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Exelon Nuclear

10CFR50.55a(f)(4)(iv)

RS-01-195

September 26, 2001

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

Byron Station, Units 1 and 2
Facility Operating License Nos. NPF-37 and NPF-66
NRC Docket Nos. STN 50-454 and STN 50-455

Dresden Nuclear Power Station, Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

Quad Cities Nuclear Power Station, Units 1 and 2
Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Submittal of Inservice Test Programs for Braidwood, Byron, Dresden, LaSalle and Quad Cities Stations

References:
(1) Letter from R. M. Krich (Commonwealth Edison Company) to NRC, "Request to Implement a Portion of the 1995 Edition and 1996 Addenda of the American Society of Mechanical Engineers Code for Operation and Maintenance of Nuclear Power Plants Regarding Appendix II, 'Check Valve Condition Monitoring Program,'" dated April 18, 2000

(2) Letter from NRC to O. D. Kingsley (Commonwealth Edison Company), "Approval to Implement a Check Valve Inservice Testing Program Using ASME OM Code-1995 Edition, OMA-1996 Addenda at the Commonwealth Edison Company Nuclear Station," dated June 7, 2000

In Reference 1, Commonwealth Edison Company (now Exelon Generation Company, LLC) requested NRC approval to implement the check valve portion of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance of Nuclear Power Plants -

A047

1995 Edition and 1996 Addenda (i.e., the OMa – 1996 Code Addenda) in advance of incorporating the 1995 Edition with the 1996 Addenda of the ASME OM Code, in its entirety, as the code of record. This request was made in accordance with 10CFR50.55a(f), "Inservice testing requirements," paragraph (4)(iv). In Reference 2, the NRC approved this request.

Full implementation of the ASME OMa-1996 Code was completed on or before September 1, 2001, as scheduled, at Braidwood, Byron, Dresden, LaSalle, and Quad Cities Stations. As indicated in Reference 1, we are now providing a copy of each station's updated IST Program Plan to the NRC for information.

Should you have any questions concerning this matter, please contact Mr. J. A. Bauer at (630) 663-6484.

Respectfully,

K. A. Ainger

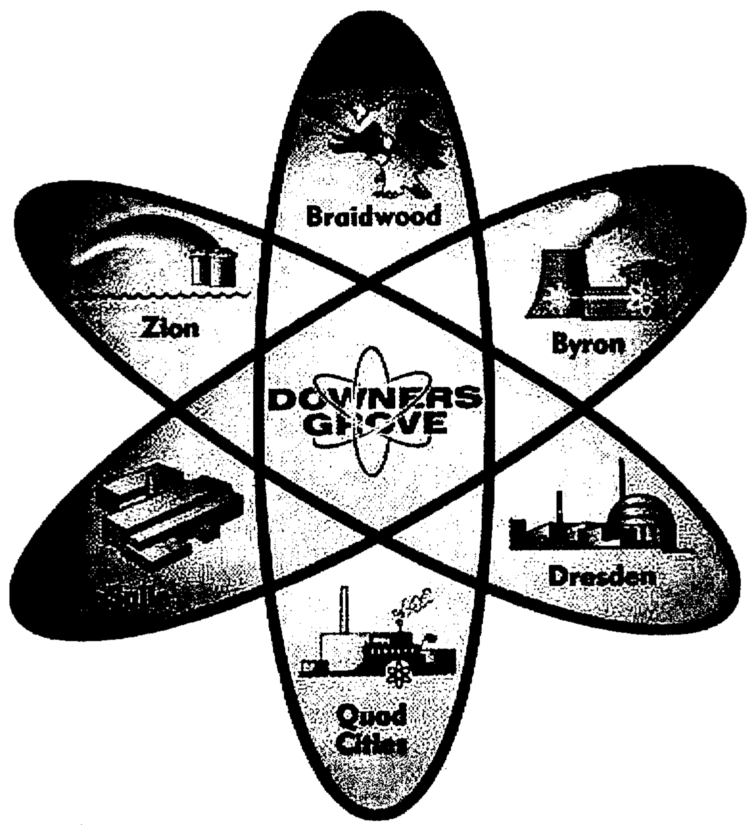
K. A. Ainger
Director – Licensing
Mid-West Regional Operating Group

Attachments: Braidwood Station Inservice Testing Program
Byron Station Inservice Testing Program
Dresden Nuclear Power Station Inservice Testing Program
LaSalle County Station Inservice Testing Program
Quad Cities Nuclear Power Station Inservice Testing Program

cc: Regional Administrator - Region III
NRC Senior Resident Inspector - Byron Station (w/o attachments)
NRC Senior Resident Inspector - Braidwood Station (w/o attachments)
NRC Senior Resident Inspector - Dresden Nuclear Power Station (w/o attachments)
NRC Senior Resident Inspector - LaSalle County Station (w/o attachments)
NRC Senior Resident Inspector - Quad Cities Nuclear Power Station (w/o attachments)

Byron Nuclear Power Station

IST Program Plan



Exelon
Nuclear

Byron Nuclear Power Station
Units 1 & 2

Inservice Testing Program
Second Ten Year Interval

Commercial Service Dates:

Unit 1 – 9/16/85
Unit 2 – 8/21/87

Byron Nuclear Power Station
4450 N. German Church Rd.
Byron, Illinois 61010

ComEd Company
P.O. Box 767
Chicago, Illinois 60690

REVISION LOG

Effective Date	Revision Description	Prepared; IST Program Engineer	Date	Approved; Engr. Programs Supervisor	Date
4/19/00	IST Scope Bases Document Update. Reference LER 2000-001-00				
8/24/01	• Incorporated Corporate Technical Position, TP-EXE-IST-01-01, "Exelon IST Program Technical Position Non-Safety Check Valve Exercise Testing By Normal Operations • Revised 1.2 "Scope," to incorporate check valve testing to the ASME OMa Code-1996 Addenda (includes Condition Monitoring). • Revised "Test Type," and "Test Freq," in Valve Table Description for new Code check valve changes • Indicated Valve Relief Requests RV-2, RV-4, RV-5, RV-6 in Valve Relief Request Index as Superceded by Condition Monitoring and deleted these Reliefs from Plan • Indicated Valve Relief Request RV-7 as withdrawn due to Modification and deleted Relief from Plan • Indicated Cold Shutdown Justifications CS-11, CS-17, CS-20, CS-25 as Superceded by Condition Monitoring in Cold Shutdown Justification Index and deleted these	[illegible]	8/24/01	[illegible]	8/24/01

	Justifications from Plan. Deleted Partial Stroke Test from Cold Shutdown Justification CS-7 for 1/2RH8730A/B as no longer required by new Code. • Indicated Refuel Outage Justifications RJ-1, RJ-2, RJ-10, RJ-11, RJ-12, RJ-13, RJ-15, RJ-16, RJ-17, RJ-20, RJ-21 as Superceded by Condition Monitoring in Refuel Outage Justification Index and deleted these Justifications from Plan. Deleted Partial Stroke Test from Refuel Outage Justifications RJ-6 for 1/2SI8926, and RJ-7 for 1/2CV8481A/B, as no longer required by new Code. • Indicated Technical Position TP-VA-8 as Superceded by Condition Monitoring in Station Technical Position Index and deleted from Plan. • Indicated Technical Position TP-CWE-IST-98-04 as deleted from Corporate Technical Position Index as PRDUG is developing industry guidance and deleted from Plan. • Added Corporate Technical Positions TP-EXE-IST-01-01 and TP-EXE-IST-01-03 for Condition Monitoring • Updated Corporate Technical Position TP-	[signature]	8/24/01	[signature]	8/24/01

	EXE-IST-00-04 to new Revision 1 • Indicated Pump Relief Request RP-1 as "Suspended," in index and on Relief Request as not currently invoked • Revised Pump Technical Position TP-PA-1 for clarification of vibration data gathering • Valve Tables changed to reflect Condition Monitoring Program implementation • 1/2CV8367 and 1/2CV8372 removed from valve tables as determined to not be within scope of program (reference ITR PR 01-042) • Added newly issued Corporate Technical Position TP-EXE-IST-01-02, "Thermal Relief Valve Scoping"	[signature]	8/24/01	[signature]	8/24/01

REVISION LOG

Effective Date	Revision Description	Prepared; IST Program Engineer	Date	Approved; Engr. Programs Supervisor	Date
4/19/00	IST Scope Bases Document Update. Reference LER 2000-001-00				
2/9/01	• Incorporated Skid Mounted Component Tech Position TP-EXE-IST-00-04. • Redesignated Diesel Fuel Oil Pumps as Skid Mounted Components i.a.w. Tech Position TP-EXE-IST-00-04. • Revised Pump Relief Request Index to indicate D.O. related Relief RP-1 as "Withdrawn." AR # 44450 01 to track communicating this to NRC. • Revised Pump Relief Request (D.O. related) RP-1 as "Withdrawn." • 1/2SX173, 1/2SX178 redesignated as passive open (no position indication, no testing required) – i.a.w. DCP 9900827. • Indicated Stroke Closed (non-Safety test) for 1/2SI8919A/B. Even though this test was to be removed from the Program due to the recent rebaselining project, the testing never ceased. As the Program is going to the 1996 Code Addenda for check valves, the closed test will remain. • Delete VA-9 Technical Position from 1/2CC9495A-D as	[illegible]	2/9/01	[illegible]	2/9/01

	typographical error.				

REVISION LOG

Effective Date	Revision Description	Prepared; IST Program Engineer	Date	Approved; Engr. Programs Supervisor	Date
4/19/00	IST Scope Bases Document Update. Reference LER 2000-001-00				
10/11/00	Added 1/2WO079A/B per Modification. Added Corp. Technical Positions	[signature]	10/11/00	[signature]	10/11/00

REVISION LOG

Effective Date	Revision Description	Prepared; IST Program Engineer	Date	Approved; Engr. Programs Supervisor	Date
4/19/00	IST Scope Bases Document Update. Reference LER 2000-001-00	[signature]	4/19/00	[signature]	4/19/00

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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.) as follows:

  - 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).

- Check valve testing in this Program Plan was prepared to meet the requirements of the ASME OMa Code-1996 Addenda to the ASME OM Code-1995, Subsection 4.5, "Inservice Exercising Tests for Category C Check Valves."

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

- Unit One: July, 1, 1996 through June 30, 2006
- Unit Two: July 1, 1996 through June 30, 2006

This plan will be updated as required in accordance with 10 CFR50.55a(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"*
- OM-1995/1996 Addenda, ISTC *"Inservice Testing of Valves in Light-Water Reactor Power Plants," check valve subsection, including Appendix II, "Condition Monitoring"*

2.0 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 Byron 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.

<u>System</u> The system abbreviation codes for the system containing the pump.

<u>Pump Name</u> The descriptive name for the pump.

<u>Pump EPN</u> 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

<u>Safety Class</u> 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)

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.
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 and OM-10 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 Byron Nuclear Station IST Plan are listed in Attachment 16. The information contained in these tables identify those valves that are required to be tested to the requirements of OM-1 and OM-10, the test parameters, frequency of testing, and the associated relief requests. The headings for the valve tables are delineated below.

<u>System</u> — The unique system identifier.

<u>Valve Name</u> — The description of the valve.

<u>Valve EPN</u> — 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

<u>Safety Class</u> — 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.

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[1]
SC	Exercise Closed
SD	De-energize
SE	Energize
SO	Exercise Open
RT	Relief Valve Test
CC	Exercised Closed – Check Valve[2]
CO	Exercise Open – Check Valve[2]
CP	Partial Exercise Open[2]
DT	Rupture Disk / Explosive Valves
FC	Fail Safe Test Closed
FO	Fail Safe Test Open
PI	Position Indication Test
TMP	Temperature Monitoring (Condition Monitoring)

[1] If more than one type of leak test is performed on a valve, then three letter designations may be used to differentiate between the tests. For example, it is appropriate to designate Appendix J leak tests as "LTJ", low pressure leak tests as "LTL", and high pressure leak tests as "LTH".

[2] 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, or "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
OP	Operating Activities[2]
RR	Refuel Outage
S2	Explosive Charge Sample
SA	Check Valve Disassembly Sample
YX	X Years (X = 1, 2,…,10)

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".

[1] Frequency is as indicated in 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."

3.2 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.
Notes	Miscellaneous valve information

4.0 ATTACHMENTS

ATTACHMENT 1

PUMP RELIEF REQUEST INDEX
(Page 1 of 1)

Designator	Description	Approval Date
RP-1	(1/2DO01PA-D) Requests approval to allow a tolerance of +/- 1 psig (>2%) on the set reference values of discharge pressure.	11/18/96 Suspended – 6/15/01

ATTACHMENT 2

- Suspended- **RELIEF REQUEST: RP-1** **- Suspended-**
(Page 1 of 2)

TITLE: Diesel Oil Transfer Pump Discharge Pressure Tolerance Increase

PUMP NUMBER	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2DO01PA	3	M-50-1B(M-130-1A)	E4(C5)
1/2DO01PB	3	M-50-1A(M-130-1B)	E4(C5)
1/2DO01PC	3	M-50-1B(M-130-1A)	E4(C5)
1/2DO01PD	3	M-50-1A(M-130-1B)	E4(C5)

FUNCTION(S):

The 1/2DO01PA-PD pumps transfer diesel fuel oil from storage tanks to the diesel generator day tanks.

