCI	2	A/C
2-2301-074	HPCI	2	C

Component Function(s)

Check valves 2301-034 and 2301-071 are Primary Containment Isolation Valves (PCIV) on the HPCI drain pot (2301-97) discharge line to the Suppression Pool (Torus). These check valves must open to discharge condensate from the drain pot, and ensure that condensate does not back-up into the steam lines or turbine. These check valves must also close to provide containment isolation.

Check Valve 2301-045 is on the HPCI turbine (2303) exhaust line to the Torus. This valve must open to exhaust "low" pressure steam, and ensure that the HPCI turbine does not trip on excessive back pressure. If the HPCI system trips, the steam in the exhaust line will start to condense and create a vacuum. This valve must close to prevent Torus water from entering the discharge line/turbine, while the vacuum breakers relieve the vacuum. If Torus water enters the exhaust line/turbine, the system may be damaged when the operator resets the trip and attempts to re-start the system.

Justification

The subject check valves are exercised open quarterly during the HPCI system pump test.

Since the subject valves are check valves with no position indication, they cannot be verified to be closed without performing a reverse flow/leak test or by verifying closure using radiography.

The performance of a Local Leak Rate Test to verify valve closure would require taking a non-redundant system (HPCI) Out-Of-Service (OOS) for an extended period of time. During operation, the OOS would disable the auto-initiation function of HPCI to protect the safety of the test personnel. If during the test, HPCI was needed to inject due to a Loss of Coolant Accident, the time it would take to return the system to its operating configuration would prevent the system from fulfilling its design function. This delay in system actuation would result in an additional burden to the Control Room operators while trying to recover from the LOCA event.

REFUEL OUTAGE JUSTIFICATION: RJ-23A

Justification (Cont'd)

Certified personnel using specialized test equipment can only perform radiography. The plant does not maintain certified radiography personnel or the radiography equipment permanently on-site and must contract out this service. It is neither practical nor cost-effective for the station to maintain a radiography crew on-site solely for the purpose of verifying closure of these check valves.

The burden of testing of these check valves on a quarterly frequency vice a Cold Shutdown or Refuel frequency is not commensurate with a corresponding increase in quality and safety.

To perform Local Leak Rate testing during Cold Shutdowns, the time taken install test equipment and perform the test may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical. Also, due to the short duration of Cold Shutdowns, the time needed for the contracted radiography personnel to arrive on-site, install test equipment, perform the test, and analyze the results may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical.

The subject check valves will be exercised closed each refueling outage by:

1. Local Leak Rate Testing in accordance with Appendix J or

2. Radiography during or within two weeks prior to each reactor refueling outage. At this time, Radiography personnel and equipment are available to support planned reactor refueling outage activities.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

The non-safety exercise Closed test of the 1 (2)-2301-074 valve is performed during the 1(2)-2301-045 closure test.

REFUEL OUTAGE JUSTIFICATIONR: RJ-23B

(Sheet 1 of 2)

Component Number	System	Code Class	Category
1-2301-007	HPCI	2	C
2-2301-007	HPCI	2	C

Component Function(s)

This valve must open to provide a cooling water flow path from the HPCI system or the safe shutdown makeup system to the reactor vessel.

Justification

This check valves cannot be opened during normal operation using the air actuator because there is a 1000 psig differential pressure across the valve disk. The air actuator on this valve cannot overcome a differential pressure of 1000 psig. The air actuator also is not capable of exercising the check valve to a full open position. Full Stroke exercising can only be performed by removing the air actuator and manually exercising the valve.

Since this valve is located in the X-Area or MSIV Room, it is impractical to enter this area during normal operation to equalize the pressure across the valve obturator and manually exercising the valve. Exercising this valve during normal operation would expose personnel to the following hazards: the ambient temperature near these valves is between 120 and 140° F and an accumulated radiation dose of ~1.5 man-Rem.

These check valves cannot be exercised during normal operation via a full flow test because the injection of cold water from the Contaminated Condensate Storage Tanks and/or Suppression Chamber would produce reactivity excursions. This cold water would create a thermal shock to various Class 1 piping systems especially causing concerns at the weld joints. Providing there is inadequate thermal mixing in the reactor vessel, there is a possibility that the cold water could reach the reactor vessel nozzles and reactor vessel internals. By minimizing the number of injections into the reactor vessel, the thermal cycling of weld joints and reactor components and the resulting piping stresses would be reduced. Because of these reasons, Quad Cities decided to minimize the number of cold water injections.

During Cold Shutdowns, the time taken to take the system OOS, remove the air actuator, perform the test, re-install the air actuator, and return the system to service may result in a delay in plant startup and is not practical.

The burden of testing of these check valves on a quarterly frequency vice a Cold Shutdown or Refuel frequency while increasing the burden to plant operations is not commensurate with a corresponding increase in quality and safety.

REFUEL OUTAGE JUSTIFICATIONR: RJ-23B
(Sheet 2 of 2)

JUSTIFICATION (Cont.)

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 2.4.5, "Deferring Valve Testing to Cold Shutdown or Refueling Outages."

The subject check valves will be verified open at each reactor refueling outage.

The non-safety exercise Closed test is performed during the performance of the open exercise test surveillance.

REFUEL OUTAGE JUSTIFICATION: RJ-24A

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Component Number	System	Code Class	Category
1-2498-008A	CAM	NC	A/C
1-2498-008B	CAM	NC	A/C
1-2498-011A	CAM	NC	A/C
1-2498-011B	CAM	NC	A/C
1-2498-014A	CAM	NC	A/C
1-2498-014B	CAM	NC	A/C
1-2498-017A	CAM	NC	A/C
1-2498-017B	CAM	NC	A/C
1-2499-022A	CAM	2	A/C
1-2499-022B	CAM	2	A/C
2-2498-008A	CAM	NC	A/C
2-2498-008B	CAM	NC	A/C
2-2498-011A	CAM	NC	A/C
2-2498-011B	CAM	NC	A/C
2-2498-014A	CAM	NC	A/C
2-2498-014B	CAM	NC	A/C
2-2498-017A	CAM	NC	A/C
2-2498-017B	CAM	NC	A/C
2-2499-022A	CAM	2	A/C
2-2499-022B	CAM	2	A/C

Component Function(s)

Check Valves 1(2)-2498-008A/B, 1(2)-2498-011A/B, 1(2)-2498-014A/B, and 1(2)-2498-017A/B are internal to the hydrogen / oxygen analyzer and are opened to allow calibration gas to flow through the hydrogen / oxygen analyzer for testing and calibration purposes. The valves have an active safety function in the closed position to provide containment isolation during emergency and accident conditions. This valve is the second containment isolation valve for penetration X-051 (Unit 1 Train "A") / X-104E (Unit 1 Train "B") / X-033 (Unit 2 Train "A") / X-037C (Unit 2 Train "B"). It closes on reverse flow.

Check valves 1(2)-2499-22A/B are in the return lines from the Containment Atmosphere Monitoring system H_2/O_2 analyzer to the Drywell. These valves are Primary Containment Isolation Valves (PCIVs) outside containment. They must close to provide containment isolation.

REFUEL OUTAGE JUSTIFICATION: RJ-24A

Justification

Check valves 1(2)-2499-22A/B cannot be exercised closed during normal operation because valve manipulations would put Primary Containment at risk and would create the possibility of injecting service air into the inerted containment affecting containment nitrogen concentration.

Check valves 1(2)-2499-22A/B cannot be exercised closed during Cold Shutdown because there are no external means of determining disk position and there are no test connections available to vent pressure downstream of the valve. The time taken to take the system out of service, disconnect tubing joints, install test equipment, perform the test, and return the system to service may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical.

Check Valves 1(2)-2498-008A/B, 1(2)-2498-011A/B, 1(2)-2498-014A/B, and 1(2)-2498-017A/B do not have position indication and they cannot be verified closed without performing a reverse flow/leak test. In order to perform a reverse flow/leak test of these valves, the system must be taken out of service, tubing joints disconnected, equipment installed, the test performed, and then the system can be returned to service.

During operation, the hydrogen/oxygen analyzer maintains an elevated temperature to prevent condensation from forming within the analyzer's tubing and components. Moisture and condensation accumulation within these lines can lead to damage and potential failure of the analyzer.

When the analyzer is taken out of service for testing, the analyzer will begin to cool. The cooling of the analyzer and the disconnection of analyzer tubing create conditions susceptible for the formation of condensation within the analyzer. Due to the increased potential of damaging the analyzer, the burden of testing of these check valves on a quarterly frequency vice a Cold Shutdown or Refuel frequency is not commensurate with a corresponding increase in quality and safety.

Check Valves 1(2)-2498-008A/B, 1(2)-2498-011A/B, 1(2)-2498-014A/B, and 1(2)-2498-017A/B cannot be exercised closed during Cold Shutdown because there are no external means of determining disk position and there are no test connections available to vent pressure downstream of the valve. The time taken to take the system out of service, disconnect tubing joints, install test equipment, perform the test, and return the system to service may result in a delay in plant startup. Therefore, cold shutdown testing is not practical.

The subject valves will be exercised closed during each reactor refueling outage.

REFUEL OUTAGE JUSTIFICATION: RJ-30A

Component Number	System	Code Class	Category
1-0220-081A	Main Steam	NS	C
1-0220-081B	Main Steam	NS	C
1-0220-081C	Main Steam	NS	C
1-0220-081D	Main Steam	NS	C
1-0220-081E	Main Steam	NS	C
1-0220-105A	Main Steam	NS	C
1-0220-105B	Main Steam	NS	C
1-0220-105C	Main Steam	NS	C
1-0220-105D	Main Steam	NS	C
1-0220-105E	Main Steam	NS	C
2-0220-081A	Main Steam	NS	C
2-0220-081B	Main Steam	NS	C
2-0220-081C	Main Steam	NS	C
2-0220-081D	Main Steam	NS	C
2-0220-081E	Main Steam	NS	C
2-0220-105A	Main Steam	NS	C
2-0220-105B	Main Steam	NS	C
2-0220-105C	Main Steam	NS	C
2-0220-105D	Main Steam	NS	C
2-0220-105E	Main Steam	NS	C

Component Function(s)

The Main Steam Safety/Relief Valve (MSRV) discharge line vacuum breakers are required to open for the Automatic Depressurization System (ADS) to perform its safety function.
These vacuum breakers must open to admit drywell atmosphere into the MSRV discharge lines. If these vacuum breakers do not open, Suppression Pool (Torus) water would be sucked into the MSRV discharge lines after actuation of the MSRVs (as the steam in the line condenses). A subsequent actuation of the MSRVs with an elevated water leg in the MSRV discharge lines would result in large water clearing transient loads that could damage the MSRV discharge lines. These valves are required to close to prevent discharge of steam into the drywell during relief valve actuation.

Justification

These vacuum breakers (check valves) do not have remote position indication. There is no means available to verify that these valves are normally closed, and then open following a relief valve actuation. Since these valves are located inside the drywell, they are only accessible when the containment is de-inerted during some Cold Shutdowns or Reactor Refueling.

REFUEL OUTAGE JUSTIFICATION: RJ-30A
(Page 2 of 2)

Justification (Cont'd)

These check valves are at the end of the vacuum breaker line, and the disc is readily accessible for examination/testing. These check valves will be exercised open and closed during reactor refueling outages by manually pushing the disk away from its seat using a small dowel rod / force measurement device. After exercising the valve open, a visual examination will be performed to verify that the disc returns to the closed position. These valves are also subject to a preventive maintenance program that includes disassembly, refurbishment, adjustments, and force measurements prior to their return to service.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing".

REFUEL OUTAGE JUSTIFICATION: RJ-30B

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Component Number	System	Code Class	Category
1-0203-001A-SOAC	Main Steam	NC	B
1-0203-001A-SODC	Main Steam	NC	B
1-0203-001B-SOAC	Main Steam	NC	B
1-0203-001B-SODC	Main Steam	NC	B
1-0203-001C-SOAC	Main Steam	NC	B
1-0203-001C-SODC	Main Steam	NC	B
1-0203-001D-SOAC	Main Steam	NC	B
1-0203-001D-SODC	Main Steam	NC	B
1-0203-002A-SOAC	Main Steam	NC	B
1-0203-002A-SODC	Main Steam	NC	B
1-0203-002B-SOAC	Main Steam	NC	B
1-0203-002B-SODC	Main Steam	NC	B
1-0203-002C-SOAC	Main Steam	NC	B
1-0203-002C-SODC	Main Steam	NC	B
1-0203-002D-SOAC	Main Steam	NC	B
1-0203-002D-SODC	Main Steam	NC	B
2-0203-001A-SOAC	Main Steam	NC	B
2-0203-001A-SODC	Main Steam	NC	B
2-0203-001B-SOAC	Main Steam	NC	B
2-0203-001B-SODC	Main Steam	NC	B
2-0203-001C-SOAC	Main Steam	NC	B
2-0203-001C-SODC	Main Steam	NC	B
2-0203-001D-SOAC	Main Steam	NC	B
2-0203-001D-SODC	Main Steam	NC	B
2-0203-002A-SOAC	Main Steam	NC	B
2-0203-002A-SODC	Main Steam	NC	B
2-0203-002B-SOAC	Main Steam	NC	B
2-0203-002B-SODC	Main Steam	NC	B
2-0203-002C-SOAC	Main Steam	NC	B
2-0203-002C-SODC	Main Steam	NC	B
2-0203-002D-SOAC	Main Steam	NC	B
2-0203-002D-SODC	Main Steam	NC	B

Component Function(s)

Valves in the 0203-001-SODC and 0203-002-SODC series are the DC solenoids. The DC solenoids must exercise to the de-energized position to close the Main Steam Isolation Valves.

Valves in the 0203-001-SOAC and 0203-002-SOAC series are the AC solenoids adjacent to the DC solenoids (not to be confused with the AC test solenoids). The AC solenoids must exercise to the de-energized position to close the Main Steam Isolation Valves.

REFUEL OUTAGE JUSTIFICATION: RJ-30B

Justification

The MSIV AC and DC solenoids are exercised each time the associated MSIV is closed. Since the MSIV can be opened with one of these two solenoids in the de-energized position, a routine exercise of the MSIV will not confirm that both of these solenoids were exercised from the energized to the de-energized position. Closure of the MSIV does confirm that both solenoids were either exercised from energized to de-energized, or that the solenoid remained in the fail safe (de-energized) position.

Simulating a Group 1 Isolation of Primary Containment Isolation valves is a conclusive test of these solenoids. If a MSIV remains open after receiving a Group 1 isolation signal to close, then one of the two respective solenoids was stuck in its energized position.

It is impractical to perform this complicated test during either normal operation or Cold Shutdown.

The AC and DC solenoid valves will be exercised during each reactor refueling outage.

REFUEL OUTAGE JUSTIFICATION: RJ-30C

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Component Number	System	Code Class	Category
1-0203-001A-AO	Main Steam	1	A
1-0203-001A-AP2	Main Steam	NC	B
1-0203-001B-AO	Main Steam	1	A
1-0203-001B-AP2	Main Steam	NC	B
1-0203-001C-AO	Main Steam	1	A
1-0203-001C-AP2	Main Steam	NC	B
1-0203-001D-AO	Main Steam	1	A
1-0203-001D-AP2	Main Steam	NC	B
2-0203-001A-AO	Main Steam	1	A
2-0203-001A-AP2	Main Steam	NC	B
2-0203-001B-AO	Main Steam	1	A
2-0203-001B-AP2	Main Steam	NC	B
2-0203-001C-AO	Main Steam	1	A
2-0203-001C-AP2	Main Steam	NC	B
2-0203-001D-AO	Main Steam	1	A
2-0203-001D-AP2	Main Steam	NC	B

Component Function(s)

The Main Steam Isolation Valves (MSIVs) open to admit reactor steam to the turbine. They close to provide containment and reactor isolation.

Valves in the 0203-001-AP2 and 0203-002-AP2 series are 2-Way Air Pilot Valves with air pilot operators that must fail open during a loss-of-instrument air event. When these valves open, the Main Steam Isolation valve will close.

REFUEL OUTAGE JUSTIFICATION: RJ-30C

Justification

A true fail safe test of these valves can only be performed BY simulating a loss of instrument air by locally venting the MSIV accumulator and verifying the valve changes position.

The 2-Way air pilot valves are exercised each time the associated Main Steam Isolation Valve (MSIV) is closed. The 2-Way air pilot valves provide a secondary vent path independent of the main 4-Way air pilot valve. So it is extremely difficult to determine whether the MSIV closed with actuator air exhausting through both the 4-Way air pilot and the subject 2-Way air pilot, or though the 4-Way air pilot alone.

A loss-of-instrument air event must be simulated by locally venting the MSIV accumulator to provide conclusive evidence that the 2-way air pilot valve was exercised open.

The valves and accumulators are located in the drywell and thus cannot be lined up to exercise during power operation or cold shutdowns when the drywell is inerted. Testing will occur during cold shutdowns ONLY when the drywell is de-inerted for Maintenance or Operation purposes. It is impractical to de-inert the drywell solely for the purpose of conducting this test. As a minimum, the fail safe test will be performed during every refueling outage.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing".

REFUEL OUTAGE JUSTIFICATION: RJ-32A

Component Number	System	Code Class	Category
1-0220-058A	Feedwater	1	A/C
1-0220-058B	Feedwater	1	A/C
1-0220-059A	Feedwater	NS	C
1-0220-059B	Feedwater	2	C
1-0220-062A	Feedwater	1	A/C
1-0220-062B	Feedwater	1	A/C
1-2901-010	Safe Shutdown Makeup	2	C
2-0220-058A	Feedwater	1	A/C
2-0220-058B	Feedwater	1	A/C
2-0220-059A	Feedwater	NS	C
2-0220-059B	Feedwater	2	C
2-0220-062A	Feedwater	1	A/C
2-0220-062B	Feedwater	1	A/C
2-2901-010	Safe Shutdown Makeup	2	C

Component Function(s)

Valves 0220-058A, 0220-058B, 0220-062A, and 0220-062B are Primary Containment Isolation Valves (PCIVs) for the Reactor Feedwater system.

Valves 0220-058B, 0220-062B and 2301-007 must open, and valves 0220-059B and 2901-010 must close, when High Pressure Coolant Injection (HPCI) performs its safety function.

Valves 0220-058A and 0220-062A must open, and valve 0220-059A must close, when Reactor Core Isolation Cooling (RCIC) performs its safety function.

Justification

These check valves cannot be exercised closed during normal (power) operation because the Feedwater system is required to maintain reactor vessel/primary coolant level. A scram on low water level would occur if one of the subject valves was closed to perform an exercise test.

Valves 0220-058A, 0220-059A, and 0220-062A cannot be exercised closed during Cold Shutdown because the Reactor Water Clean-Up (RWCU) system is required to be operable during Cold Shutdown to maintain reactor water chemistry and minimize thermal stratification in the reactor vessel. All of these valves would be extremely difficult to test during Cold Shutdown (even if RWCU was isolated). In addition, an entry into the Drywell would have to be made in order to isolate the reactor vessel from the feedwater system. The Drywell is not always de-inerted during every Cold Shutdown. It is impractical to perform such tests during Cold Shutdown.

REFUEL OUTAGE JUSTIFICATION: RJ-32A

Justification (Cont'd)

The subject valves will be exercised closed during each reactor refueling outage.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing".

REFUEL OUTAGE JUSTIFICATION: RJ-37A

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Component Number	System	Code Class	Category
1-3799-031	RBCCW	NC	A/C
2-3799-031	RBCCW	NC	A/C

Component Function(s)

This check valve is in the Reactor Building Closed Cooling Water (RBCCW) supply line to the drywell. It is the Primary Containment Isolation Valve (PCIV) inside containment. This check valve must close to provide primary containment isolation.

Justification

This check valve cannot be exercised closed during normal operation because the RBCCW system supplies cooling water to the Reactor Recirculation pump and motor bearings, and the drywell coolers. The Reactor Recirculation pump and motor bearings would be damaged, and drywell temperature would increase if the subject check valve was closed.