CODE REQUIREMENT(S):

1. Per OMa-1988, Part 6, paragraph 5.2, an inservice test shall be conducted with the pump operating at specified test reference conditions.

2. Per NUREG 1482, section 5.3, a total tolerance of +/-2 percent of the reference value is allowed without approval from the NRC.

BASIS FOR RELIEF:

The Diesel Oil Transfer pumps are positive displacement pumps which transfer diesel oil to the diesel generator day tanks. The discharge pressure (constant for positive displacement pumps) is considered the set value for the pumps and have indicated consistent values in the past. The lowest discharge pressure reference value for a specific Diesel Oil Transfer Pump is currently 23 psig and the highest reference value is 25.5 psig. Numbers this low allow only a small tolerance for the discharge pressure when applying the +/-2% tolerance (as noted in NUREG 1482, section 5.3). For instance, in considering a reference value of 23 psig, the +/-2% criteria allows only a +/- 0.46 psig tolerance. The pressure indicators are 0-60 psig analog gauges with increments of 0.5 psig, allowing readability to the nearest 0.25 psig (readings are acceptable to a degree of precision no greater than one-half the smallest increment). To be within the +/-2% criteria, only a readability range of +/- 0.25 psig would be possible (next higher reading of +/-0.5 psig would represent a tolerance > 2%). For the reference values of 25 psig or above, only a readability range of +/- 0.5 psig would be possible to remain within the +/-2% tolerance. History indicates

RELIEF REQUEST PR-1 (continued)

that there would be a few "acceptable" data points that would fall outside of these tight ranges. Byron proposes a more practical acceptable range of +/- 1 psig.

Discharge pressure for these positive displacement pumps are considered to be constant. There are no throttling techniques or other methods available to adjust the discharge pressure. It would be impractical to set up strict ranges of +/-2% due to the small magnitude of the numbers involved. In addition, the readability of the gauges are limited. History has shown acceptable pump operation for values within the +/- 1 psig tolerance. The level of safety concerning the operation of these pumps will not be compromised by allowing a tolerance of +/-1 psig versus a strict +/-2% tolerance. Any deviations greater than 1 psig from the reference value would result in an investigation of the pump performance.

To encompass all the pumps on a consistent basis, a +/-1 psig tolerance on the discharge pressure reference value is requested, which would represent a tolerance of +/-3.9% to +/-4.3% of the existing reference values.

PROPOSED ALTERNATIVE TESTING:

Byron will use a discharge pressure tolerance of +/- 1 psig from the reference value when testing the Diesel Oil Transfer Pumps. The Flow will be compared to Table 3b of OM-6 to ensure the measured value is within the necessary acceptable limits.

APPROVAL STATUS:

1. Submitted with Revision 0 of Byron's 2nd Interval Program (December, 1995).

2. Approved per NRC SER, dated November 18, 1996 [In response to Revision 0 of Byron's 2nd Interval Program].

3. Suspended 02/09/01. Pumps designated/tested as "skid mounted components" i.a.w. Technical Position TP-EXE-IST-00-04.

ATTACHMENT 3

VALVE RELIEF REQUEST INDEX
(Page 1 of 1)

Designator	Description	Approval Date
*RV-1	Requests an "Appendix J" Test Frequency for Testing Performed in LLRT Surveillances	Denied
*RV-2	(1/2CS003A/B, 1/2CS008A/B, 1/2CS011A/B, 1/2CS020A/B) Sample Disassembly of the 3s, 11s, and 20s on an 18 month frequency and the 8s per GL 89-04, Position 2, to satisfy Full Stroke Testing (CO); proposes using Tech Spec Flow Test in lieu of Disassembly for 11s, and 20s when performed (approx. every 5 years)	Superceded by Condition Monitoring
*RV-3	(1/2SX101A) Verify to open during quarterly Motor Driven Auxiliary Feedwater Pump Surveillance (encapsulated design)	11/18/96
*RV-4	(1/2AF001A/B) Sample Disassembly per GL 89-04, position 2 to satisfy the Backflow Test (CC); Note: Successful Acoustics on both valves during an Outage would be considered Acceptable Testing (would become a Refueling Outage Justification); Approved per GL 89-04	Superceded by Condition Monitoring
*RV-5	(1/2FW079A-D) Disassembly per GL 89-04, Position 2, to satisfy the Backflow Test (CC); Approved per GL 89-04	Superceded by Condition Monitoring
*RV-6	(0SX028A/B) Requests an 18 Month Frequency for the Acoustic Backflow Test (CC)	Superceded by Condition Monitoring

Designator	**Description**	**Approval Date**
*RV-7	(0SX127A/B) Requests an 18 Month Frequency for the Full Stroke Test (CO) Note: Withdrawn as modification removed 0SX127A/B	Withdrawn due to Modification
*RV-8	(1/2DG5182A/B, 1/2DG5183A/B, 1/2DG5184A/B, 1/2DG5185A/B) Non-IST Alternative Testing for Diesel Air Start Valves; NRC Prior Approval Not Required	11/18/96

*These designators were those used for the submittal of these relief requests to the NRC. Consequently, they are of the previous format.

RELIEF REQUEST RV-3

TITLE: Motor Driven Auxiliary Feedwater Pump Essential Service Water Lube Oil Cooler Outlet Isolation Valve Stroke Test

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2SX101A	B	3	M-42-3(M-126-1)	E3 (E6)

FUNCTION(S):

The 1/2SX101A valves are the Essential Service (SX) Water outlet isolation valves for the Unit 1 and 2 motor driven Auxiliary Feedwater Pump lube oil coolers. These valves are required to open to provide a flow path for Essential Service Water through the motor driven AFW pump oil coolers.

CODE REQUIREMENT(S):

Stroke Time testing per OM-10, paragraph 4.2.1.4, development of stroke time acceptance criteria per OM-10, paragraph 4.2.1.8, corrective actions per OM-10, paragraph 4.2.1.9 and fail-safe testing per OM-10, paragraph 4.2.1.6.

BASIS FOR RELIEF:

Both of these valves are completely encapsulated per design and do not have local or remote position indicators which could be used to time the valve stroke.

The 1/2SX101A valves are pilot operated globe type solenoid valves which are energized to close. Upon de-energizing (pump start), the valve opens with the aid of a spring force against the plunger, and differential pressure across the main disk. Upon energizing, the valve closes by the magnetic force of the coil pulling the plunger down and pressure buildup above the main disk. In the absence of any pressure differential across the main disk, the spring or magnetic force is sufficient to open or close the valve, respectively.

Per the code requirements, these valves cannot be tested by the traditional means of stopwatch and indicating lights. The proposed alternative testing will adequately maintain the system in a state of operational readiness, while not sacrificing the safety of the plant.

PROPOSED ALTERNATIVE TESTING:

The 1/2SX101A solenoid valves will be verified to open during each quarterly ASME surveillance of the motor driven Auxiliary Feedwater Pumps. In addition, these valves are stroked monthly during Auxiliary Feedwater Pump surveillances required by Byron Station Technical Specifications.

RELIEF REQUEST RV-3 (continued)

APPROVAL STATUS:

1. Submitted with Revision 0 of Byron's 2nd Interval Program (Dec., 1995).

2. Approved per NRC SER, dated November 18, 1996 [In response to Revision 0 of Byron's 2nd Interval Program]. This relief requires including acceptance criteria in the test procedure which is related to the method of verifying that the valves stroke during the quarterly pump test.

RELIEF REQUEST RV-8

TITLE: Non-IST Monthly Test of Diesel Generator Air Start System Valves

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2DG5182A	B	N/A	M-152-20	B5 (B5)
1/2DG5182B	B	N/A	M-152-20	B5 (B5)
1/2DG5183A	B	N/A	M-152-20	E5 (E5)
1/2DG5183B	B	N/A	M-152-20	E5 (E5)
1/2DG5184A	C	N/A	M-152-20	B6 (B6)
1/2DG5184B	C	N/A	M-152-20	B6 (B6)
1/2DG5185A	C	N/A	M-152-20	F6 (F6)
1/2DG5185B	C	N/A	M-152-20	F6 (F6)

FUNCTION(S):

This relief request covers the open function of these valves only. They are required to open in order to supply starting air to the Diesel Generators.

CODE REQUIREMENT(S):

These valves are not within the scope of the IST Program per 10 CFR50.55 (a). However, the requirements for stroke timing and trending of the valves associated with the Diesel Air Start System are being mandated by the NRC as an augmented testing requirement pursuant to 10 CFR50.55 (6)(ii).

Therefore, valves associated with the Diesel Air Start System shall be exercised to the position required to fulfill their function per OM-10, Paragraphs 4.2.1.1 and 4.3.2.2. Additionally, the stroke testing of power operated valves shall be measured to the nearest second and such stroke times compared to the initial reference valves to document continued valve operational readiness per OM-10, paras. 4.2.1.4(b), 4.2.1.8, and 4.2.1.9.

BASIS FOR RELIEF:

The monthly Diesel Generator testing program, outlined in Byron Station's Technical Specifications and implemented by station operating procedures, exceeds the intent of the quarterly valve testing program which would be required by OM-10, Paragraph 4.2.1.2. Additionally, the stroke timing of solenoid operated valves associated with the Diesel Air Start System is impractical due to the fast actuation of these valves.

RELIEF REQUEST RV-8 (continued)

Proper valve operation will be demonstrated on a monthly basis by the verification of diesel generator air start capability. Such verification will compare the air pressures contained in the receiver tanks both before and after the diesel generator start, thus verifying the operability of the air start control valves. The proposed testing methodology at the increased frequency satisfies the intent of the Section XI requirements without posing undue hardships or difficulties.

PROPOSED ALTERNATIVE TESTING:

The performance of Byron Station's Diesel Generator operability monthly surveillance will verify the operational readiness of the valves associated with the Diesel Air Start System.

This surveillance testing will require the recording of the air pressures contained in both trains A & B of the Diesel Generator Air Start Receiver Tanks both before and immediately after diesel generator start.

By the comparison of these valves between trains, the satisfactory operation of the power operated and self-actuated check valves associated with the Diesel Air Start System can be adequately demonstrated.

APPROVAL STATUS:

1. Submitted with Revision 0 of Byron's 2nd Interval Program (Dec., 1995).
2. Relief granted due to involvement of Non-IST Components (Dec., 1995).
3. Approved per NRC SER, dated November 18, 1996 [In response to Revision 0 of Byron's 2nd Interval Program].

ATTACHMENT 5

COLD SHUTDOWN JUSTIFICATION INDEX

(Page 1 of 2)

Designator	Description	Approval Date
CS-1	(1/2MS001A-D) Stroke Time Test (SC) during Cold Shutdown	December, 1997
CS-2	(1/2CV8104; 1/2CV8442; 1/2CV8804A; 1/2CV112D; 1/2CV112E) Full Stroke Test of 1/2CV8442 and Stroke Time Test of remaining valves during Cold Shutdown	December, 1995
CS-3	(1/2FW009A-D) Stroke Time Test (SC) during Cold Shutdown	December, 1997
CS-4	(1/2CV112B; 1/2CV112C; 1/2CV8105; 1/2CV8106; 1/2CV8152; 1/2CV8160) Stroke Time Test (SC) during Cold Shutdown and Fail Safe Test Closed (FC) of 1/2CV8152 and 1/2CV8160 during Cold Shutdown	December, 1995
CS-5	(1/2RH8701A/B; 1/2RH8702A/B) Stroke Time Test (SC) during Cold Shutdown	December, 1995
CS-6	(1/2RC014A-D) Stroke Time Test (SC) / Fail Safe Test Closed (FC) during Cold Shutdown	December, 1995
CS-7	(1/2RH8730A/B) Full Stroke Test (CO) / Close Stroke Test (CC) during Cold Shutdown	December, 1995
CS-8	(1/2SI8818A-D; 1/2SI8958A/B) Full Stroke Test (CO) during Cold Shutdown	December, 1995
CS-9	(2FW039A-D) Stroke Time Test (SC) and Fail Safe Test Closed (FC) during Cold Shutdown	December, 1995
CS-10	(1/2CV459; 1/2CV460) Stroke Time Test (SC) and Fail Safe Test Closed (FC) during Cold Shutdown	December, 1995

COLD SHUTDOWN JUSTIFICATION INDEX
(Page 2 of 2)

Designator	Description	Approval Date
CS-11	(1/2AF014A-H; 1/2AF029A/B) Partial Stroke Test (CP) of all valves during Cold Shutdown; and Closure Test (CC) during Cold Shutdown for 1/2AF014A-H	Superceded by Condition Monitoring
CS-12	(1/2SI8801A/B) Stroke Time Test (SO/SC) during Cold Shutdown	December, 1995
CS-13	(1/2SI8802A/B; 1/2SI8806; 1/2SI8809A/B; 1/2SI8813; 1/2SI8835; 1/2SI8840) Stroke Time Test (SO/SC) during Cold Shutdown	December, 1995
CS-14	(1/2RY455A; 1/2RY456) Stroke Time Test (SO/SC) and Fail Safe Test Closed (FC) during Cold Shutdown	December, 1995
CS-15	Pressure Isolation Valves (PIVs) and 1/2RH8705A/B Leak Test (LT) during Cold Shutdown for all per Technical Specifications and Close Stroke Test (CC) for Check Valves at the same frequency	December, 1995
CS-16	Not used	
CS-17	(1/2SI8948A-D) Partial Stroke Test (CP) During Cold Shutdown	Superceded by Condition Monitoring
CS-18	(1/2RH8716A/B) Stroke Time Test (SO/SC) during Cold Shutdown	December, 1995
CS-19	(1/2CC685, 1/2CC9413A, 1/2CC9414, 1/2CC9415, 1/2CC9416, 1/2CC9438, 1/2CV8100, 1/2CV8112) Stroke Time Test (SC) during Cold Shutdown with no RCPs running	December, 1995
CS-20	(1/2FW036A-D) Backflow Test (CC) during Cold Shutdown using non-intrusive techniques	Superceded by Condition Monitoring

Designator	Description	Approval Date
CS-21	(1/2SI8808A-D) Stroke Time Test (SC) during Cold Shutdown	December, 1995
CS-22	(1/2CV8355A-D) Stroke Time Test (SO) during Cold Shutdown with no RCPs running	December, 1995
CS-23	(1SD054A-H; 2SD054B,D,F,H) Stroke Time Test (SC) and Fail Safe Test Closed (FC) during Cold Shutdown	December, 1995
CS-24	(1/2VQ001A,B; 1/2VQ002A,B) Stroke Time Test (SC) and Fail Safe Test Closed (FC) During Cold Shutdown or as Required to Declare Operability	December, 1995
CS-25	(1/2AF003A/B) Full Stroke Test (CC) during cold Shutdown verified by acoustic monitoring	Superceded by Condition Monitoring

ATTACHMENT 6

COLD SHUTDOWN JUSTIFICATION: CS-1

Component Number	System	Code Class	Category
1/2MS001A	Main Steam	2	B
1/2MS001B	Main Steam	2	B
1/2MS001C	Main Steam	2	B
1/2MS001D	Main Steam	2	B

Component Function(s)

These are the Main Steam Isolation Valves (MSIVs). In the normally open position, steam is supplied to the turbine. The valves are required to close to isolate the main steam line to prevent: reverse flow into containment during a main steam line break, Steam Generator Blowdown during a major steamline break outside of containment, and secondary system contamination from a Steam Generator tube rupture.

Justification

Closure of the main steam isolation valves 1MS001A-D or 2MS001A-D during Unit operation would result in a significant steam generator transient and a manual reactor trip. Failure of these valves during partial stroke testing can result in valve closure and subsequent reactor trip. NUREG-1482 section 4.2.4 states, "MSIVs should not be tested at power, since even a part-stroke exercise increases the risk of a valve closure when the Unit is generating power."

Because stroke testing of these valves at power would result in a reactor trip, and because partial stroke testing at power presents the unwarranted risk of a potential reactor trip, testing of these valves during operation is not practical. Stroke time testing of the Main Steam Isolation Valves will be completed during cold shutdown, as conditions allow, in accordance with OM-10, paragraph 4.2.1.2. The actual test modes are Modes 3-6, but normally testing is performed in Modes 3 or 4 before or after cold shutdowns.

COLD SHUTDOWN JUSTIFICATION: CS-2

Component Number	System	Code Class	Category
1/2CV8104	Chemical and Volume Control	2	B
1/2CV8442	Chemical and Volume Control	2	C
1/2CV8804A	Chemical And Volume Control	2	B
1/2CV112D	Chemical And Volume Control	2	B
1/2CV112E	Chemical And Volume Control	2	B

Component Function(s)

These are the emergency boration flowpath valves. The 1/2CV8104 is the emergency boration valve and the 1/2CV8442 is the emergency boration header check valve. The 1/2CV8804A is the RH heat exchanger 1A to charging pumps suction isolation valve required to be open for Post LOCA recovery. The 1/2CV112D and 1/2CV112E are the RWST to charging pumps suction isolation valves which are in the emergency boration flowpath when the RWST is the Boration Source.

Justification

The testing of any emergency boration flowpath valves during Unit operation is not practical. Stroke testing the boric acid injection isolation valve 1/2CV8104 and check valve 1/2CV8442, the RH to CV pump suction isolation valve 1/2CV8804A, or the RWST to CV pump suction isolation valves 1/2CV112D/E could result in boration of the RCS, resulting in a cooldown or reactivity transient. Aligning the system in this configuration even for a short duration is, therefore, unacceptable. These valves will be stroke tested during cold shutdown, in accordance with OM-10, paragraphs 4.2.1.2 and 4.3.2.2.

COLD SHUTDOWN JUSTIFICATION: CS-3

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Component Number	System	Code Class	Category
1/2FW009A	Feed Water	2	B
1/2FW009B	Feed Water	2	B
1/2FW009C	Feed Water	2	B
1/2FW009D	Feed Water	2	B

Component Function(s)

These are the main feedwater isolation valves (FWIVs). They are open during normal operation to allow flow to the Steam Generator (non-IST function). They are required to close for Feedwater Isolation and Containment Isolation.

Justification

The main feedwater isolation valves cannot be fully stroked during operation as feedwater would be terminated causing a reactor trip. Failure of these valves during partial stroke testing can result in valve closure and subsequent reactor trip.

Because stroke testing of these valves at power would result in a reactor trip, and because partial stroke testing at power presents the unwarranted risk of a potential reactor trip, testing of these valves during operation is not practical. Stroke time testing of the Main Feedwater Isolation Valves will be completed during cold shutdown, as conditions allow, in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-4

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Component Number	System	Code Class	Category
1/2CV112B	Chemical And Volume Control	2	B
1/2CV112C	Chemical And Volume Control	2	B
1/2CV8105	Chemical And Volume Control	2	B
1/2CV8106	Chemical And Volume Control	2	B
1/2CV8152	Chemical And Volume Control	2	A
1/2CV8160	Chemical And Volume Control	2	A

Component Function(s)

The 1/2CV112B & C are the volume control tank outlet isolation/charging pump suction valves. The 1/2CV8105 and 1/2CV8106 are the normal charging path containment isolation valves. The 1/2CV8152 and the 1/2CV8160 are the letdown line containment isolation valves. These valves are part of the chemical and volume control system (CVCS).

Justification

Closure of these letdown and charging makeup valves 1/2CV112B/C, 1/2CV8105, 1/2CV8106, 1/2CV8152, and 1/2CV8160 during normal Unit operation would cause a loss of charging flow which would result in a reactor coolant inventory transient, and possibly, a subsequent reactor trip. Additionally, isolating letdown during normal Unit operation would result in a thermal transient on the charging nozzle. Valves 1/2CV8152 and 1/2CV8160 will be stroke time tested during cold shutdown in accordance with OM-10, paragraph 4.2.1.2 (also covers fail-safe tests for 1/2CV8152 and 1/2CV8160). As valves 1/2CV112B/C are the volume control tank outlet isolation/charging pump suction valves, they should not be closed while the charging pumps are running. As valves 1/2CV8105 and 1/2CV8106 are in the normal charging flow path, they should not be closed while the charging pumps are running. Valves 1/2CV112B/C, 1/2CV8105, and 1/2CV8106 will be exercised during Cold Shutdown when the charging pumps are not running, as a result they may not be tested during cold shutdowns in which the charging pumps are not secured for sufficient duration to perform the tests. It is not the intent of this justification to require charging pump shutdown only to perform the exercise test for these valves. Valves 1/2CV112B/C, 1/2CV8105, and 1/2CV8106 will be tested during Cold Shutdown in which the charging pumps are secured for sufficient duration to perform the tests, which is in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-5

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Component Number	System	Code Class	Category
1/2RH8701A	Residual Heat Removal	1	A
1/2RH8701B	Residual Heat Removal	1	A
1/2RH8702A	Residual Heat Removal	1	A
1/2RH8702B	Residual Heat Removal	1	A

Component Function(s)

The 1RH8701A/B, 2RH8701A/B, 1RH8702A/B and 2RH8702A/B valves are the isolation boundary between the Residual Heat Removal Pumps and the Reactor Coolant System. The RH8701 valves isolate the "A" loop of the RCS from the "A" RHR pump suction. The RH8702 valves isolate the "C" loop of the RCS from the "B" RHR pump suction.

Justification

Opening one of these valves during Unit operation will leave only one valve isolating RHR from the high RCS pressure. This would place the plant in an undesirable and potentially unsafe condition. Therefore, these valves will be full stroke tested during cold shutdown, in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-6

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2RC014A	Reactor Coolant	1	B
1/2RC014B	Reactor Coolant	1	B
1/2RC014C	Reactor Coolant	1	B
1/2RC014D	Reactor Coolant	1	B

Component Function(s)

These are the reactor head vent valves and are used to vent the reactor of hydrogen or other post-accident gases.

Justification

The Reactor Pressure Vessel Vent Valves 1RC014A-D and 2RC014A-D cannot be stroked during Unit operation, as they provide a pressure boundary between the Reactor Coolant system and containment atmosphere. Failure of one of these valves in the open position would result in leaving only one valve as the high pressure boundary. These valves will be full stroke exercised and fail safe tested when the RCS pressure is at a minimum during cold shutdown, in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-7

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Component Number	System	Code Class	Category
1/2RH8730A	Residual Heat Removal	2	C
1/2RH8730B	Residual Heat Removal	2	C

Component Function(s)

These are the RHR pump discharge check valves. The open function of these valves is to provide an RHR pump flowpath. The closure function is to prevent back leakage while the opposite train is in operation during post-accident situations.

Justification

The Residual Heat Removal Pump discharge check valves 1RH8730A/B and 2RH8730A/B cannot be full stroke exercised during Unit operation due to the RCS pressure being greater than the RH pumps are capable of putting out. These check valves will be partial stroke tested, however, on a quarterly basis during the mini-flow recirculation RHR pump tests and full stroke exercised during cold shutdown. This is in accordance with OM-10, paragraph 4.3.2.2.

Additionally, it would be impractical to backflow test these valves during Unit operation. The methodology for testing these valves involves closing the mini-flow valve on the train being tested and having the opposite train provide pressure against the check valve being tested. The test is satisfied by verifying that the pump on the same train as the check valve is not rotating backwards. However, this testing would put the plant in an undesirable condition as both trains of RH would be considered inoperable. During cold shutdowns, the train running on shutdown cooling may be used to pressurize against the opposite train's check valve. For this reason, these valves will be backflow tested during cold shutdown in accordance with OM-10, paragraph 4.3.2.2.

COLD SHUTDOWN JUSTIFICATION: CS-8

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Component Number	System	Code Class	Category
1/2SI8818A	Safety Injection	1	AC
1/2SI8818B	Safety Injection	1	AC
1/2SI8818C	Safety Injection	1	AC
1/2SI8818D	Safety Injection	1	AC
1/2SI8958A	Safety Injection	2	C
1/2SI8958B	Safety Injection	2	C

Component Function(s)

The SI8818 valves are the safety injection RCS Loop 1 cold leg upstream check valves located in the flowpath from the Residual Heat Removal (RHR) pumps. The SI8958 valves are the safety injection RWST outlet check valves to the RHR pumps.

Justification

Due to the high RCS pressure during Unit operation (2235 psi), these valves cannot be full or partial stroke exercised during quarterly testing. The 1/2SI8958A/B check valves, although located at the suction of the RHR pumps, are not in the recirculation flow path to allow partial stroking each quarter. These valves will be full stroke exercised during cold shutdown, in accordance with OM-10, paragraph 4.3.2.2.

COLD SHUTDOWN JUSTIFICATION: CS-9

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Component Number	System	Code Class	Category
2FW039A	Feed Water	2	B
2FW039B	Feed Water	2	B
2FW039C	Feed Water	2	B
2FW039D	Feed Water	2	B

Component Function(s)

These are the steam generator feedwater preheater bypass downstream isolation valves. They provide for Feedwater/Containment isolation in the closed position. They are normally open air operated valves located on the cross-tie lines connecting the main FW line to the tempering line.