The subject valve is a check valve with no position indication and cannot be exercised closed without a reverse flow/leak test or by verifying closure using radiography.

Reverse flow/leak testing entails the draining of the piping system from inside of the Drywell. The Drywell is not always de-inerted during every Cold Shutdown. It is impractical to perform such complicated tests during Cold Shutdown.

Certified personnel using specialized test equipment can only perform radiography. The plant does not maintain certified radiography personnel and the radiography equipment permanently on-site and must contract out this service. It is neither practical nor cost-effective for the station to maintain a radiography crew on-site solely for the purpose of verifying closure of this check valve every quarter.

Also, due to the short duration and the typically unexpected nature of Cold Shutdowns, the time for the radiography personnel to arrive on-site, set up test equipment, perform the test, and analyze the results may result in a delay in plant start-up and is not practical.

The subject check valve will be exercised closed during each refueling outage by:

1. Local Leak Rate Testing in accordance with Appendix J or

2. Radiography during or within two weeks prior to each reactor refueling outage. At this time, Radiography personnel and equipment are available to support planned reactor refueling outage activities.

REFUEL OUTAGE JUSTIFICATION: RJ-37A

Justification (Cont'd)

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing" and NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

REFUEL OUTAGE JUSTIFICATION: RJ-43A

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Component Number	System	Code Class	Category
1-4399-046	Clean Condensate	NC	A/C
2-4399-046	Clean Condensate	NC	A/C

Component Function(s)

This check valve is in the Clean Condensate supply line to the Drywell. It is the Primary Containment Isolation Valve (PCIV) outside containment. This valve must close to provide Primary Containment Isolation.

Justification

Since the subject valve is a check valve with no position indication, it cannot be tested without performing a flow/leak test or by verifying closure using radiography.

These tests require the erection of scaffolding locally at the valves. The valve is located in a limited access area approximately 15 ft above floor level. The erection/dismantling of scaffolding would be impractical to perform quarterly during normal operation and may delay startup during Cold Shutdowns.

Certified personnel using specialized test equipment can only perform radiography. The plant does not maintain certified radiography personnel or the radiography equipment permanently on-site and must contract out this service. It is neither practical nor cost-effective for the station to maintain a radiography crew on-site solely for the purpose of verifying closure of this check valve.

The burden of testing of this check valve on a quarterly frequency vice a Cold Shutdown or Refuel frequency is not commensurate with a corresponding increase in quality and safety.

To perform Local Leak Rate testing during Cold Shutdowns, the time taken install test equipment and perform the test may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical. Also, due to the short duration of Cold Shutdowns, the time needed for the contracted radiography personnel to arrive on-site, install test equipment, perform the test, and analyze the results may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical.

REFUEL OUTAGE JUSTIFICATION: RJ-43A

Justification (Cont'd)

The subject check valve will be exercised closed by:

1. Local Leak Rate Testing in accordance with Appendix J or

2. Radiography during or within two weeks prior to each reactor refueling outage. At this time, Radiography personnel and equipment are available to support planned reactor refueling outage activities.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

The non-safety Open direction exercise test is performed every refuel outage during various maintenance and operations activities in the drywell.

REFUEL OUTAGE JUSTIFICATION: RJ-46A

Component Number	System	Code Class	Category
1-4699-047	Service Air	NC	A/C
2-4699-047	Service Air	NC	A/C

Component Function(s)

This check valve is in the Service Air supply line to the drywell. It is the Primary Containment Isolation Valve (PCIV) outside containment. This valve must close to provide primary containment isolation.

Justification

Since the subject valve is a check valve with no position indication, it cannot be exercised closed without performing a reverse flow/leak test or by verifying closure using radiography.

The reverse flow/leak test cannot be performed during normal operation because the test procedure entails a Drywell entry. The Drywell is required to be inerted with nitrogen during normal operation.

Certified personnel using specialized test equipment can only perform radiography. The plant does not maintain certified radiography personnel or the radiography equipment permanently on-site and must contract out this service. It is neither practical nor cost-effective for the station to maintain a radiography crew on-site solely for the purpose of verifying closure of this check valve.

The reverse flow/leak test cannot be performed during Cold Shutdown, because this test requires the Drywell to be de-inerted and the setup of test equipment. The time to perform these complicated tasks may result in a delay in plant startup. It is not practical to attempt to perform such complicated tests during Cold Shutdown. Also, due to the short duration of Cold Shutdowns, the time needed for the contracted radiography personnel to arrive on-site, install test equipment, perform the test, and analyze the results may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical.

The subject check valve will be exercised closed during each refueling outage by:

1. Local Leak Rate Testing in accordance with Appendix J or
2. Radiography during or within two weeks prior to each reactor refueling outage. At this time, Radiography personnel and equipment are available to support planned reactor refueling outage activities.

REFUEL OUTAGE JUSTIFICATION: RJ-46A

Justification (Cont'd)

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing" and NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

The non-safety Open direction exercise test is performed every refuel outage during various maintenance and operation activities in the drywell.

REFUEL OUTAGE JUSTIFICATION: RJ-47A

Component Number	System	Code Class	Category
1-0203-001AD	Main Steam	NC	A/C
1-0203-001BD	Main Steam	NC	A/C
1-0203-001CD	Main Steam	NC	A/C
1-0203-001DD	Main Steam	NC	A/C
1-0203-003AD	Main Steam	NC	A/C
1-0203-002AC	Main Steam	NC	A/C
1-0203-002BC	Main Steam	NC	A/C
1-0203-002CC	Main Steam	NC	A/C
1-0203-002DC	Main Steam	NC	A/C
2-0203-001AD	Main Steam	NC	A/C
2-0203-001BD	Main Steam	NC	A/C
2-0203-001CD	Main Steam	NC	A/C
2-0203-001DD	Main Steam	NC	A/C
2-0203-003AD	Main Steam	NC	A/C
2-0203-002AC	Main Steam	NC	A/C
2-0203-002BC	Main Steam	NC	A/C
2-0203-002CC	Main Steam	NC	A/C
2-0203-002DC	Main Steam	NC	A/C

Component Function(s)

These check valves are installed on the Main Steam Isolation Valve (MSIV) air actuator accumulators and the Target Rock Safety/Relief Valve (SRV) air actuator accumulator. Since the Instrument Air system is not safety related, these check valves must close to retain compressed air in the local accumulator, and preserve sufficient pressure to actuate the MSIV or SRV.

Justification

These check valves do not have remote position indication and there is no direct means of determining that these check valves are closed, they cannot be exercised closed without performing a reverse flow/leak test.

Exercising these valves at power requires isolating the instrument air header from the actuator. This could result in an inadvertent closure of an MSIV, which would result in a reactor trip.

REFUEL OUTAGE JUSTIFICATION: RJ-47A

Justification (Cont'd)

This test also cannot be performed during normal operation because the test procedure entails a Drywell or MSIV Room entry. The Drywell is required to be inerted with nitrogen during normal operation and the MSIV room is a high temperature and high radiation area during reactor operation. The ALARA and personnel safety aspects make it impractical to perform this test during power operation.

The test is not practical to perform during Cold Shutdowns because this test requires the Drywell to be de-inerted (Inboard MSIVs and Target Rock Only) and the setup of test equipment. The time to perform these complicated tasks may result in a delay in plant startup.

These valves are exercised closed during the MSIV Accumulator check valve leak test that is performed during each reactor refueling outage.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing" and NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

REFUEL OUTAGE JUSTIFICATION: RJ-47B

Component Number	System	Code Class	Category
1-4799-155	Instrument Air	NC	A/C
1-4799-156	Instrument Air	NC	A/C
1-4799-158	Instrument Air	NC	A/C
1-4799-159	Instrument Air	NC	A/C
2-4799-155	Instrument Air	NC	A/C
2-4799-156	Instrument Air	NC	A/C
2-4799-158	Instrument Air	NC	A/C
2-4799-159	Instrument Air	NC	A/C
2-4799-353	Instrument Air	NC	A/C
2-4799-354	Instrument Air	NC	A/C

Component Function(s)

Check valves 4799-155 and 4799-156 are Primary Containment Isolation Valves (PCIVs) on the Instrument Air supply to the Drywell. These valves open to supply the Main Steam Isolation Valve (MSIV) and Target Rock Safety/Relief Valve (SRV). These valves must close to provide primary containment isolation.

Check valves 4799-158 and 4799-159 are PCIVs on the Instrument Air supply to the Suppression Pool (Torus). These valves open to supply the Torus/Drywell vacuum breakers.). These valves must close to provide primary containment isolation.

Check valves 4799-353 and 4799-354 are PCIVs on the Instrument Air supply to the Drywell. These valves open to supply purging air to the Source Range Monitor and Intermediate Range Monitor assemblies. These valves must close to provide primary containment isolation.

Justification

These valves are check valves with no position indication, they cannot be tested without performing a reverse flow/leak test or by verifying closure using radiography.

The reverse flow/leak tests require entry into the Drywell and Suppression Chamber. These valves are only accessible when the containment is de-inerted.

The reverse flow/leak tests cannot be performed during normal operation because the test procedure entails a Drywell and Suppression Chamber entry. The Drywell and Suppression Chamber are required to be inerted with nitrogen during normal operation.

REFUEL OUTAGE JUSTIFICATION: RJ-47B

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Justification (Cont'd)

Certified personnel using specialized test equipment can only perform radiography. The plant does not maintain certified radiography personnel and the radiography equipment permanently on-site and must contract out this service. It is neither practical nor cost-effective for the station to maintain a radiography crew on-site solely for the purpose of verifying closure of these check valves every quarter.

The reverse flow/leak test cannot be performed during Cold Shutdown, because this test requires the Drywell and Suppression Chamber to be de-inerted and the setup of test equipment. The time to perform these complicated tasks may result in a delay in plant startup. It is not practical to attempt to perform such complicated tests during Cold Shutdown. Also, due to the short duration of Cold Shutdowns, the time needed for the contracted radiography personnel to arrive on-site, install test equipment, perform the test, and analyze the results may result in a delay in plant startup. Therefore, Cold Shutdown testing is not practical.

The subject check valves will be exercised closed every refueling outage by:

1. Local Leak Rate Testing in accordance with Appendix J or

2. Radiography during or within two weeks prior to each reactor refueling outage. At this time, Radiography personnel and equipment are available to support planned reactor refueling outage activities.

This justification is in accordance with the position detailed in NUREG 1482, Paragraph 3.1.1.3, "De-Inerting Containment of Boiling Water Reactors to Allow Cold Shutdown Testing" and NUREG 1482, Paragraph 4.1.4, "Extension of Test Interval to Refueling Outage for Check Valves Verified Closed by Leak Testing".

The non-safety Open position exercise test of the 2-4799-353, 2-4799-354 is performed by applying forward flow through the check valves during the Local Leak Rate Surveillance.

ATTACHMENT 9

STATION TECHNICAL POSITION INDEX

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Designator	Description	Approval Date
TP-00A	Timing of Valves with Inaccurate Position Indication	11/01/95
TP-00B	Testing of Air Pilot and Solenoid Control Valves	11/01/95
TP-00C	Fail Safe Testing of Valves	11/01/95
TP-00D	Definition of Vertical Line Shaft Pump	11/01/95
TP-00E	Deleted (see CTP00-04)	
TP-00F	Appendix J Exemption for Category B PCIVS	11/01/95
TP-00G	Appendix J testing of PCIVs	11/01/95
TP-00H	Testing of Fast Acting Valves	11/01/95
TP-00I	Manual Valve Testing	11/01/95
TP-00J	Check Valve Sample Disassembly in Lieu of Full Stroke testing	08/28/01
TP-03A	CRD HCU Valve Population and Testing	11/01/95
TP-03B	Testing of ARI Solenoid Valves	01/17/01
TP-07A	Transverse In-Core Probe System Shear Valves Can Not be Seat Leak Tested.	11/01/95
TP-16A	Drywell / Suppression Chamber Vacuum Breaker Leak Test	11/01/95
TP-23A	HPCI Auxiliary Oil Pump Flow	11/01/95
TP-30A	Main Steam Safety Valve Set Point Testing, Additional Testing Requirements	11/01/95
TP-41A	Control Room HVAC AFU Fire Header Valve Testing	11/01/95
TP-52A	Diesel Generator Fuel Oil Transfer Pump Discharge Solenoid Valves Exercise Testing Requirements	11/01/95

ATTACHMENT 10

STATION TECHNICAL POSITIONS

STATION TECHNICAL POSITION: TP-00A

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Component Number	System	Code Class	Category
1-1301-022-MO	RCIC	NS	B
1-1301-025-MO	RCIC	NC	B
1-1301-026-MO	RCIC	NC	B
1-1301-048-MO	RCIC	NS	B
1-1301-049-MO	RCIC	NS	B
1-1301-053-MO	RCIC	NS	B
1-1301-060-MO	RCIC	NS	B
1-1301-061-MO	RCIC	NS	B
1-1301-062-MO	RCIC	NS	B
2-1301-022-MO	RCIC	NS	B
2-1301-025-MO	RCIC	NC	B
2-1301-026-MO	RCIC	NC	B
2-1301-048-MO	RCIC	NS	B
2-1301-049-MO	RCIC	NS	B
2-1301-053-MO	RCIC	NS	B
2-1301-060-MO	RCIC	NS	B
2-1301-061-MO	RCIC	NS	B
2-1301-062-MO	RCIC	NS	B

Code Requirement(s)

OMa-1988, Part 10, Paragraph 4.2.1.4 (b), “Power-Operated Valve Stroke Testing”

- “The stroke time of all power-operated valves shall be measured to at least the nearest second.

Position Statement

These valves have been identified to have inaccurate position indication. Stroke timing of the valve will be measured locally at the valve's breaker. Stroke time will commence upon the closing of the contactor and end when the contactor re-opens.

STATION TECHNICAL POSITION: TP-00A

Justification

Normally stroke timing is measured from remote position indication located in the Control Room. However, certain motor operated valves have been identified as having inaccurate light indication. The majority of these valves were modified to allow the accurate setting of position indication. However, this modification did not include all of the motor operated valves within the scope of the IST program. Locally at the breaker, stroke times measurements that commence upon the closing of the contactor and end when the contactor re-opens provide a much more accurate representation of the valve's full stroke time.

STATION TECHNICAL POSITION: TP-00B

(Page 1 of 1)

Component Number	System	Code Class	Category
Solenoid and Air Pilot valves which control a "main" valve.	Various	NC	A & B

Code Requirement(s)

OMa-1988, Part 10, Paragraph 4.2.1.4 (b), "Power-Operated Valve Stroke Testing"

- "The stroke time of all power-operated valves shall be measured to at least the nearest second.

Position Statement

The main valve reference values and acceptance criteria will govern the operability status of the associated pilot valve(s).

Justification

Solenoid valves are excluded from the Inservice Testing program if they are considered part of the external control system for a main valve. These solenoids do not have a individual position indicating system and therefore cannot be stroked timed. These solenoids are used only to control air to and from the main valve's control air system.

Periodic exercising of these valves is performed when the main valve is tested. Degradation and/or failure of these solenoid valves is assessed during operability testing of the main valve.

STATION TECHNICAL POSITION: TP-00C

Component Number	System	Code Class	Category
Power Operated Valves with a Fail Safe function.	Various	All	A & B

Code Requirement(s)

OMa-1988 Part 10, Paragraph 4.2.1.6, "Fail Safe Valves"

- "Valves with fail-safe actuators shall be tested by observing the operation of the actuator upon the loss of valve actuating power in accordance with the exercising frequency of paragraph 4.2.1.1"

Position Statement

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

Quad Cities uses remote position indication as applicable to verify proper fail safe operation, provided that the indication is periodically verified in accordance with OMa-1988, Part 10, paragraph 4.1.

Justification

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

STATION TECHNICAL POSITION: TP-00D

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Component Number	System	Code Class	Category
1-1002A	RHR	2	N/A
1-1002B	RHR	2	N/A
1-1002C	RHR	2	N/A
1-1002D	RHR	2	N/A
1-1401A	Core Spray	2	N/A
1-1401B	Core Spray	2	N/A
2-1002A	RHR	2	N/A
2-1002B	RHR	2	N/A
2-1002C	RHR	2	N/A
2-1002D	RHR	2	N/A
2-1401A	Core Spray	2	N/A
2-1401B	Core Spray	2	N/A

Code Requirement(s)

OMa-1988, Part 6

Position Statement

The pumps identified above are vertically mounted, but are not considered vertical line shaft pumps. The test parameters for these pumps are established and analyzed in accordance with the centrifugal pump type criteria of OM Part 6 Tables 2 and 3.

Justification

OM Part 6 does not provide a definition of what constitutes a vertical line shaft pump.

Quad Cities' defines a vertical line shaft pump as a deep draft pump where only the upper motor bearing(s) is accessible for vibration measurement. Centrifugal pumps where the motor and pump housing are mounted in the vertical plane, and all necessary bearings are accessible for vibration measurement, are not considered to be vertical line shaft pumps.

STATION TECHNICAL POSITION: TP-00F

Component Number	System	Code Class	Category
1-1001-007A-MO	RHR	2	B
1-1001-007B-MO	RHR	2	B
1-1001-007C-MO	RHR	2	B
1-1001-007D-MO	RHR	2	B
1-1301-025-MO	RCIC	NC	B
1-1402-003A-MO	Core Spray	2	B
1-1402-003B-MO	Core Spray	2	B
1-2301-036-MO	HPCI	2	B
2-1001-007A-MO	RHR	2	B
2-1001-007B-MO	RHR	2	B
2-1001-007C-MO	RHR	2	B
2-1001-007D-MO	RHR	2	B
2-1301-025-MO	RCIC	NC	B
2-1402-003A-MO	Core Spray	2	B
2-1402-003B-MO	Core Spray	2	B
2-2301-036-MO	HPCI	2	B

Code Requirement(s)

OMa-1988, Part 10, paragraph 4.2.2.2, "Containment Isolation Valves"

Position Statement

These PCIVs are considered to be Category B and are not leak tested due to the system accident condition configuration, as well as being closed systems, and having a qualified inboard water seal.

Justification

Primary Containment Isolation Valves (PCIVs) are normally Category "A" valves subject to leak rate testing in accordance with the Appendix J Type "C" test program. However, These valves are considered to be Category "B" PCIVs. These valves are not subject to the Plant Appendix J Test Program due to the system accident condition configuration, as well as being closed systems, and having a qualified inboard water seal. This exemption is verified through the Plant Appendix J Testing Program.

STATION TECHNICAL POSITION: TP-00G

Component Number	System	Code Class	Category
Primary Containment Isolation Valves (PCIVs)	Various	All	A

Code Requirement(s)

OMa-1988, Part 10, Subsection 4.2.2
OMa-1988, Part 10, Paragraph 4.2.2.3.

Position Statement

Primary containment isolation valve seat leak rate testing will be performed in accordance with the requirements of 10CFR50, Appendix J for Type C testing. Testing will comply with all regulations and commitments applicable to the Appendix J program. When Appendix J, Type C testing covers multiple PCIVs during the local leak rate test, the total leakage measured during the test will be attributed to the CIV volume tested. (Reference NUREG-1482, Paragraph 4.4.3).

The results of primary containment isolation valve seat leak rate testing will be analyzed in accordance with the requirements of:

1. 10CFR50, Appendix J for Type C leak rate tests, and

2. Technical Specifications 3.6.1.1 and 5.5.12

Justification

The intent of OM Part 10 Subsection 4.2.2 is met by a primary containment isolation valve surveillance program that complies with the requirements of 10CFR50, Appendix J for Type C Local Leak Rate Testing and OM Part 10 Paragraph 4.2.2.3.