Justification

It is not practical for the 2FW039A-D valves to be stroke tested during normal operation as closure of these valves would require a power reduction from full power to less than 80%. Stroking these valves closed above 80% would result in undesirable preheater tube vibrations within the Steam Generators. These valves will be stroke time/fail safe tested during cold shutdown, in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-10

Component Number	System	Code Class	Category
1/2CV459	Chemical And Volume Control	1	B
1/2CV460	Chemical And Volume Control	1	B

Component Function(s)

CV459 & 460 valves are normally OPEN with the Unit at power, allowing letdown flow to occur. The valves auto close on low Pressurizer level and on letdown isolation due to an interlock with the orifice isolation valves.

Justification

It is impractical to exercise and stroke time the above listed valves on a quarterly basis. Due to the interlocks between the 1/2CV459, 1/2CV460, & the 1/2CV8149A-C valves, exercising these valves during normal operation results in (multiple) total letdown flow isolation events. The affect of a letdown isolation with the Unit at power is a thermal transient to the RPV charging nozzle. A letdown isolation also results in some amount of pressurizer level fluctuation until equilibrium letdown and makeup is re-established. While the piping and components are designed for thermal transients, each cycle presents some additional stress to all of the affected equipment. It is prudent to minimize the number of transients the equipment is required to undergo to prevent premature failures.

Due to the above, these valves will be stroke tested and failed safe tested in Cold Shutdowns in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-12

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Component Number	System	Code Class	Category
1/2SI8801A	Safety Injection	2	B
1/2SI8801B	Safety Injection	2	B

Component Function(s)

These are the charging pumps to RCS cold leg isolation valves. They are required to open to provide a flow path for the high head safety injection portion of ECCS. They are required to close for containment isolation.

Justification

The High Head Injection Isolation Valves 1SI8801A/B and 2SI8801A/B cannot be stroke tested during Unit operation. These valves isolate the CV system from the RCS. Opening them during operation would enable charging flow to pass directly into the RCS, bypassing the regenerative heat exchanger. The temperature difference of the charging flow and the RCS could result in damaging thermal stresses to the cold leg nozzles as well as cause a reactivity change which would, in turn, cause a plant transient. These valves will be stroke time tested during cold shutdowns provided the charging pumps are shutdown. As a result, they may not be tested during cold shutdowns for which the charging pumps are required to be running. It is not the intent of this justification to require charging pump shutdown to perform the exercise test for these valves. These valves will be tested during cold shutdowns in which the charging pumps are secured for sufficient duration to perform the tests, which is in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-13

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Component Number	System	Code Class	Category
1/2SI8802A	Safety Injection	2	B
1/2SI8802B	Safety Injection	2	B
1/2SI8806	Safety Injection	2	B
1/2SI8809A	Safety Injection	2	B
1/2SI8809B	Safety Injection	2	B
1/2SI8813	Safety Injection	2	B
1/2SI8835	Safety Injection	2	B
1/2SI8840	Safety Injection	2	B

Component Function(s)

The SI8802 valves are the Safety Injection to the Reactor Coolant System (RCS) hot leg (1A/1D, 1B/1C) isolation valves. The SI8806 valves are the A and B train SI pump suction isolation valves from the RWST. The SI8809 valves are the Residual Heat Removal (RHR) pumps to RCS cold leg isolation valves. The SI8813 valves are the SI pumps common mini-flow recirculation isolation valves. The SI8835 valves are the SI pumps cold leg isolation valves. The SI8840 valves are the RHR to RCS hot legs 1A/1D isolation valves.

Justification

The safety injection system SVAG (Spurious Valve Actuation Group) valves 1/2SI8802A/B, 1/2SI8806, 1/2SI8809A/B, 1/2SI8813, 1/2SI8835, and 1/2SI8840 cannot be stroke tested during Unit operation. These valves are required by the Technical Specifications to be de-energized in their proper positions during Unit operation. Stroking them would be a violation of the Technical Specifications as well as defeating the de-energized SVAG valve principle. These valves will be stroke tested during cold shutdown when they are not required to be de-energized. This is in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-14

Component Number	System	Code Class	Category
1/2RY455A	Residual Heat Removal	1	B
1/2RY456	Residual Heat Removal	1	B

Component Function(s)

Pressurizer Power Operated Relief Valves are required to open for low temperature overpressure protection. The closed function is for pressure isolation.

Justification

PORV's 1/2RY455A and 1/2RY456 will be stroke/fail safe tested on a cold shutdown frequency per Generic Letter 90-06. This recommendation comes from Enclosure A to Generic Letter 90-06, which addresses the NRC staff positions concerning PORV and Block Valve Reliability. Item number 3.1.2 states that the "Stroke testing of PORVs should only be performed during Mode 3 (HOT STANDBY) or Mode 4 (HOT SHUTDOWN) and in all cases prior to establishing conditions where the PORVs are used for low-temperature overpressure protection. Stroke testing of the PORV's should not be performed during power operation." For this reason, these valves will be stroke time tested/fail-safe tested during cold shutdowns in accordance with OM-10, paragraph 4.2.1.2 and Generic Letter 90-06. The actual test mode will be Mode 3 or 4, as the Technical Specifications require full cycle operation in Mode 3 or 4 once per 18 months. This is accomplished before entering Mode 5 during plant shutdowns per station procedures.

COLD SHUTDOWN JUSTIFICATION: CS-15
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Component Number	System	Code Class	Category
1/2RH8701A	Residual Heat Removal	A	1
1/2RH8701B	Residual Heat Removal	A	1
1/2RH8702A	Residual Heat Removal	A	1
1/2RH8702B	Residual Heat Removal	A	1
1/2RH8705A	Residual Heat Removal	A	2
1/2RH8705B	Residual Heat Removal	A	2
1/2SI8815	Safety Injection	AC	1
1/2SI8818A	Safety Injection	AC	1
1/2SI8818B	Safety Injection	AC	1
1/2SI8818C	Safety Injection	AC	1
1/2SI8818D	Safety Injection	AC	1
1/2SI8819A	Safety Injection	AC	1
1/2SI8819B	Safety Injection	AC	1
1/2SI8819C	Safety Injection	AC	1
1/2SI8819D	Safety Injection	AC	1
1/2SI8841A	Safety Injection	AC	1
1/2SI8841B	Safety Injection	AC	1
1/2SI8900A	Safety Injection	AC	1
1/2SI8900B	Safety Injection	AC	1
1/2SI8900C	Safety Injection	AC	1
1/2SI8900D	Safety Injection	AC	1
1/2SI8905A	Safety Injection	AC	1
1/2SI8905B	Safety Injection	AC	1
1/2SI8905C	Safety Injection	AC	1
1/2SI8905D	Safety Injection	AC	1
1/2SI8948A	Safety Injection	AC	1
1/2SI8948B	Safety Injection	AC	1
1/2SI8948C	Safety Injection	AC	1
1/2SI8948D	Safety Injection	AC	1
1/2SI8949A	Safety Injection	AC	1
1/2SI8949B	Safety Injection	AC	1
1/2SI8949C	Safety Injection	AC	1
1/2SI8949D	Safety Injection	AC	1
1/2SI8956A	Safety Injection	AC	1
1/2SI8956B	Safety Injection	AC	1
1/2SI8956C	Safety Injection	AC	1
1/2SI8956D	Safety Injection	AC	1

Component Function(s)

The listed valves have been identified as intersystem LOCA valves. Only the closed function of these valves will be addressed in this justification. These valves form a pressure boundary between the RCS and the other essential components in order to protect these components from damage.

Justification

All of these valves are considered pressure isolation valves (PIVs) per the Technical Specifications, except for the 1/2RH8705A/B valves, which will be tested on the same frequency since they are tested in conjunction with the 1/2RH8701/2 valves. The performance of the leak test also satisfies the backflow test required for check valves by NRC Generic Letter 89-04. These valves will be backflow/leak tested during cold shutdowns, in accordance with OM-10, paragraph 4.2.1.2 and 4.3.2.2.

Additionally, pressure isolation valves are required to be tested in accordance with Technical Specification SR 3.4.14.1. The Technical Specification requires that if the Unit is in cold shutdown for 7 days or more and the valves have not been tested in the past nine months, they will be leak tested prior to entry into Mode 2.

COLD SHUTDOWN JUSTIFICATION: CS-18

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Component Number	System	Code Class	Category
1/2RH8716A	Residual Heat Removal	2	B
1/2RH8716B	Residual Heat Removal	2	B

Component Function(s)

These valves are the Residual Heat Removal system cross connect valves that are required to be open to allow injection into all four RCS loops. Both A and B valves are required to be open for train operability of either train of RHR. The valves are required to be closed during cold leg recirculation and open during hot leg recirculation.

Justification

Technical Specifications require these valves to be open. Stroking either valve closed would make both trains of RH inoperable, which is a violation of the Technical Specification. They can only be exercised during cold shutdown or refuel. These valves will be stroke timed closed and open during cold shutdowns in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-19

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Component Number	System	Code Class	Category
1/2CC685	Component Cooling	2	A
1/2CC9413A	Component Cooling	2	A
1/2CC9414	Component Cooling	2	A
1/2CC9415	Component Cooling	3	B
1/2CC9416	Component Cooling	2	A
1/2CC9438	Component Cooling	2	A
1/2CV8100	Chemical & Volume Control	2	A
1/2CV8112	Chemical & Volume Control	2	A

Component Function(s)

Motor operated valves 1/2CC685 and 1/2CC9438 function in the closed position to provide a limited leakage barrier between the containment atmosphere and the environment during accident conditions. These valves open to provide a return flow path from the RCP Thermal Barrier.

Motor operated valves 1/2CC9413A are the component cooling water supply to RCP isolation valves. These valves must close to provide containment isolation. These valves open to supply component cooling water to the RCPs.

Motor operated valves 1/2CC9414 and 1/2CC9416 are the component cooling water return line from the RCPs isolation valves. These valves close to provide containment isolation. These valves open to provide a component cooling water return path from the RCPs.

Motor operated valves 1/2CC9415 are in the supply line to the RCPs and other non-essential Component Cooling Water loads. They close to isolate non-essential loads from essential loads during accident conditions. Additionally, these valves may need to be reopened to cool the Excess Letdown HX to maintain control of pressurizer level during a post accident scenario.

Motor operated valves 1/2CV8100 and 1/2CV8112 must close to provide containment isolation. These valves open to provide a seal water return path from the RCPs.

Justification

These valves cannot be stroked during normal operations because closure would isolate flow to the Reactor Coolant Pumps. Failure of one of the CC valves in a closed position during an exercise test would result in a loss of cooling flow to the pumps and eventual pump damage and/or trip. Failure of a CV valve in the closed direction would result in seal water return being diverted to the PRT by lifting a relief valve (1/2CV8121) upstream of the isolation valves. Therefore, these valves will be stroke tested during cold shutdowns, in accordance with OM-10, paragraph 4.2.1.2 provided all of the RCPs are shutdown. This test frequency will adequately maintain these valves in a state of operational readiness by testing them as often as safely possible.

COLD SHUTDOWN JUSTIFICATION: CS-21

(Page 1 of 1)

Component Number	System	Code Class	Category
1/2SI8808A	Safety Injection	1	B
1/2SI8808B	Safety Injection	1	B
1/2SI8808C	Safety Injection	1	B
1/2SI8808D	Safety Injection	1	B

Component Function(s)

The 1/2SI8808A-D valves are Motor Operated Safety Injection Accumulator Discharge Isolation Valves. These valves are OPEN with Power Removed for Modes 1, 2, and 3 with Pressurizer Pressure above 1000 psig in accordance with the Technical Specifications. These valves were included in the IST Program for their need to be closed after all of the water in the Accumulator has been injected into the RCS. Closure of these valves would prevent injection of a Nitrogen bubble into the RCS. These valves are included in the IST Program as passive open and active to close.

Justification

Technical Specifications require the (Accumulator) isolation valves be open and power removed while in Modes 1, 2 or 3 (with pressurizer pressure above 1000 psig).

Since the Technical Specifications require these valves to be OPEN with power to their motor operators removed during periods when pressurizer pressure is above 1000 psig, the valves cannot be exercised every three months. In lieu of stroke time testing the valves every three months, these valves will be tested during heatup or cooldown (the pressure transition between 800 and 1000 psig pressurizer pressure) or, they will be tested with the RCS depressurized and the associated accumulator vented and drained. This cold shutdown testing frequency is in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-22

Component Number	System	Code Class	Category
1/2CV8355A	Chemical And Volume Control	2	B
1/2CV8355B	Chemical And Volume Control	2	B
1/2CV8355C	Chemical And Volume Control	2	B
1/2CV8355D	Chemical And Volume Control	2	B

Component Function(s)

The CV8355 valves are Motor Operated Isolation valves in the seal injection line to the Reactor Coolant Pumps. Additionally, the CV8355s are designated Containment Isolation valves but are exempt from Local Leak Rate Testing of 10 CFR 50, Appendix J. The CV8355s have no automatic closure function as part of Containment Isolation.