STATION TECHNICAL POSITION: TP-00H

Component Number	**System**	**Code Class**	**Category**
Category A and B valves with a reference stroke time of ≤1.000 second (i.e., fast acting valves)	Various	All	A & B

Code Requirement(s)

OM Part 10, Paragraph 4.2.1.8(e)

Position Statement

The maximum limiting stroke time of 2 seconds allowed by paragraph 4.2.1.8(e) will be applied to only those valves that have a reference stroke time of ≤ 1.000 second. The criteria specified in paragraphs 4.2.1.8(c) and 4.2.1.8(d) will be applied to those valves with reference stroke times of > 1.000 second.

Justification

OM Part 10, Paragraph 4.2.1.8(e) states that "valves that stroke in less than 2 seconds may be exempted from the acceptance criteria specified in paragraphs 4.2.1.8(c) and 4.2.1.8(d). In such cases the maximum limiting stroke time shall be 2 seconds."
For valves with a reference stroke time of between 1.000 and 2.000 seconds, the acceptable range is considerably tight. (i.e. actual stroke time = 1.800 seconds with a max stroke time of 2.000 seconds leaves an Acceptable range of only 0.200 seconds).
On fast acting valves, operator and timing device inconsistency is the most significant contributor to the difference in stroke time from one test to the next. Since it is undesirable to unnecessarily declare a valve inoperable based on an unreasonably tight acceptance range, the maximum limiting stroke time of 2 seconds allowed by paragraph 4.2.1.8(e) will be applied to only those valves that have a reference stroke time of ≤ 1.000 second. The criteria specified in paragraphs 4.2.1.8(c) and 4.2.1.8(d) will be applied to those valves with reference stroke times of > 1.000 second.

STATION TECHNICAL POSITION: TP-00I

(Page 1 of 1)

Component Number	System	Code Class	Category
0-3999-089	DG Cooling Water	B	3
0-5799-381	Control Room HVAC	B	3
2-3999-089	DG Cooling Water	B	3

Code Requirement(s)

OMa-1988, Part 10, paragraph 4.2.1.2, Exercising Requirements.

Position Statement

These valves are manually operated and therefore are not subject to the stroke timing requirements of OM Part 10, are interpreted to require only an exercise test of a manual valve.

These valves are manually cycled to verify the operational readiness of the valve.

Justification

This position is in accordance to the clarification detailed in NUREG-1482, Subsection 4.4.6.

TECHNICAL POSITION TP-00J

Component Number	System	Code Class	Category
Various	Various	Various	C

Component Function(s)

These check valves must open to pass the maximum required accident flow and/or close to prevent back flow.

TECHNICAL POSITION TP-00J

Code Requirement(s)

ISTC Paragraph 4.5.4, "Valve Obturator Movement"

- "The necessary valve obturator movement during exercise testing shall be demonstrated by performing both an open and a close test".

Position Statement

10CFR50.55a(g)(6)(i), "impractical"

Quad Cities has conducted a detailed evaluation of the testability of each of the subject check valves. For several of the valves identified, there is no direct or reliable indirect means of verifying that the subject check valves have been exercised to the open position by passing the maximum required accident flow through the valve. For several of the valves identified, there is no direct or reliable indirect means of verifying that the subject check valves have been exercised to the closed position be either a reverse flow or "seat leakage" type test. A variety of pressure tests, vacuum tests, special system alignments, monitoring of other system parameters, etc. were evaluated, and no conclusive test is possible. Disassembly of every check valve during every refueling outage presents a burden to the station without a compensating increase in quality and safety.

Justification

The operability of the subject check valves will be verified by disassembly. Due to the scope of this testing (specifically, the personnel hazards involved and system operating restrictions), disassembly and inspection will be performed during reactor refueling outages or specific system work windows. Since it would be burdensome to disassemble and inspect all of the subject check valves during each refueling outage/work window, a sample disassembly and inspection plan for groups of identical valves in similar applications will be employed.

Non-intrusive methods (such as acoustic indication) have been explored in conjunction with the efforts in progress in response to SOER 86-03 to enable quantitative evaluation of check valve disk exercising. Such non-intrusive methods are currently being qualified and implemented. Each check valve listed will continue to be identified for disassembly until enough qualitative data is collected for each valve to determine, on an individual basis, the ability of the non-intrusive method assess the operational readiness of the valve.

Check valves will be disassembled to the extent necessary to assess the condition of the valve and to allow manual exercising of the disk. During the visual examination, full stroke capability will be verified. Any loose, corroded, or otherwise degraded parts, will be evaluated and appropriate corrective action will be taken, if required.

TECHNICAL POSITION TP-00J
(Page 3 of 3)

Justification(Cont'd)

The population of check valves has been broken down into sample groups that contain no more than four (4) valves. All of the valves in a given sample group are of identical design (manufacturer, size, model number, and materials of construction) and have the same service conditions including valve orientation. All valves within each group will be disassembled and inspected at least once every six years.

STATION TECHNICAL POSITION: TP-03A
(Page 1 of 1)

Component Number	System	Code Class	Category
1-0305-114	CRD	2	C

1-0305-115	CRD	1	A/C
1-0305-117-SO	CRD	NC	B
1-0305-118-SO	CRD	NC	B
1-0305-120-FCV	CRD	1	B
1-0305-121-SO	CRD	1	B
1-0305-122-SO	CRD	1	B
1-0305-123-FCV	CRD	1	B
1-0305-136-CV	CRD	1	B
1-0305-127-CV	CRD	1	B
1-0305-137	CRD	1	C
1-0305-138	CRD	1	C
2-0305-114	CRD	2	C
2-0305-115	CRD	1	A/C
2-0305-117-SO	CRD	NC	B
2-0305-118-SO	CRD	NC	B
2-0305-120-FCV	CRD	1	B
2-0305-121-SO	CRD	1	B
2-0305-122-SO	CRD	1	B
2-0305-123-FCV	CRD	1	B
2-0305-136-CV	CRD	1	B
2-0305-127-CV	CRD	1	B
2-0305-137	CRD	1	C
2-0305-138	CRD	1	C

Code Requirement(s)

OMa-1988, Part 10, paragraph 6.2, Test Plans.

Position Statement

The IST Valve Tables list each valve only once, however, each valve is typical of each 177 HCUs. All 177 valves will be tested as specified for the typical valve in the valve tables.

Justification

There are 177 Control Rod Drive (CRD) Hydraulic Control Units (HCU) for each reactor unit. Each CRD HCU contains one of these valves.

STATION TECHNICAL POSITION: TP-03B

(Page 1 of 2)

Component Number	System	Code Class	Category
1-0302-019A-SO	CRD	NC	B
1-0302-019B-SO	CRD	NC	B
1-0302-020A-SO	CRD	NC	B
1-0302-020B-SO	CRD	NC	B
1-0302-025A-SO	CRD	NC	B
1-0302-025B-SO	CRD	NC	B
1-0302-181A-SO	CRD	NC	B
1-0302-181B-SO	CRD	NC	B
1-0302-182A-SO	CRD	NC	B
1-0302-182B-SO	CRD	NC	B
2-0302-019A-SO	CRD	NC	B
2-0302-019B-SO	CRD	NC	B
2-0302-020A-SO	CRD	NC	B
2-0302-020B-SO	CRD	NC	B
2-0302-025A-SO	CRD	NC	B
2-0302-025B-SO	CRD	NC	B
2-0302-181A-SO	CRD	NC	B
2-0302-181B-SO	CRD	NC	B
2-0302-182A-SO	CRD	NC	B
2-0302-182B-SO	CRD	NC	B

Code Requirement(s)

OMa-1988, Part 10, Paragraph 4.2.1.4 (b), "Power-Operated Valve Stroke Testing"

- "The stroke time of all power-operated valves shall be measured to at least the nearest second.

Position Statement

The Alternate Rod Insertion/Anticipated Transient Without Scram (ARI/ATWS) Air Header Bleed Off will not be timed.

STATION TECHNICAL POSITION: TP-03B

Justification

These solenoid-operated valves provide an alternate method of relieving the CRD scram air header pressure so as to provide CRD insertion.

Check valve, 1(2)-0302-026 bypasses 1(2)-0302-025A to provide flow to 1(2)-0302-025B. Valves 1(2)-0302-025A and 1(2)-0302-025B vent directly to atmosphere, and airflow can be verified to exit through both ports. Flow through 1(2)-0302-025B and 1(2)-0302-026 cannot be independently quantified.

The backup scram and scram dump valves operate to vent instrument air from the scram valves and the scram discharge volume vent and drain valves. Valves 0302-19A and 0302-19B are in series and each shift to vent air. Check valve, 0301-122, bypasses 0302-19A to provide flow to 0302-19B. The series of valves provide multiple vent paths. Valves 0302-20B and 0302-20A are in series. Valve 0302-20B shifts to provide flow to 0302-20A.

These 0.5" valves operate rapidly and there is no position indication for any practical timing measurements. These valves will be exercised, without timing during Cold Shutdowns as discussed in Cold Shutdown Justification CS-03B.

STATION TECHNICAL POSITION: TP-07A

Component Number	System	Code Class	Category
1-0737-002B	TIP	NC	A/D
1-0737-002C	TIP	NC	A/D
1-0737-002D	TIP	NC	A/D
1-0737-002E	TIP	NC	A/D
1-0737-002F	TIP	NC	A/D
2-0737-002B	TIP	NC	A/D
2-0737-002C	TIP	NC	A/D
2-0737-002D	TIP	NC	A/D
2-0737-002E	TIP	NC	A/D
2-0737-002F	TIP	NC	A/D

Component Function(s)

These valves are the Transverse In-Core Probe system shear valves that must close for containment isolation purposes. These valves have an explosive actuator capable of a one time use.

Code Requirement(s)

OM Part 10, Paragraph 4.2.2.3, "Leakage Rate for Other Than Containment Isolation Valves"

- Category A valves, which perform a function other than Containment Isolation (Note: the subject valves are classified as PCIVs, See TV-00G), shall be seat leakage tested to verify their leak-tight integrity. Valve closure prior to seat leakage testing shall be by using the valve operator with no additional closing force applied.

Position Statement

These valves are not seat leakage tested. Twenty percent of these valves are exploded once every two (2) years and replaced in accordance with OMa-1988, Part 10, paragraph 4.4.1, "Explosive Actuated Valve Tests."

Justification

The TIP shear valves cannot be seat leakage tested due to their design and operating characteristics. The shear valve assembly would need to be exploded with the in-core probe extended to ensure that the containment isolation leakage function of the valve is correctly tested.

STATION TECHNICAL POSITION: TP-07A

Destructive testing of this nature is impractical. Additionally, this type of testing would require replacing the TIP shear valve and in-core probe every outage if the explosive actuator was detonated to crush the TIP guide tube to perform a seat leakage test. This would impose a significant hardship on Quad Cities.

STATION TECHNICAL POSITION: TP-16A

Component Number	System	Code Class	Category
1-1601-032A	Pressure Suppression	NC	A/C
1-1601-032B	Pressure Suppression	NC	A/C
1-1601-032C	Pressure Suppression	NC	A/C
1-1601-032D	Pressure Suppression	NC	A/C
1-1601-032E	Pressure Suppression	NC	A/C
1-1601-032F	Pressure Suppression	NC	A/C
1-1601-033A	Pressure Suppression	NC	A/C
1-1601-033B	Pressure Suppression	NC	A/C
1-1601-033C	Pressure Suppression	NC	A/C
1-1601-033D	Pressure Suppression	NC	A/C
1-1601-033E	Pressure Suppression	NC	A/C
1-1601-033F	Pressure Suppression	NC	A/C
2-1601-032A	Pressure Suppression	NC	A/C
2-1601-032B	Pressure Suppression	NC	A/C
2-1601-032C	Pressure Suppression	NC	A/C
2-1601-032D	Pressure Suppression	NC	A/C
2-1601-032E	Pressure Suppression	NC	A/C
2-1601-032F	Pressure Suppression	NC	A/C
2-1601-033A	Pressure Suppression	NC	A/C
2-1601-033B	Pressure Suppression	NC	A/C
2-1601-033C	Pressure Suppression	NC	A/C
2-1601-033D	Pressure Suppression	NC	A/C
2-1601-033E	Pressure Suppression	NC	A/C
2-1601-033F	Pressure Suppression	NC	A/C

Code Requirement(s)

Oma-1988, Part 10, paragraph 4.2.2.3, Leakage Rate For Other Than Containment Isolation Valves.

Position Statement

A drywell to suppression chamber bypass leakage limit is applicable in accordance with Quad Cities Improved Technical Specification 3.6.1.1 (SR 3.6.1.1.2). The acceptance criteria is ≤ 2% of the drywell to suppression chamber bypass leakage limit. This acceptance criteria is essentially applied collectively to all twelve vacuum breakers.

STATION TECHNICAL POSITION: TP-16A

Justification

Individual leak rates for the drywell / suppression chamber vacuum breakers cannot be measured. One end of the valve is open directly to the Torus atmosphere. The other is connected to the Torus downcomer vent header that is submerged in the Torus water volume. There is no means to isolate these valves individually for individual leak rate testing. They can only be tested by pressurizing the drywell and measuring the pressure decay rate. The NRC previously recognized the impracticality of individual testing when it approved a collective test of all of the valves in Quad Cities Technical Specifications.

STATION TECHNICAL POSITION: TP-23A

(Page 1 of 2)

Component Number	System	Code Class	Category
1-2308	HPCI	NC	N/A
2-2308	HPCI	NC	N/A

Component Function(s)

The High Pressure Coolant Injection (HPCI) Auxiliary Oil Pump is a motor-driven vertical line shaft pump. These pumps furnish oil for the HPCI hydraulic and lubrication systems during HPCI startup and low speed operation. These pumps also furnish priming oil to the dual shaft-driven oil pump. Once the shaft-driven pump is delivering the total hydraulic and lube oil system requirements, the Auxiliary Oil pumps may be shut down.

Code Requirements

O&M Part 6 Paragraph 5.2, "Test Procedure"

- The test parameters shown in Table 2 shall be determined and recorded as directed in this paragraph.

O&M Part 6 Paragraph 5.2(d)

- "Pressure, flow rate, and vibration (displacement or velocity) shall be determined and compared with corresponding reference values.

O&M Part 6 Table 2, "Inservice Test Parameters"

Position Statement

Quad Cities will use the discharge pressure in lieu of DP for monitoring pump performance. The auxiliary oil pump discharge pressure are measured quarterly during the HPCI system inservice testing. Reference values for the discharge pressure will be set using acceptance criteria established for the Vertical Line Shaft pump DP in O&M Part 6 Table 3b, to evaluate the need for alert or required action.

STATION TECHNICAL POSITION: TP-23A
(Page 2 of 2)

Justification

The HPCI auxiliary oil pump is a Vertical Line Shaft Pump that is physically immersed in oil inside of the HPCI turbine oil tank.

The HPCI auxiliary oil pump discharge piping does not have a flow meter installed to quantify the pumps flow rate or a suction pressure instrument. In order to meet the flow rate and differential pressure monitoring requirements, a modification to install a suction gauge and flow meter to the piping system would have to be performed. The imposed cost and hardship of installing this modification would not result in a commensurate increase in quality and safety.

STATION TECHNICAL POSITION: TP-30A
(Page 1 of 2)

Component Number	System	Code Class	Category
1-0203-003A-RV	Main Steam	1	C
1-0203-004A-RV	Main Steam	1	C
1-0203-004B-RV	Main Steam	1	C
1-0203-004C-RV	Main Steam	1	C
1-0203-004D-RV	Main Steam	1	C
1-0203-004E-RV	Main Steam	1	C
1-0203-004F-RV	Main Steam	1	C
1-0203-004G-RV	Main Steam	1	C
1-0203-004H-RV	Main Steam	1	C
2-0203-003A-RV	Main Steam	1	C
2-0203-004A-RV	Main Steam	1	C
2-0203-004B-RV	Main Steam	1	C
2-0203-004C-RV	Main Steam	1	C
2-0203-004D-RV	Main Steam	1	C
2-0203-004E-RV	Main Steam	1	C
2-0203-004F-RV	Main Steam	1	C
2-0203-004G-RV	Main Steam	1	C
2-0203-004H-RV	Main Steam	1	C

Code Requirement(s)

OM-1987, Part 1, paragraph 1.3.3.1(e), Valves Not Meeting Acceptance Criteria.

Position Statement

For Main Steam Safety Valve (MSSV) "as-found" set point testing, additional valves will be tested if the as-found set-point is outside ± 3% of the design set pressure.

Justification

For MSSV "as-found" set point testing, OM Part 1 provides a set point acceptance criteria of three percent (3%) or greater than the design set pressure. Experience with safety valves currently used in nuclear power plants indicates that normal expected set point drift is within plus or minus three percent (± 3%). Set point drift outside of this range is generally indicative of mechanical or human error problems that need to be addressed. Since OM Part 1 does not provide guidance for sample expansion when the "as-found" set point pressure test results are found to be lower than the design set pressure, a lower limit of minus (-) 3% is considered appropriate.

STATION TECHNICAL POSITION: TP-30A

Justification (Cont'd)

For MSSV "as-found" set point testing, additional valves will be tested if the as-found set-point is outside ± 3% of the design set pressure. Sample expansion of the safety valves will be consistent with Relief Request RV-30B. In accordance with Technical Specifications, the MSSV's set points will be adjusted and or verified to be within ± 1% of the design set pressure prior to installation.

STATION TECHNICAL POSITION: TP-41A

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Component Number	**System**	**Code Class**	**Category**
0-4199-315-AO	Fire Protection	NC	B

Code Requirement(s)

OMa-1988, Part 10, paragraph 4.1, Valve Position Verification

OMa-1988, Part 10, paragraph 4.2.1.2, Exercising Requirements

OMa-1988, Part 10, paragraph 4.2.1.6, Fail Safe Valves

Position Statement

Due to potential damage to the charcoal absorbers in the Control Room HVAC Air Filtration Unit (AFU), This valve cannot be opened at any time and is considered to be passive. This valve will not be exercised, fail safe tested, or position indication verified.

Justification

The subject valve has a closed safety function to prevent water from injecting into the Control Room HVAC Air Filtration Unit (AFU) which would cause damage to the charcoal absorbers. The open function of the valve is regulatory related for fire protection only and is not considered to be a function important to safety. The valve can perform their safety function only by remaining closed at all times. Any situation where the valve is to be opened would result in a reduction in the plant's margin of safety due to the loss of Control Room HVAC because of water and/or fire damage. The fail safe closed function of the valve and the exercise closed test would only prove that the valves could be closed after water had already been injected into the AFU.

STATION TECHNICAL POSITION: TP-52A

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Component Number	System	Code Class	Category
0-5201-SO	DG Fuel Oil Transfer	NC	B
1-5201-SO	DG Fuel Oil Transfer	NC	B
2-5201-SO	DG Fuel Oil Transfer	NC	B

Component Function(S)

These solenoid valves must open for the Diesel Fuel Oil Transfer Pumps (5203) to replenish the fuel oil supply in the Diesel Oil Day Tank (5202).

Code Requirement(s)

OM Part 10, Paragraph 4.2.1.4(b), "Power-Operated Valve Stroke Testing"

- "The stroke time of all power-operated valves shall be measured to at least the nearest second."

OM Part 10, Paragraph 4.2.1.8(e), "Stroke Time Acceptance Criteria"

- "Valves that stroke in less than 2 sec may be exempted from 4.2.1.8(c) and 4.2.1.8(d) above. In such cases the maximum limiting stroke time shall be 2 sec."

OM Part 10, Paragraph 4.2.1.9(b), "Corrective Action"

- "Valves with measured stroke times which do not meet the acceptance criteria of paragraph 4.2.1.8 shall be immediately retested or declared inoperable..."

Position Statement

Stroke times will not be measured, and corrective actions based on stroke time will not be implemented. Quad Cities will verify that the subject valves are open by verifying that the associated Diesel Fuel Oil Day Tank can be re-filled following a diesel fuel oil transfer pump operability test.

Justification

The diesel fuel oil transfer pump discharge solenoid valves full stroke in milliseconds. These valves are not equipped with close and open position indicators.