Justification

Reactor Coolant Pumps (RCPs) are required to be in operation in Mode 1, Power Operation. Seal injection flow must be maintained when the RCPs are running. Interruption of seal injection flow with the RCPs in operation, even for a short duration, is detrimental to the RCP seals. The above listed valves are Seal Injection Inlet valves and are designated Containment Isolation valves (CIVs).

The 1/2CV8355A-D valves are exempt from Local Leakage Rate testing of 10 CFR 50, Appendix J, but due to their designation as CIVs, they will be tested per ASME Code in the Closed direction. Due to the above, these valves will not be exercised during plant operation, but they will be exercised during Cold Shutdown when the RCPs are not running. Short duration forced outages to Cold Shutdown seldom require shutdown of RCPs as they are part of the normal heat removal loop. It is not the intent of this justification to require RCP shutdown only to perform the exercise tests for these valves. It is anticipated that these valves may not normally be tested more often than once per refueling outage. However, these valves will be tested during Cold Shutdowns in which the RCPs are secured for sufficient time to perform the tests, which is in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-23

(Page 1 of 2)

Component Number	System	Code Class	Category
1SD054A	Steam Generator Blowdown	2	B
1/2SD054B	Steam Generator Blowdown	2	B
1SD054C	Steam Generator Blowdown	2	B
1/2SD054D	Steam Generator Blowdown	2	B
1SD054E	Steam Generator Blowdown	2	B
1/2SD054F	Steam Generator Blowdown	2	B
1SD054G	Steam Generator Blowdown	2	B
1/2SD054H	Steam Generator Blowdown	2	B

Component Function(s)

The SD054 valves are normal Steam Generator Blowdown throttle control valves. An additional function of the Unit 1, (A through H valves) and the Unit 2, (B train valves [B, D, F, & H]) is to isolate Blowdown in the event of a High Energy Line Break (HELB) in the SD system.

Justification

It is impractical to exercise and stroke time the above listed valves on a quarterly basis. The valves have no Open / Closed handswitch. They are normally operated by means of a potentiometer which ultimately controls an air signal to a positioner. Attainment of repeatable stroke time results requires the valves to be stroked by causing (or simulating) HELB relay actuation. This method of closure causes multiple valve actuations resulting in complete steam generator blowdown isolation. Furthermore, the remote position indicator, (a 0-100% indicator - not based on limit switch operation) may lag actual valve position. Therefore the only repeatable method of stroke timing these valves involves stationing personnel locally at the valve(s) to witness actual valve movement.

Full stroke exercising the valves is a Unit operation concern in that closure of these valves during normal operation presents a thermal transient to the downstream piping and components including the blowdown condenser. While the valves, piping, and components are designed to withstand this thermal transient, each transient produces stress which may lead to premature failure of the affected components. It is prudent to minimize the number of thermal transients that these high energy lines are required to undergo.

COLD SHUTDOWN JUSTIFICATION: CS-23

Personnel safety concerns exist with this stroking exercise during normal operation in that the valves are physically located in the Main Steam Isolation (MSIV) Valve Room, off the Steam Tunnel. This room contains the MSIVs, Feedwater Isolation Valves (FWIVs), Main Steam Safety Valves, Main Steam PORVs, and other miscellaneous piping and valves. The normal ambient temperature in this room with the Unit at power is greater than 110 °F. Almost all of the piping (most of which is insulated) and instrument tubing in the room are normally at temperatures of approximately 500 °F or more. The SD054 valves are located above the floor some 16 to 20 feet and are not visible from the floor being obscured by Main Steam and Feedwater Piping. Since personnel must be stationed locally at the valve to witness actual valve movement, it is necessary to climb around very hot piping in a hot and very noisy ambient atmosphere. In some cases it may be necessary to erect scaffolding to conduct this test with the Unit in normal operation.

Due to the above, these valves will be stroke time/fail safe tested during Cold Shutdowns of sufficient duration to allow safe access to the valves, including the erection of scaffolding, if required. This testing frequency is in accordance with OM-10, paragraph 4.2.1.2.

COLD SHUTDOWN JUSTIFICATION: CS-24

Component Number	System	Code Class	Category
1/2VQ001A	Containment Ventilation	2	A
1/2VQ001B	Containment Ventilation	2	A
1/2VQ002A	Containment Ventilation	2	A
1/2VQ002B	Containment Ventilation	2	A

Component Function(s)

The 1/2VQ001A/B valves are the containment purge supply isolation valves. The 1/2VQ002A/B valves are the containment purge exhaust isolation valves. They were designed to purge containment under normal shutdown conditions. The IST function of closure is for containment isolation.

Justification

The Primary Containment Purge Supply and Exhaust Valves, 1/2VQ001A/B and 1/2VQ002A/B, cannot be stroke time tested during Unit operation. These 48-inch valves are the only isolation points between the containment atmosphere and the environment. Stroking these valves at any time other than Modes 5 or 6 would be a violation of Technical Specifications, in which it states that in Modes 1-4, the valves "..shall be closed and power removed." Administratively, these valves are maintained Out of Service Closed.

As a containment isolation valve, the closure function is considered to be operable. The valves are leak tested in accordance with Technical Specifications every 184 days, and a monthly verification is performed to verify that these valves are closed and power is removed. The monthly verification is completed by verifying the closed indication of the Group 6 monitor lights in the control room and that each power supply is off. However, if re-positioning this valve is necessary and the valve needs to be considered operable in association with exercising capabilities of it, then the IST stroke time testing and remote position indication testing will be completed prior to declaring the valve operable per OM-10, paragraph 4.2.1.7. It is anticipated that the necessary stroke time testing of these valves will be very infrequent, if at all, in the future.

Test Frequency

The 1/2VQ001A/B and 1/2VQ002A/B valves will be stroke time and fail safe tested during cold shutdowns, as necessary, to declare the valve exercising capabilities operable, in accordance with OM-10, paras. 4.2.1.2 and 4.2.1.7.

ATTACHMENT 7

REFUEL OUTAGE JUSTIFICATION INDEX
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Designator	Description	Approval Date
RJ-1	(OSX143A/B) Backflow Test (CC) during Refueling Outages (U-1 and U-2)	Superceded by Condition Monitoring
RJ-2	(1/2SI8948A-D, 1/2SI8956A-D) Full Stroke Test (CC) during Refueling (verified with Sampling Acoustic Testing), and Partial Stroke Test (CP) of 1/2SI8948A-D during Cold Shutdown (see VC-17)	Superceded by Condition Monitoring
RJ-3	(1/2CC9458; 1/2CC9459A/B; 1/2CC9467A-C) All Valves Manually Tested in preparation/ during each U-2 Refueling	December, 1995
RJ-4	(1/2SI8811A/B) Stroke Time Tested (SO/SC) during Refueling	December, 1995
RJ-5	(1/2IA065; 1/2IA066) Stroke Time Test (SC) and Fail Safe Test Closed (FC) during Refueling	December, 1995
RJ-6	(1/2SI8819A-D; 1/2SI8905A-D; 1/2SI8922A/B; 1/2SI8926; 1/2SI8949B,D) All Valves Full Stroke Tested (CO) during Refueling	December, 1995
RJ-7	(1/2CV8481A/B; 1/2CV8546; 1/2SI8815; 1/2SI8900A-D) All Valves Full Stroke Tested (CC) during Refueling	December, 1995
RJ-8	(1/2SI8841A/B; 1/2SI8949A,C) Full Stroke Test (CO) during Refueling	December, 1995
RJ-9	(1/2RH8705A/B) Full Stroke Test (CO) during Refueling	December, 1995

REFUEL OUTAGE JUSTIFICATION INDEX
(Page 2 of 3)

Designator	Description	Approval Date
RJ-10	(1/2FP345) Backflow Test (CC) during Refueling	Superceded by Conditon Monitoring
RJ-11	(1/2CV8348) Backflow Test (CC) during Refueling	Superceded by Condition Monitoring
RJ-12	(1/2CV8368A-D) Backflow Test (CC) during Refueling	Superceded by Condition Monitoring
RJ-13	(1/2CC9495A-D) Backflow Test (CC) during Refueling	Superceded by Condition Monitoring
RJ-14	(1/2FW510A; 1/2FW520A; 1/2FW530A; 1/2FW540A; 1/2FW510; 1/2FW520; 1/2FW530; 1/2FW54-0; 1/2FW034A-D) Augmented Fail-Safe Test Closed (FC) during Refueling per Byron Technical Specifications	December, 1995
RJ-15	(1/2CC9486; 1/2CC9518; 1/2CC9534; 1/2CS008A/B; 1/2CS008A/B; 1/2CV8113; 1/2IA091; 1/2PR032; 1/2PS231A/B; 1/2RY8046; /2RY8047; 1/2SI8968; 1/2WM191; 1/2WO007A/B) Backflow Test (CC) during Refueling; (1/2CC9518; 1/2CC9534; 1/2CV8113) Full Stroke Test (CO) during Refueling	Superceded by Condition Monitoring
RJ-16	(1/2CV8546; 1/2SI8926) Backflow Test (CC) during Refueling	Superceded by Condition Monitoring
RJ-17	(1/2CV8440) Backflow Test (CC) during Refueling	Superceded by Condition Monitoring
RJ-18	(1/2RY085A/B, 1/2RY086A/B) Backflow Test	December, 1995

(CC) during Refueling

REFUEL OUTAGE JUSTIFICATION INDEX
(Page 3 of 3)

RJ-19	(1/2SX168) Fail Open Test during Refueling	March, 2000
RJ-20	(0WO205A/B) Sample nonintrusive examination or disassembly inspection per GL 89-04, Position 2, to satisfy the closure test.	Superceded by Condition Monitoring
RJ-21	(1/2CC070A/B) Sample nonintrusive examination or disassembly inspection per GL 89-04, Position 2, to satisfy the closure test.	Superceded by Condition Monitoring

ATTACHMENT 8

REFUELING OUTAGE JUSTIFICATION
RJ-3

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2CC9458	B	3	M-66-3B	C6 (C3)
1/2CC9459A	B	3	M-66-3A	D6 (D3)
1/2CC9459B	B	3	M-66-3A	D5 (D4)
1/2CC9467A	B	3	M-66-4D	C6 (C3)
1/2CC9467B	B	3	M-66-4D	C5 (C3)
1/2CC9467C	B	3	M-66-3B	D6 (D2)

FUNCTION(S):

1/2CC9458: CC pump Discharge Header Manual Isolation Valves which may provide for train separation in a post accident situation.

1/2CC9459A: CC Pump Suction Header Crosstie Manual Isolation valves which may provide for separation/isolation of the CC system into two redundant trains during recirculation phase of RHR operation during a LOCA and other applicable accident modes.

1/2CC9459B: CC Pump Suction Header Crosstie Manual Isolation valves which may provide for separation/isolation of Unit 1 and Unit 2 CC systems during normal cooldown and recirculation phase of RHR operation.

1/2CC9467A: CC heat exchanger Outlet Header Crosstie Manual Isolation Valves which provide for possible manual isolation of flow to the Unit normal plant loads if the respective CC9415 valve fails open.

1/2CC9467B: CC Heat Exchanger Header Crosstie Manual Isolation Valves which may provide for train separation while the subject Unit undergoes Post LOCA cooldown. Provides separation/isolation of Unit 1 and Unit 2 CC systems during normal cooldown and recirculation phase of RHR operation.

1/2CC9467C: CC Supply Header Crosstie Manual Isolation Valve which may need to be called upon due to a single failure within the CC system configuration.

REFUELING OUTAGE JUSTIFICATION
RJ-3 (continued)

JUSTIFICATION:

General Information:

In general, the 1/2CC9459B and 1/2CC9467B CC manual valves are safety significant valves that belong in the IST Program, as identified in the Region III NRC Inspection Report, dated February 18, 1994. This refueling outage justification will address these valves in great detail. The remaining valves in this refueling outage justification (CC9458, CC9459A, CC9467A,B) are much less significant within the CC system. None of these remaining valves would function as a primary means of mitigating an accident, and none of them are considered "active" valves per UFSAR table 3.9.16. The reason for their inclusion is the possibility that they may be called upon following a single failure within the CC system. In addition, there are several other "maintenance" type valves that would also be available for isolation purposes. In a post accident situation, there are no specific directions taken within the CC system. If a malfunction were to occur, operators would be dispatched and the problem isolated as required. Byron conservatively added these valves to the program due to the uniqueness of the CC system and to address possible concerns about the valves' ability to isolate. In addition, Byron will be exercising these valves on the same frequency as the CC9459B and CC9467B valves. There would be no value added and it would be impractical to exercise them on a more frequent basis. The following is specific information concerning the valves in this refueling outage justification.

Specific Information:

a. 1/2CC9459B and 1/2CC9467B.

Manual valves 1/2CC9459B and 1/2CC9467B are used to provide train separation and/or isolation of the Component Cooling Water (CCW) System. More specifically, they are aligned to place the Unit 0 Heat Exchanger and Pump on the Unit 1 or Unit 2 side of CCW to ensure adequate cooling during shutdowns and/or Post-Accident.