ATTACHMENT 11

CORPORATE TECHNICAL POSITION INDEX

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Designator	**Description**	**Date**
CTP98-01, Rev 0	Instrument Accuracy Requirements for Pump Testing	9/28/98
CTP98-02, Rev. 4	Excess Flow Check Valve Testing	6/8/01
CTP98-03, Rev. 0	Elimination of PIT and Exercise Testing for Safety and Relief Valves	1/20/99
CTP99-01, Rev. 0	Repair Activities for Valves Exceeding Seat Leakage Test Acceptance Criteria	2/1/99
CTP00-02, Rev. 0	Check Valve Condition Monitoring	8/14/00
CTP00-04, Rev. 1	Classification of Skid Mounted Components	6/8/01
CTP01-01, Rev. 0	Non-Safety Check Valve Exercise Testing by Normal Operations	4/9/01
CTP01-02, Rev. 0	Thermal Relief Valve Scoping	4/27/01
CTP01-03, Rev. 0	Justification for Exception to Exercise Check Valves after Reassembly	4/9/01

ATTACHMENT 12

CORPORATE TECHNICAL POSITIONS

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ComEd IST Program Technical Position
Instrument Accuracy Requirements for Pump Testing

Purpose

This paper clarifies the instrument accuracy requirements of OM-1987 with OMa-1988, Part 6, Paragraph 4.6.1.1 and Table 1. It is applicable to pump testing at all ComEd stations. The need for this position was identified at Quad Cities during the 1998 AE Inspection during which the accuracy of pressure and flow gauges used for pump testing was called into question. This position is only applicable to Section XI testing of pumps. This is an interim position until it is validated by the ASME OM-6 Working Group through the inquiry process.

Position

- The accuracy requirements of OM-1987 with OMa-1988, Part 6, Paragraph 4.6.1.1 and Table 1 apply to the accuracy to which installed instruments are calibrated.
- For instrument loops, the accuracy requirements apply to the accuracy to which the instrument loop is calibrated. If the instrument loop is not calibrated as a loop, then a loop accuracy calculation is performed.
- To calculate loop accuracy, either the reference accuracies for individual components or the calibration accuracies for the individual components should be summed using square root of the sum of squares.

Justification.

This position is based on a review of code interpretations and definitions in recent versions of the Code. Discussions with ASME OM-6 working group members indicate that this position is consistent with industry practice and code intent. The purpose of the accuracy requirements in the code is to ensure that measurements can be used to trend pump performance and identify degradation. Calibration of instruments to the criteria in Table 1 of OM-6 provides the level of quality and assurance to fulfill this purpose. A code inquiry will be issued to formalize this position and change the status of this technical position to final.

Interpretation 91-3 states that Table 1 of Part 6 applies only to the calibration of the instrument. (This was in response to a question on whether the final indication of flow rate on an analog instrument must be within 2% of full scale of actual process flow rate, taking into account attributes such as orifice plate tolerances, tap locations, and process temperatures.)

Question 1 of Interpretation 95-07 states that it is the intent of Part 6 "to consider only the instrument's reference accuracy, such as supplied by the instrument manufacturer, in determination of instrument loop accuracy." An instrument loop is defined in the code as "two or more instruments or components working together to provide a single output." It was this interpretation that led to the assumption during the AE inspection that the only permissible way to determine loop accuracy was to combine reference accuracies of the individual loop components using square root of the sum of squares. However, discussions with OM-6 working group members indicate that the intent of this interpretation was to

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clarify that loop accuracy calculations did not need to consider environmental effects, process effects, and vibration effects on loop accuracy (see Question 2 of Interpretation 95-07).

Section 5.5.4 of NUREG 1482 discusses the accuracy of flow rate instrument loops. It states that the accuracy for analog instruments specified in Section XI IWP and OM-6 applies only to the calibration of the instruments.

Starting with the OM-1994 addendum of the code, the definition of instrument accuracy is clarified to read, "the allowable inaccuracy of an instrument loop based on the square root of the sum of the square of the inaccuracies of each instrument or component in the loop when considered separately. Alternatively, the allowable inaccuracy of the instrument loop may be based on the output for a known input into the instrument loop." From this definition, it is clear that calibration of an instrument or instrument loop to the OM Code accuracy criteria meets the Code requirements.

References

1. US NRC letter to Commonwealth Edison (Oliver Kingsley) dated May 6, 1998; "Quad Cities Nuclear Power Station – Design Inspection (NRC Inspection Report Nos. 50-254/98-201 and 50-265/98-201)"; Section E1.2.3.2a (Instrument Uncertainty – ASME XI)
2. ASME OM Code-1987 with OMa-1988, Part 6; "Inservice Testing of Pumps in Light Water Reactor Power Plants"
3. ASME OM Code-1995, Subsection ISTB; "Inservice Testing of Pumps in Light Water Reactor Power Plants"
4. OM Code-1990 Interpretations and OM Code-1995 Interpretations
5. NUREG-1482; "Guidelines for Inservice Testing of Nuclear Power Plants"

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June 8, 2001
Revision 4
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Exelon IST Program Technical Position
Excess Flow Check Valve Testing

Purpose

The purpose of this position paper is to eliminate leakage testing and clarify open testing for excess flow check valves. Closure testing at pressures less than design pressure is adequate to meet IST requirements. Open testing is satisfied in the course of normal plant operations. This position supports goals to reduce outage duration by eliminating unnecessary critical path work. This position is only applicable to Dresden, LaSalle and Quad Cities Stations.

Position

- No leakage testing of excess flow check valves is required to meet IST and Appendix J requirements.
- Closure testing of excess flow check valves can be performed at all system pressures between 600 psig and the system design basis pressure. Acceptance criteria for the test shall be audible click denoting valve closure or significant reduction in flow. For LaSalle excess flow check valves, position indication testing may be performed in conjunction with closure testing at reduced system pressure.
- Open (non-safety direction) exercise testing is satisfied through normal plant operations.

Justification.

- Excess flow check valves (EFCV) are utilized in BWR containments to limit the release of fluid in the event of an instrument line break.
- These valves are classified as containment isolation valves. However, isolation of instrument lines during a LOCA is not prudent, since these instrument lines provide safety functions for reactor protection and containment isolation which need to be operable during a LOCA. Consequently, the valve disks are drilled to intentionally allow leakage past the valve.
- ASME OM Code-1987 with OMa-1988, Part 10 defers to Appendix J of 10CFR50 for leakage testing of containment isolation valves.
- In reference 1, the NRC provides Quad Cities with an exemption from Appendix J testing of instrument lines as long as the these lines are not isolated during 10-year ILRT tests.
- LaSalle UFSAR Table 6.2.21 indicates that instrument line pressure integrity is verified during periodic Type A (ILRT) testing. No requirement for Type C (LLRT) valve leakage testing exists. The analysis for Instrument Line Break in Section 15.6.2 does not take any credit for excess flow check valves.

Technical Specifications

- LaSalle, Dresden and Quad Cities Tech Spec SR 3.6.1.3.8 requires the excess flow check valves (EFCVs) to be demonstrated to be operable at least once per 24 months by verifying each EFCV actuates to the isolation position on an actual or simulated instrument line break.
- The Dresden and Quad Cities TS Bases state; The test is performed by blowing down the instrument line during an inservice leak or hydrostatic test and verifying a distinctive 'click' when the poppet valve seats, or a quick reduction in flow.

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- Dresden UFSAR 6.2.4.2.1 states; Instrument lines are exempt from Type C testing provided they are not isolated from containment during the performance of a Type A ILRT.
- Check valves are designed to close when the flow rate past the valve disk is sufficient to pull the disk to the closed position. System pressure has little impact on check valve performance during the closure test. In fact, a higher system pressure is likely to create a higher flow rate through the valve while it is open. Therefore, testing the valves at lower than design pressure should be conservative with respect to closure capability.
- The LaSalle excess flow check valve drawings indicate that this valve is designed to fully close at only 10 psid differential pressure. Therefore, past problems with dual indication during closure tests were not caused by testing at less than design pressure.
- A review of industry practices indicates that several other utilities only require closure testing of the subject valves. These utilities specify minimum test pressures between 200 psig and 600 psig to ensure flow rates and pressure across the valves are sufficient to allow satisfactory performance.
- Non-safety direction (open) testing requirements of OMa-1996 ISTC 4.5 are satisfied in the course of normal plant operations (Ref. 3) by proper operation of associated instruments. At LaSalle, position indication testing further verifies opening of the poppet post closure testing.

References

1. USNRC letter from Domenic Vassallo to Dennis Farrar dated June 12, 1984.
2. ASME OM Code-1987 with OMa-1988, Part 10, "Inservice Testing of Valves in Light-Water Reactor Power Plants".
3. Exelon IST Program Technical Position, TP-EXE-IST-01-01, "Non-Safety Check Valve Exercise Testing by Normal Operations".
4. ASME OM Code-1995 with OMa-1996, ISTC 4.5, "Inservice Exercising Tests for Category C Check Valves".

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ComEd IST Program Technical Position
Elimination of PIT and Exercise Testing for Safety and Relief Valves

Purpose
The purpose of this technical position is to clarify that no Inservice Testing Program requirement exists for performing Position Indication Tests and Exercise tests of safety and relief valves at ComEd stations.

Background
Inservice Testing Programs at ComEd stations currently require that safety and relief valves be tested in accordance with both OM-10 (IVW-3000 for Dresden) and OM-1 requirements. Consequently, Exercise Tests are performed on ComEd relief valves in accordance with OM-10 / IWV-3000. For valves with auxiliary operating devices, stroke times are measured when exercising the valves. In addition, Position Indication Tests are performed for safety and relief valves with remote position indication.

Position
- OM-10 (ISTB) defers to OM-1 (OM Code Appendix I) for relief valve testing requirements.
- OM-1 and later editions of the ASME OM Code do not require Exercising Tests for safety and relief valves.
- Exercising at a frequency greater than OM-1 setpoint testing shall be performed when required by Tech Specs or when valve performance history indicates that exercising is needed to keep the valve setpoint from increasing. However, stroke timing during exercising is not required, unless a commitment to measure stroke time has been made to the NRC.
- OM-1 and later editions of the ASME OM Code do not require Position Indication Tests for safety and relief valves.

Justification
- NUREG 1482, Section 4.3.9 states "As licensees began applying the requirements of OM-1, it became clear that clarifications were needed. The OM working group has clarified several issues in the 1994 addenda to the 1990 OM Code. The clarifications discussed below may be used without further NRC approval. Other clarifications identified by licensees may also be used without further NRC approval if it is determined to be clarification only and is documented in the IST program or test procedures, as necessary."
- In the ASME OMa 1996 edition of the Code, a new paragraph was added at the end of Section ISTC section 1.2. This paragraph states, "Category A and B Safety and

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- Relief valves are excluded from the requirements of ISTC 4.1, Valve Position Verification and ISTC 4.2, Inservice Exercising Test."
- Summary of Public Workshops, Section 2.4.18 states, "Licensees should note that the OM Code has been revised (i.e., in the 1996 Addenda) to clarify that Category A and B safety and relief valves are excluded from the requirements of ISTC 4.1, Valve Position Verification, and ISTC 4.2, Inservice Exercising Test. Therefore, these valves will only be required to be tested in accordance with Appendix I. As discussed in NUREG-1482, Section 4.3.9, clarifications may be used without further NRC approval." (emphasis added)
- A comparison of Appendix I in ASME OM 1995 with Appendix I in ASME OMa 1996 indicates that no new testing requirements were added as replacements for ISTC 4.1, Valve Position Verification and ISTC 4.2, Inservice Exercising Test. Consequently, it is appropriate to classify the subject 1996 code change as a clarification.
- Stroke time measurements have not benefited ComEd in preventing safety and relief valve failures. In fact, exercising tests have been attributed to subsequent seat leakage failures, especially for fast stroking relief valves. Consequently, exercising is only appropriate when valve performance history indicates that exercising on a frequency greater than OM-1 setpoint testing is needed to prevent setpoint elevation due to adhesion between the seat and disk.
- Position indication testing serves little purpose for valves that are not susceptible to mispositioning. Position indication testing at ComEd has not identified problems with stuck open relief valves being remotely indicated as closed.

References

1. ASME OM Code-1987 with OMa-1988, Part 10; "Inservice Testing of Valves in Light Water Reactor Power Plants"
2. ASME OM Code-1987, Part 1; "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices"
3. ASME OM Code-1995, Subsection ISTC; "Inservice Testing of Valves in Light Water Reactor Power Plants" and Appendix I; "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Plants"
4. ASME OMa Code-1996, Subsection ISTC; "Inservice Testing of Valves in Light Water Reactor Power Plants" and Appendix I; "Inservice Testing of Pressure Relief Devices in Light-Water Reactor Plants"
5. Summary of Public Workshops Held in NRC Regions on Inspection Procedure 73756, "Inservice Testing of Pumps and Valves," And Answers to Panel Questions on Inservice Testing Issues; published July 18, 1997
6. NUREG-1482; "Guidelines for Inservice Testing of Nuclear Power Plants"

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None

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ComEd IST Program Technical Position
Repair Activities for Valves Exceeding Seat Leakage Test Acceptance Criteria

Purpose
The purpose of this technical position is to clarify code requirements for repairing valves that exceed seat leakage test acceptance criteria during Inservice Testing.

Background
On February 1, 1999, Dresden station performed testing on CRD check valves 3-0399-593 and 3-0399-594. The measured leakage rate of >2.0 gpm significantly exceeded the acceptance criteria of 0.01 gpm and the valves were declared inoperable. After flushing the line containing the valves, the measured leakage through the valves was 0 gpm. These 2 ½" spring-assisted lift-check valves were installed during the last Dresden Unit 3 outage and did not fail the previous IST seat leakage tests (refueling outage test periodicity).

Position
Flushing of lines containing valves that fail seat leakage testing requirements is considered sufficient corrective action provided the following conditions are met:

- A review of past valve performance history does not indicate seat leakage failures of the valves are repetitive.
- The seat leakage criterion is met following the flushing evolution.

Justification
- The ASME OM-10 Code and the AMSE IWV-3000 Code require that valves failing seat leakage tests be repaired or replaced.
- NUREG 1482 and the 1997 Inservice Testing Workshop Questions and Answers do not provide guidance on what activities constitute repair. However, NUREG 1482 states that repair activities for relief valve setpoint test failures are not limited to Section XI repair activities. (A Section XI repair or replacement activity is defined as a repair by welding, brazing, or metal removal of the pressure-retaining parts of a component or the replacement of pressure-retaining parts.) It is appropriate to assume that the same logic applied by the NRC in determining appropriate corrective actions for relief valve setpoint drift can be used to determine appropriate corrective actions for seat leakage failures.
- Debris on valve seats is a common cause of valve seat leakage problems. Flushing of lines is an effective method of removing debris that is preventing a valve from passing the seat leakage acceptance criteria. Past experiences with MSIVs at Quad Cities and other valves at ComEd stations support the use of flushing to eliminate isolated cases of seat leakage.

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- Repeated seat leakage failures indicate that the installed valve design is incompatible with system conditions (such as fluid cleanliness). Consequently, repetitive correction of seat leakage problems by flushing is not appropriate.
- Corporate Engineering notes that the Dresden valves have not previously experienced failures during IST testing. Therefore, flushing is an appropriate corrective actions for these valves.

References

1. ASME OM Code-1987 with OMa-1988, Part 10; "Inservice Testing of Valves in Light Water Reactor Power Plants"
2. ASME Section XI Article IWV-3000, "Test Requirements"
3. NUREG-1482; "Guidelines for Inservice Testing of Nuclear Power Plants"

Assumptions

None

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ComEd IST Program Technical Position
Check Valve Condition Monitoring

Purpose

The purpose of this technical position is to provide the Corporate Inservice Testing (IST) Program position on implementing a check valve condition monitoring program. The condition monitoring process allows certain flexibility in establishing the types of tests, examination, and preventative maintenance activities and their associated intervals, when justified based on the valve's performance and operating condition.

Background

10CFR50.55a was revised 11/22/99 to endorse the ASME OMa-1996 Code which includes provisions (Appendix II) for implementing a check valve condition monitoring program for IST Check valves. A letter dated April 18, 2000 was sent to the NRC requesting approval to implement the check valve portion of the ASME OM Code-1995 Edition, 1996 Addenda, at all ComEd Nuclear Stations. By letter dated June 7, 2000 the NRC approved ComEd to implement ASME OMa-1996 and the modifications required to implement Appendix II for all check valves at all ComEd Stations. Corporate Engineering Programs issued Nuclear Engineering Standard NES-MS-08.5, Condition Monitoring for Inservice Testing of Check Valves on June 30, 2000.

Position

- All ComEd Stations will perform check valve testing in accordance with the ASME OMa-1996 Code, including Appendix II.

- Full implementation of the ASME OMa-1996 Code will be completed by September 1, 2001 (Reference 8 and 9).

- Check valves not included in the Appendix II program will be tested to the requirements of ASME OMa-1996 Code, ISTC 4.5.1 through 4.5.4.

- Referencing this technical position in the program plan indicates that test requirements for a check valve are supported by a condition monitoring plan meeting Reference 6 requirements.

- The following modifications to Appendix II are required by the NRC (Reference 9 and 10).

  - Valve opening and closing functions must be demonstrated when flow testing or examination methods (e.g., nonintrusive or disassembly and inspection) are used.

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- The initial interval for tests and associated examinations will not exceed two fuel cycles or 3 years, whichever is longer. Any extension of this interval will not exceed one fuel cycle per extension with the maximum interval not to exceed 10 years. Trending and evaluation of existing data will be used to reduce or extend the time interval between tests.

- If the Appendix II condition monitoring program is discontinued, then the requirements of ISTC 4.5.1 through 4.5.4 must be implemented.

- Check valve condition monitoring plans shall be developed in accordance with Nuclear Engineering Standard NES-MS-08.5, Condition Monitoring for Inservice Testing of Check Valves.

Justification

- The NRC recently endorsed the ASME OM Code-1995 Edition, 1996 Addenda (Reference 3 and 10) which allows the use of Appendix II as an alternative to certain check valve testing requirements in Subsection ISTC of the OM Code.

- ComEd implementation of ASME OMa-1996 (including the modifications required to implement Appendix II) for all check valves at all ComEd Stations was approved by NRC letter dated June 7, 2000.

- Implementation of condition monitoring for check valves provides the opportunity to optimize check valve testing requirements for valves in the IST program as discussed in Reference 6.

References

1. NSP-ER-3015, "Inservice Testing Program Implementing Procedure"

2. ER-AA-321, "Administrative Requirements for Inservice Testing"

3. ASME OMa Code-1996 Addendum to OM Code-1995 Edition, Appendix II, "Check Valve Condition Monitoring Program"

4. Nuclear Engineering Standard NES-MS-08.2, "Inservice Testing Plan Format and Content"

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5. Nuclear Engineering Standard NES-MS-08.1, "Inservice Testing Bases Document Format and Content"

6. Nuclear Engineering Standard NES-MS-08.5, "Condition Monitoring for Inservice Testing of Check Valves"

7. ER-AA-400, "Check Valve Monitoring and Preventive Maintenance Program"

8. ComEd letter dated April 18, 2000 to the NRC, "Request to implement a Portion of the 1995 Edition and the 1996 Addenda of the ASME Code for Operation and Maintenance of Nuclear Power Plants Regarding Appendix II, "Check Valve Condition Monitoring Program"

9. Nuclear Regulatory Commission letter dated June 7, 2000, "Approval to Implement a Check Valve Inservice Testing Program Using ASME OM Code-1995 Edition, OMa-1996 Addenda at the Commonwealth Edison Company Nuclear Stations (TAC Nos. MA8703, MA8704, MA8715, MA8716, MA8717, MA8718, MA8803, MA8804, MA8733, and MA8734)

10. Nuclear Regulatory Commission Final Rule 10CFR Part 50 "Industry Codes and Standards; Amended Requirements," (64 FR 63892) dated September 22, 1999

Assumptions
None

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