Exercising these valves presents a concern for the equipment cooled by the CCW System. The CCW system is a delicately balanced system that has the potential for becoming upset upon swapping the Unit 0 Heat Exchanger and Pump from one Unit to the other. History has shown that stroking these valves will cause oscillation in the lines, disrupt flow balancing due to D/P differences throughout the system, and would place the normal loads at risk for adequate cooling. For instance, the CC685 valve, which is the Reactor Coolant Pump (RCP) thermal barrier Component Cooling Water return valve, autocloses on high flow, which would result in a loss of flow to the RCP thermal barriers. The CC685 valve could potentially close during the exercising of the CC manual valves, due to the upset flow conditions. Exercising the CC manual valves quarterly is impractical for the reasons presented above.

REFUELING OUTAGE JUSTIFICATION
RJ-3 (continued)

The normal alignment of the CCW System is to have the Unit 0 heat exchanger and Unit 0 Pump aligned to Unit 1. It would be impractical due to the reasons presented previously (flow concerns, etc) to exercise the CC manual valves during a Unit 1 refueling outage or cold shutdown since the Unit 0 heat exchanger and Unit 0 pump would normally already be aligned in the desired position for the Unit 1 outage or cold shutdown. However, before entering a Unit 2 refueling outage or before a planned U-2 cold shutdown (or just after a forced U-2 cold shutdown), the 2CC9459B and 2CC9467B CC manual valves would be exercised open and the respective U-1 valves would be exercised closed to align the Unit 0 heat exchanger and Unit 0 Pump to Unit 2 to ensure adequate cooling is available. Despite this necessity to fulfill plant operations, it would be impractical to routinely return the valves to their original position during a U-2 cold shutdown (following RH cooling as the plant is ascending to Mode 1) due to the fact that it may interfere with other outage activities. These valves require very careful plant monitoring and a considerable amount of time to physically exercise.

Due to the above justification, in accordance with OM-10, paragraph 4.2.1.2, Byron will exercise the 1(2)CC9459B and 1(2)CC9467B manual valves in the following manner: In preparation for a Unit 2 refueling outage, the 2CC9459B and 2CC9467B Component Cooling manual valves would be exercised open and the respective U-1 valves will be exercised closed to align the Unit 0 heat exchanger and pump to Unit 2. Prior to entry into Mode 1, the valves would be exercised in the opposite direction to re-align the Unit 0 heat exchanger and pump to their normal alignment for Unit 1.

REFUELING OUTAGE JUSTIFICATION
RJ-3 (continued)

To further support this refueling outage justification, a review of maintenance history dating back to 1983 was performed at Byron. The 1CC9459B and 1CC9467B valves were repacked with graphoil in 1983 and the 2CC9459B was repacked with graphoil in 1986. In addition, the 1CC9459B had a small leak repaired by tightening bolts in 1985, had a limit switch adjustment made in 1987, and was repacked in 1994. The 2CC9467B valve had valve packing adjusted in 1986 and a gearbox oil leak repaired in 1995. This review showed that there has been no evidence of valve exercising malfunctions for these valves from 1983 to the present.

b. 1/2CC9467A

Exercising these valves quarterly is impractical. One function of these valves is to serve as another means of isolating flow to the normal plant loads in a post-accident situation in the event that the respective CC9415 valve were to fail open. Due to its function, it is an undesirable practice to exercise these manual valves during normal operations. When the plant is in its normal lineup, closing the 2CC9467A valve would interrupt flow to the normal plant loads. For Unit 1, if the 1CC9467A valve was exercised closed, CC flow would need to be diverted through the Unit O heat exchanger, which may cause disruptions within the CC system.
In addition, a maintenance history search at Byron indicates that both valves were repacked with graphoil in 1984, and the U-2 valve had screws tightened on the gear housing due to a minor grease leak in 1990. There is no evidence of valve exercising malfunctions.

It is impractical to induce the disruptions described above during normal operations. Additionally, finding an appropriate window to stroke these valves during a cold shutdown could possibly result in an extension of the cold shutdown and there would be no compensated increase in plant safety. The most practical alternative method is to exercise these valves at the same frequency (within the same procedure) as valves 1/2CC9459B and 1/2CC9467B.

c. 1/2CC9458, 1/2CC9459A, and 1/2CC9467C

If these manual valves were exercised during a valve lineup which varied from the normal lineup, there are possibilities of disrupting the CC system. There would be instances in which pumps may need to be swapped, or further re-routing of flow may be necessary due to other misc. work being performed throughout the system.

REFUELING OUTAGE JUSTIFICATION
RJ-3 (continued)

Maintenance history since 1983 at Byron indicates that there have not been problems associated with manual exercising these valves. There are no indications of binding or other trouble. The work on them has consisted of the following: the U-1 valves were all repacked with graphoil in 1983 and all of the U-2 valves were repacked with graphoil in 1986; the 1CC9458 valve had a limit switch adjustment in 1992 and 1993; the 1CC9459A valve had the ground strap reattached for the limit switch in 1991; and the 1CC9467C valve had broken seal-tite repaired in 1984.

For reasons justified in the general section and throughout this refueling outage justification, it is more practical to exercise these manual valves at the same frequency as described for the manual valves in Part a and Part b of this refueling outage justification. A U-2 refueling outage frequency is more than sufficient for monitoring degradation on these valves.

Conclusions:

To conclude, the most practical method of exercising all the CC manual valves included in this justification is to test all of them under the same procedure, under carefully controlled conditions, to ensure that all necessary precautions/actions are taken. To test them in a different manner would be impractical.

TEST FREQUENCY:

The 1(2)CC9459B and 1(2)CC9467B valves will normally be exercised in one direction in preparation for a Unit 2 refueling outage, and then exercised in the opposite direction prior to entry into Mode 1. The remaining valves in this refueling outage justification will normally be exercised within the same procedure. The executing procedure, containing documentation of all Component Cooling manual valve strokes, will be tracked as a U-2 refueling outage activity with the Work Planning Department. This testing is being deferred to every U-2 Refueling outage in accordance with OM-10, paragraph 4.2.1.2(e).

REFUELING OUTAGE JUSTIFICATION
RJ-4

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2SI8811A	B	2	M-61-4 (M-136-4)	B5(B6)
1/2SI8811B	B	2	M-61-4 (M-136-4)	A5(A6)

FUNCTION(S):

These normally closed motor operated gate valves are located on the Containment Recirculation Sump discharge line. The valves are required to be closed during the injection phase of ECCS along with functioning as a containment isolation valve. These valves are required to open during the recirculation phase of ECCS.

JUSTIFICATION:

The stroke time testing of the 1/2SI8811A/B valves require the suctions of the Residual Heat Removal Pumps to be drained, thus rendering the train that is being tested inoperable. The stroke time testing of these valves during Unit operation would be clearly impractical due to the extensive activities required to perform this testing, along with rendering a subsystem of ECCS (RHR) inoperable for an extended period of time (placing the plant in an undesirable condition).

The routine testing of these valves during cold shutdowns is also impractical for the following reasons:

1. For a cold shutdown in which the Reactor Coolant Loops remain filled and there is one train of Residual Heat Removal declared inoperable, Byron Station's Technical Specifications require the secondary side narrow range water level to be sufficient to provide a viable heat sink. However, if the cold shutdown was necessitated by a problem requiring draining of the secondary side of the Steam Generators (i.e. tube leaks), the Technical Specifications would preclude the testing of the containment sump outlet isolation valves until such time as the affected steam generators had been refilled.

2. For Cold Shutdown operations with the Reactor Coolant Loops not filled (i.e., drained down to support Reactor Vessel Incore Seal Table, Loop Stop Valve, Reactor Coolant Pump and Seal Maintenance or primary leakage), the Technical Specifications would preclude the testing of the Containment Sump Outlet Isolation Valves as it mandates that "two residual heat removal (RHR) Loops shall be operable and at least one RHR Loop shall be in operation."

REFUELING OUTAGE JUSTIFICATION
RJ-4

JUSTIFICATION: (continued)

3. The full stroke testing of the 1/2SI8811A, B valves; in conjunction with system draining, filling and venting of each train, accounts for an additional six days (3 days per train) of scheduling requirements and increased radiation dose to operators and radiological control personnel. Processing of thousands of gallons of contaminated water, and subsequent required liquid effluent discharges would also result from the draining, refilling and venting of the RHR system. This time duration required to perform the surveillance testing of the Containment Sump Outlet Isolation Valves during Cold Shutdown activities, could, as a result, cause a violation of the action requirements for the Technical Specifications. The violations would occur since these action statements require (as noted in their respective foot note sections) the return of the inoperable residual heat removal loop to service within 2 hours, if such loop was removed for surveillance testing provided the other RHR Loop is operable and in operation.

4. In addition, NRC Generic Letter 88-17, Loss of Decay Heat Removal, highlights the consequences of a loss of RH during reduced Reactor Coolant System inventory (below three feet below the reactor vessel flange). If the operating RH pump is lost due to air entrainment, and the other train is inoperable for the stroke test, then the "operable" train must be vented to restore decay heat removal. Under worst conditions, boiling in the core would occur in approximately 10 minutes, the core would be uncovered in approximately 30 minutes, and fuel damage would occur in approximately 1 hour.

   Given the apparent disparity between the Technical Specification time requirements for an inoperable RHR Loop return to service (2 hours) and the time required to perform surveillance stroke testing of the Containment Sump Outlet Isolation valves (3 days) during Cold Shutdown, the alternate testing frequency of refueling outage periodicity will adequately maintain the system in a state of operational readiness, while not imposing undue hardships or sacrificing the safety of the plant.

TEST FREQUENCY:

The 1/2SI8811A/B valves will be stroke timed during refuel

REFUELING OUTAGE JUSTIFICATION
RJ-5

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2IA065	A	2	M-55-4(M-55-5)	D3 (E6)
1/2IA066	A	2	M-55-4(M-55-5)	D6 (E4)

FUNCTION(S):

Air Operated Valves 1/2IA065 and 1/2IA066 are the outboard and inboard (respectively) containment isolation valves for Instrument Air supply lines to containment. The closed safety function of these valves is to provide a leak-tight barrier between the containment atmosphere and the environment during accident conditions.

Check Valves 1/2IA091 are located on the air supply lines to the 1/2IA066 valves (inboard containment isolation valves). The safety function of the 1/2IA091 valves in the closed direction is to provide a leak-tight barrier between the containment atmosphere and the environment during accident conditions (see Note 1 and RV-12). The function in the open direction is to supply control air to the 1/2IA066 valves. This is not a safety function for 1/21A091.

JUSTIFICATION:

Stroke/fail-safe testing of the 1/2IA065 and 1/2IA066 valves during plant operation or cold shutdowns would, by design, isolate the air to air operated instruments inside the containment building. This would introduce the possibility of major operating perturbations and/or personnel safety concerns should these valves fail to re-open during testing activities. This would result in scenarios such as:

1. Loss of Pressurizer Pressure Control -

   The pressurizer spray valves 1/2RY455B & C and the pressurizer auxiliary spray valve 1/2CV8145 would fail closed and not be available for pressurizer pressure control.

REFUELING OUTAGE JUSTIFICATION
RJ-5 (continued)

2. Loss of Chemical Volume Control System Letdown Flow (both normal and excess) and Charging Flow -

   The loss of instrument air would cause a disruption in the Unit letdown flow paths resulting in pressurizer level increases. Such valves as the letdown orifice containment outlet header isolation valve 1/2CV8160, the letdown line isolation valves 1/2CV459 and 1/2CV460, the letdown orifice outlet isolation valves 1/2CV8149A, B & C, the excess letdown heat exchanger inlet isolation valves 1/2CV8153A & B, and the regenerative heat exchanger letdown inlet isolation valves 1/2CV8389A & B would go to their fail closed positions. Additionally, the ability to normally make-up reactor coolant inventory and adjust the reactor chemical shim (i.e. normal boration/dilution) would also be lost as the regenerative heat exchanger inlet isolation valves 1/2CV8324A & B would fail to their respective closed positions.

3. Loss of Component Cooling to Containment Penetrations -

   The loss of instrument air supply would cause the penetration cooling supply flow control valve 1/2CC053 to go to its fail closed position. The loss of penetration cooling would result in elevated temperatures being imposed on the penetrations being supported by the component cooling system.

4. Loss of Personnel Breathing Air -

   The loss of Instrument Air supply to the Service Air downstream isolation valve 1/2SA033 would cause this valve to go to its fail close position. This loss of Service Air in the containment building would eliminate the normal source of supplied breathing air needed to support numerous maintenance and component inspection activities in a contaminated environment.

TEST FREQUENCY:

Air Operated Valves 1/2IA065 and 1/2IA066 will be stroke tested and fail safe tested during refueling outages on the respective Unit in accordance with OM-10, paragraphs 4.2.1.2 and 4.3.2.2.

REFUELING OUTAGE JUSTIFICATION
RJ-6

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2SI8819A	AC	1	M-61-3(M-136-3)	A5 (B4)
1/2SI8819B	AC	1	M-61-3(M-136-3)	A7 (B2)
1/2SI8819C	AC	1	M-61-3(M-136-3)	A6 (B2)
1/2SI8819D	AC	1	M-61-3(M-136-3)	A6 (B3)
1/2SI8905A	AC	1	M-61-3(M-136-3)	E4 (E4)
1/2SO8905B	AC	1	M-61-3(M-136-3)	D7 (D2)
1/2SI8905C	AC	1	M-61-3(M-136-3)	C7 (C2)
1/2SI8905D	AC	1	M-61-3(M-136-3)	E4 (E5)
1/2SI8922A	C	2	M-61-1A(M-136-1)	E7 (D4)
1/2SI8922B	C	2	M-61-1A(M-136-1)	C7 (B4)
1/2SI8926	C	2	M-61-1A(M-136-1)	D2 (C6)
1/2SI8949B	AC	1	M-61-3(M-136-3)	D8 (D1)
1/2SI8949D	AC	1	M-61-3(M-136-3)	E8 (E1)

FUNCTION(S):

All of the "AC" category valves in this refueling outage justification are pressure isolation valves (PIVs) and will be leak tested (and close stroke tested) per Byron Station Tech Specs (see CS-15). This refueling outage justification will only include the open functions of all the check valves listed above.

Check valves 1/2SI8819A-D are located in the lines going from the Safety Injection pumps to the reactor vessel cold legs. Their safety function in the open direction is to permit flow of coolant to the reactor vessel cold legs during a safety injection.

Check valves 1/2SI8905A-D and 1/2SI8949B/D are located in the lines going from the Safety Injection pumps to the reactor vessel hot legs. Their safety function in the open direction is to permit flow of coolant to the reactor vessel hot legs during the Hot Leg Recirculation portion of a safety injection.

Check valves 1/2SI8922A/B are located on the Safety Injection pumps discharge line. They are required to open for ECCS injection and recirculation phases.

Check valves 1/2SI8926 are located on the SI pumps' suction line from the RWST. They are required to open for the ECCS injection phase.

REFUELING OUTAGE JUSTIFICATION
RJ-6 (continued)

JUSTIFICATION:

These valves cannot be full stroke exercised during operation as the shut-off head of the Safety Injection pumps is lower than the reactor coolant system pressure. These valves cannot be full stroke exercised during routine Mode 5 cold shutdowns due to Byron Station Technical Specification LCO 3.4.12 requirement that all Safety Injection pumps and all but one Charging pump be inoperable during Modes 4, (temperature less than 330 F) 5, and 6, except when the reactor vessel head is removed. This requirement minimizes the possibility of low temperature overpressurization (LTOP) of the Reactor Coolant System (RCS). The alternate method of protecting against over-pressurization by partially draining the RCS to provide a surge volume is not considered a safe practice due to concerns of maintaining adequate water level above the reactor core. Full stroke exercising of these valves may only be safely performed in Mode 6 with the Reactor vessel head removed.

TEST FREQUENCY:

These valves will be full stroke exercised during refueling outages in accordance with OM-10, paragraph 4.3.2.2.

REFUELING OUTAGE JUSTIFICATION
RJ-7

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2CV8481A	C	2	M-64-3A(M-138-3A)	D6 (D6)
1/2CV8481B	C	2	M-64-3A(M-138-3A)	C6 (C7)
1/2CV8546	C	2	M-64-4B(M-138-4)	B5 (A5)
1/2SI8815	AC	1	M-61-2(M-136-2)	D5 (D4)
1/2SI8900A	AC	1	M-61-2(M-136-2)	E7 (E2)
1/2SI8900B	AC	1	M-61-2(M-136-2)	D7 (D2)
1/2SI8900C	AC	1	M-61-2(M-136-2)	C7 (C2)
1/2SI8900D	AC	1	M-61-2(M-136-2)	B7 (B2)

FUNCTION(S):

All of the "AC" category valves in this refueling outage justification are pressure isolation valves (PIVs) and will be leak tested (and close stroke tested) per Byron Station Tech Specs (see CS-15). This refueling outage justification will only include the open functions of all the check valves listed above.

Check valves 1/2SI8815 are located in the lines from the Chemical and Volume Control (CV) Centrifugal Charging pump. Their safety function in the open direction is to permit flow of coolant from the centrifugal charging pumps to the four lines which branch off and provide flow to the reactor vessel cold legs during the high pressure injection phase of a safety injection.

Check Valves 1/2SI8900A-D are in the four lines which branch off from the lines containing the 1/2SI8815 valves. Their safety function in the open direction is to permit flow of coolant from the chemical and volume Control Centrifugal Charging Pumps to the reactor vessel cold legs during the high pressure injection phase of a safety injection.

Check valves 1/2CV8481A/B are located at the discharge of the Chemical and volume Control charging pumps. They are required to open to permit flow of coolant during a safety injection.

Check valves 1/2CV8546 are located on the CV pumps' suction line from the RWST. They are required to open to permit flow of coolant when the charging pumps take suction from the RWST during a safety injection.

JUSTIFICATION:

The full stroke exercising of check valves 1/2SI8815 and 1/2SI8900A-D associated with the Emergency Core Cooling System during operation would induce thermal stresses on their respective reactor vessel nozzles as the Reactor Coolant System (maintained at greater than 500 F) is injected with water from the Refueling Water Storage Tank (maintained at approximately 65 F).

REFUELING OUTAGE JUSTIFICATION
RJ-7 (continued)

The 1/2CV8481A/B and 1/2CV8546 check valves are in series and cannot be full stroke exercised without causing stroking of 1/2SI8815 and 1/2SI8900A-D check valves.

These valves cannot be full stroke exercised during routine Mode 5 cold shutdowns due to Byron Station Technical Specifications LCO 3.4.12 requirements that all Safety Injection pumps and all but one charging pump be inoperable during Modes 4, (temperature less than 330 F) 5, and 6, except when the reactor vessel head is removed. This requirement minimizes the possibility of low temperature overpressurization (LTOP) of the Reactor coolant System (RCS). The alternate method of protecting against over-pressurization by partially draining the RCS to provide a surge volume is not considered a safe practice due to concerns of maintaining adequate water level above the reactor core. In addition, injecting large quantities of highly borated water from the RWST would likely delay reactor start up and the cost of processing the reactor coolant to restore the optimum boron concentration is consequential. Full stroke exercising of these valves may only be safely performed in Mode 6 with the Reactor vessel head removed.

TEST FREQUENCY:

These valves will be full stroke exercised during refueling outages in accordance with OM-10, paragraph 4.3.2.2.

REFUELING OUTAGE JUSTIFICATION
RJ-8

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2SI8841A	AC	1	M-61-3(M-136-3)	E4 (E4)
1/2SI8841B	AC	1	M-61-3(M-136-3)	C7 (C2)
1/2SI8949A	AC	1	M-61-3(M-136-3)	E8 (E1)
1/2SI8949C	AC	1	M-61-3(M-136-3)	C8 (C1)

FUNCTION(S):

All of the "AC" category valves in this refueling outage justification are pressure isolation valves (PIVs) and will be leak tested (and backflow tested) per Byron Station Tech Specs (see VC-15). This refueling outage justification will only include the open functions of all the check valves listed above.

Check valves 1/2SI8841A/B are located in the lines from the Residual Heat Removal (RHR) pumps to the "A" and "C" Reactor Coolant System hot legs. Their safety function in the open direction is to permit flow of coolant from the RHR pumps to the reactor vessel hot legs during the Hot Leg Recirculation phase of a safety injection.

Check Valves 1/2SI8949A/C are located in an ECCS line to the RCS "A" and "C" hot legs. They are required to open to permit flow of makeup water upon a safety injection from: (1) the Safety Injection Pumps during the high pressure safety injection phase, or (2) the RHR pumps during the Hot Leg Recirculation phase, to the reactor vessel hot legs.

JUSTIFICATION:

The full stroke exercising of check valves 1/2SI8841A/B and 1/2SI8949A/C, associated with the Emergency Core Cooling System (ECCS) and the Residual Heat Removal (RHR) System cannot be accomplished during normal reactor operation because the low head developed by the RHR pumps (less than 250 psi) is not great enough to inject into the RCS (2235 psi). Similarly, the 1/2SI8949A/C check valves cannot be partial stroke tested during normal reactor operation with the Safety Injection (SI) pumps since the RCS pressure cannot be overcome by the SI pump developed head (1500 psi).

Full or partial stroke testing of these valves during cold shutdowns would induce thermal stresses on their respective reactor vessel nozzles as the Reactor Coolant System (maintained at approximately 180° F) is injected with water from the Refueling Water Storage Tank (maintained at approximately 65° F). Additionally, the margin of safety is reduced for brittle fracture prevention and an unacceptable reactivity excursion could be created (high boron concentration and low temperature water).

REFUELING OUTAGE JUSTIFICATION
RJ-8 (continued)

Finally, during cold shutdowns in which the Technical Specification leak rate testing is not to be performed, the partial or full stroking of these valves would necessitate the requirement to perform the leak test on these check valves, causing a delay in returning the plant to power in addition to causing unnecessary radiation exposure to test personnel.

TEST FREQUENCY:

These valves will be full stroke exercised during refueling outages in accordance with OM-10, paragraph 4.3.2.2.

REFUELING OUTAGE JUSTIFICATION
RJ-9

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2RH8705A	AC	2	M-62(M-137)	D1 (D8)
1/2RH8705B	AC	2	M-62(M-137)	C1 (C8)

FUNCTION(S):

These check valves are leak tested in conjunction with pressure isolation valves (PIVs) 1/2RH8701B and 1/2RH8702B and will be leak tested (and backflow tested) at the same frequency as the 1/2RH8702B valves (see VC-15). This refueling outage justification will only include the open functions of the check valves listed above.

These valves are located on the 3/4" branch line between the 1/2RH8701A/B and 1/2RH8702A/B suction isolation valves. Their safety function in the open direction is to relieve excess pressure due to thermal expansion back to the RCS when both suction isolation valves are closed in order to prevent over pressurization of the piping between the two valves.

JUSTIFICATION:

These valves are simple spring loaded lift check valves and are not equipped with an external operator or disk position indicator. The only way to verify operability in the open direction is by verifying that the piping between the suction isolation valves is able to be depressurized through the applicable valve via a field test. It would be impractical to perform this testing during Unit operation due to the necessity to enter containment, hookup a pressurized water source to the piping via a test/vent valve, and slowly increase the pressure until the check valve opens to relieve the pressure. Additionally, the RCS must be depressurized in order to perform this test.

It would be impractical to perform this test during cold shutdowns as it requires placing the standby train of Residual Heat Removal (RHR) in an inoperable condition and the RCS must be depressurized (requires all reactor coolant pumps to be stopped). Then, due to the extensive field work involved, there is a potential for delaying reactor start up and return to power. Additionally, taking away the backup/redundant train of RHR reduces both the plant decay removal capability and the available safety margin regarding shutdown risk assessment.

Testing these valves each refueling, in Mode 6, is adequate to maintain this portion of RHR in a state of operational readiness, while not sacrificing the safety of the plant.

REFUELING OUTAGE JUSTIFICATION
RJ-9 (continued)

TEST FREQUENCY:

These valves will be full stroke exercised during refueling outages in accordance with OM-10, paragraph 4.3.2.2.

REFUELING OUTAGE JUSTIFICATION RJ-14

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2FW510A	B	None	M-36-1C(M-121-1B)	C2 (C2)
1/2FW520A	B	None	M-36-1A(M-121-1D)	C2 (C2)
1/2FW530A	B	None	M-36-1D(M-121-1A)	C2 (C2)
1/2FW540A	B	None	M-36-1B(M-121-1C)	C2 (C2)
1/2FW510	B	None	M-36-1C(M-121-1B)	D2 (D2)
1/2FW520	B	None	M-36-1A(M-121-1D)	D2 (D2)
1/2FW530	B	None	M-36-1D(M-121-1A)	D2 (D2)
1/2FW540	B	None	M-36-1B(M-121-1C)	D2 (D2)
1/2FW034A	B	None	M-36-1C(M-121-1B)	E2 (E2)
1/2FW034B	B	None	M-36-1A(M-121-1D)	E2 (E2)
1/2FW034C	B	None	M-36-1D(M-121-1A)	E2 (E2)
1/2FW034D	B	None	M-36-1B(M-121-1C)	E2 (E2)

FUNCTION(S):

The Feedwater Regulating Bypass Valves (1FW510A. 1FW520A, 1FW530A, and 1FW540A), the Feedwater Regulating Valves (1FW510, 1FW520, 1FW530, and 1FW540) and the Feedwater Tempering Flow Control Valves (1FW034A-D) are non-safety related valves which perform a backup function to isolate Feedwater. These valves are not considered to be Containment Isolation Valves per the Byron Station Technical Specifications, and are considered only Feedwater Control Valves that, additionally, serve as backup Feedwater Isolation Valves. They are not considered to be in the scope of the IST Program (per OM-10, paragraph 1.1). This has always been Byron's position on these valves. However, since they do receive a Feedwater Isolation signal, an augmented test to verify the fail-safe test will be tracked within the IST Program.

JUSTIFICATION:

A commitment was made to only perform an augmented Fail-Safe on these valves in Byron's original program. These valves are all part of the surveillance 1/2BOSR 3.2.9-3 executed to satisfy Tech Spec LCO 3.3.2 (Table 3.3.2-1, item #1a), which manually simulates an SI signal, causing these valves to fail closed. These valves will be fail-safe tested to satisfy the requirements of this Technical Specification (Refueling Outage Frequency).

Additionally, the closure of the Main Feedwater Regulating Bypass Valves (1/2FW510A, 1/2FW520A, 1/2FW530A, and 1/2FW540A) during Unit operation would require the Main Feedwater Regulating Valves to correct for bypassed flow and could result in a plant transient with a possible reactor trip as a result.
The closure of the Main Feedwater Regulating Valves (1/2FW510, 1/2FW520,

REFUELING OUTAGE JUSTIFICATION
RJ-14 (continued)

1/2FW530, 1/2FW540) during Unit operation would cause a loss of feedwater to the steam generators, resulting in a plant transient with a possible reactor trip as a result. Finally, it would be impractical to fail-safe test any of these augmented valves on a more frequent basis than required by the Technical Specifications.

<u>TEST FREQUENCY:</u>

These valves will be fail-safe tested closed outside of the IST Program during refueling outages in accordance with Byron Station Technical Specifications.

REFUELING OUTAGE JUSTIFICATION
RJ-18

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2RY085A	C	3	M-60-8(135-8)	C-5 (E-7)
1/2RY085B	C	3	M-60-8(135-8)	C-3 (E-6)
1/2RY086A	C	3	M-60-8(135-8)	C-6 (E-2)
1/2RY086B	C	3	M-60-8(135-8)	C-4 (E-6)

FUNCTION(S):

These valves are the instrument air supply check valves to the pressurizer power operated relief valve (PORV) actuators. These valves must close to isolate the pressurizer PORV actuator air supply from the non safety related instrument air system. This function assures that sufficient air is available in the accumulator to open the pressurizer power operated relief valve (PORV) on demand. This valve prevents discharging the accumulator in the event of a failed instrument air supply which is non safety related.

The valve opens to provide air supply from the instrument air system to the pressurizer PORV accumulator. The accumulator provides operating gas to the pressurizer PORV. This is not a safety function since the instrument air system is not considered safety related and not relied upon for safe shutdown or accident mitigation.

UFSAR Section 5.2.2.11, NRC Generic Issue 94, NRC IN 95-34, ASME/ANSI OM Part 10.

JUSTIFICATION:

Check valves 1/2RY085A/B and 1/2RY086A/B have been investigated for possible closure testing. These valves are arranged in series without intermediate test taps such that individual verification of each valve closure cannot be performed. However, provisions exist for verification that at least one valve in a pair is closed by performance of a pressure decay/leakage test. Testing of these valves as a pair is acceptable since only one valve is required for closure. Evidence of gross leakage will indicate a failure or degradation of both valves.

The closure testing performed on these valves requires isolating the PORV air supply and accumulator to perform a reverse flow test. This testing cannot be performed during normal operation or cold shutdown conditions since the PORV's are required for low temperature over pressurization protection. Additionally, the time and equipment setup inside containment to perform the testing would extend the cold shutdown duration.

TEST FREQUENCY:

Check valves 1/2RY085A/B and 1/2RY086A/B will be exercised closed during refueling outages in accordance with ASME/ANSI OM Part 10, paragraph 4.3.2.2.

REFUELING OUTAGE JUSTIFICATION
RJ-19

VALVE NUMBER	CATEGORY	CODE CLASS	DRAWING NUMBER	DRAWING COORDINATE
1/2SX168	B	3	M-42-3(M-126-1)	B3 (B6)

FUNCTION(S):

This temperature control valve opens to provide a flow path for Essential Service Water to the cubicle coolers for the B (diesel driven) AFW pump room. This valve operates off a temperature controller (thermostat) for the room. This valve oscillates open and closed to maintain the correct room temperature. This valve fails in the open direction to ensure a flow path of essential service water to the cubicle coolers upon loss of power.

JUSTIFICATION:

These valves were investigated to determine what methods were required to conduct a fail test. There is no simple or practical way to test these valves. These valves are in a location with limited accessibility in the overhead of the diesel driven Auxiliary Feedwater pump rooms. To test these valves requires breaking open the air lines to the valves and hooking up hand pumps and gauges to operate and fail the valve. The more frequently these air line connections are broken increases the chance of introducing a failure of those fittings. This would result in additional unnecessary maintenance on those valves.

TEST FREQUENCY:

Due to the considerations of limited accessibility, and the requirement to break into the air lines and use special equipment to perform the test, it would not be practical to perform these tests routinely at power or during cold shutdowns. Byron Station will fail open test the 1/2SX168 valves during each respective refueling outage in accordance with OM-10 Section 4.2.1.2(e).

ATTACHMENT 9

STATION TECHNICAL POSITION INDEX

(Page 1 of 1)

Designator	Description	Approval Date
TP-PA-01	(0SX02PA/B) Byron's position on collecting vibration data.	August, 2001
TP-PA-02	(0/1/2AB03P) Gives basis for the exclusion of the Boric Acid Transfer Pumps from the IST Program. However, they will continue to be tested outside of the IST program.	December, 1995
TP-PA-03	(All) Byron's position on Preconditioning.	May, 1998
TP-PA-04	(1/2CS01PA/B 1/2RH01PA/B) Categorization of Residual Heat Removal and Containment Spray pumps as centrifugal pumps	April, 1999
TP-VA-1	(All Power-Operated Valves) Method of Stroke Timing Valves	December, 1995
TP-VA-2	(Valves with Fail-Safe Actuators) Method of Fail-Safe Testing Valves	December, 1995
TP-VA-3	Deleted	
TP-VA-4	(Valves with Remote Position Indicators) Method of Position Indication Testing	December, 1996
TP-VA-5	(All) Byron's Position on Preconditioning	May, 1998
TP-VA-6	(Valves with both Active and Passive Safety functions) Position for testing passive/active valves	March, 2000
TP-VA-7	(Skid Mounted Valves) Testing of Skid Mounted Valves	March, 2000
TP-VA-8	(1/2AF014A-H, 1/2AF029A/B) Sample disassembly per GL 89-04, Position 2, to satisfy the full stroke test.	Superceded by Condition Monitoring

PUMP TECHNICAL POSITION
TP-PA-1

TITLE:

Method of Collecting Vibration Data for the Byron Station Essential Service Water Makeup Pumps

PUMPS AFFECTED:

Essential Service Water Makeup Pumps - 0SX02PA and 0SX02PB.

CODE REQUIREMENT(S)/DISCUSSION:

ANSI/ASME OMa-1988 Part 6: Table 3a - Ranges for Test Parameters; Paragraph 4.6.4(b) - Vibration Measurements; Paragraph 4.6.1.6 - Frequency Response Range.

POSITION:

Byron Station's Essential Service Water Makeup Pumps are a unique design. The seven stage pump is driven by a horizontal diesel engine through a right angle gear drive, with the engine and gear drive located approximately 39 feet above the pump. This configuration assures pump operability during the design basis flooding of the Rock River.

The Essential Service Water Makeup Pumps are classified as vertical line shaft pumps. ANSI/ASME OMa-1988 Part 6 Paragraph 4.6.4 (b) requires that for vertical line shaft pumps, vibration measurements shall be taken on the upper motor bearing housing in three orthogonal directions, one of which is the axial direction. Due to the unique design of the Essential Service Water Makeup Pumps vibration measurements are taken on the gear drive upper bearing housing. This location is functionally equivalent to the upper motor bearing housing specified for vertical line shaft pumps in the OM Code.

In accordance with ANSI/ASME OMa-1988 Part 6 Paragraph 4.6.1.6 vibration measurements will include frequencies from nominally zero to 1000 Hz.

PUMP TECHNICAL POSITION
TP-PA-2

PUMP NUMBER: 0AB03P, 1AB03P, 2AB03P

ASME CODE CLASS: 3

POSITION:

The Boric Acid Transfer Pumps fall outside the scope of the IST Pump Program statement of OMa-1988, Part 6 because they are not provided with an emergency power source, Byron Station is analyzed as a "hot shutdown" plant, and these pumps are not required to maintain hot shutdown conditions. Also, the RWST (Refueling Water Storage Tank) is a Seismic Category I Structure as described in the UFSAR, Table 3.2-1. Paragraph 3.2.1.1 states that Seismic Category I Structures are designed to withstand design basis accidents including tornadoes. Therefore, the Boric Acid Transfer Pumps are not required to be included in the IST Program to satisfy any Design Basis Accident. Engineering correspondence CHRON #161733 dated January 17, 1991 supports these conclusions. However, because of the operating significance of these pumps, Byron Station has developed a testing program for these pumps outside the IST Program.

PUMP TECHNICAL POSITION
TP-PA-3
PRECONDITIONING

Preconditioning is a current issue in the nuclear industry. Recently the NRC has issued Information Notice 97-16, Preconditioning of Plant Structures, Systems, and Components before ASME Code Inservice Testing or Technical Specification Surveillance Testing. This section provides an overview of how Byron Station and the IST Program address this issue.

Preconditioning is a concern to the validity of Inservice Testing. Two of the primary interrelationships between the IST Program and preconditioning are the scheduling of work and the surveillance procedures themselves.

Preconditioning is the unacceptable practice of grooming" a component prior to a surveillance in such a way that the results of the surveillance are invalidated. It is an activity performed immediately prior that enhances performance and which prevents from accurately determining if the system, structure, or component would have been capable of meeting the established acceptance criteria in an undisturbed condition.

Work activities are scheduled and controlled at Byron Station by the Work Control Department. For major Technical Specification pump systems, work windows are established in which to perform maintenance. Normally these work windows are at a significantly reduced frequency from the IST test frequency for the pumps. For work activities which can potentially affect pump performance, the ASME Code requires having the appropriate IST tests conducted afterwards to determine if the performance characteristics were affected. As such, these work windows have the surveillance test scheduled after the pump/system maintenance to test pump operability. It is required that the IST tests be successfully passed prior to declaring the pump operable. The review process for these surveillances assesses to determine if new reference values are required. Because of the normally greater frequency of conducting IST pump surveillances, most of these surveillances are in work windows in which maintenance on the associated equipment is not scheduled.

There is no work window program, which schedules valve maintenance in conjunction with periodic valve surveillances. Post maintenance testing is performed after work, which can affect the performance of the valves. This testing is assigned on a case-by-case basis depending on the work conducted.

Byron Station has been identifying potential preconditioning concerns and changing surveillances to address these issues. Examples of this are stroke tests for valves requiring testing in both directions. The surveillances are being revised to stroke these valves in the first direction of opportunity to not precondition the valve. Surveillances for check valves are having precautions placed in them to not move the valve disc or affect the parts prior to inspection which may constitute preconditioning.

PUMP TECHNICAL POSITION
TP-PA-3
PRECONDITIONING (continued)

The identification and addressing of preconditioning concerns at Byron Station is an ongoing concern. The first step in addressing potential preconditioning concerns is at the individual's level with supervisory involvement as necessary. Activities that are determined to violate the Byron Station Preconditioning Policy are documented through the Problem Identification Form (PIF) or Engineering Request processes. Engineering will review potential violations of the preconditioning policy for appropriate disposition.

Byron Site Policy Memo 600.12, Preconditioning Position , establishes the preconditioning program at Byron Station. Refer to this Memo for guidance regarding preconditioning. (Note: The definition and reference to this policy is required by NTS # 454-556-98-PRECON-03)

PUMP TECHNICAL POSITION
TP-PA- 4

TITLE:
Categorization of RHR and CS pumps as centrifugal pumps

PUMPS AFFECTED:
1RH01PA, 1RH01PB, 2RH01PB, 2RH01PB,
1CS01PA, 1CS01PB, 2CS01PA, 2CS01PB

CODE REQUIREMENTS/DISCUSSION:

Pumps are tested in accordance with ASME/ANSI Oma-1988, Part 6, Inservice Testing of Pumps in Light-Water Reactor Power Plants. Within this document requirements for acceptance criteria and required action ranges are established in accordance with Table 3, Ranges for Test Parameters. As related to Byron Station's RH and CS pumps, this table establishes limits based upon whether the pumps are centrifugal or vertical line shaft pumps. Oma-1988, Part 6, does not provide further guidance on defining centrifugal or vertical line shaft pumps.

NUREG-1482, Guidelines for Inservice Testing at Nuclear Power Plants, in Section 5.9, discusses Vertical Line Shaft Pumps. This section proposes defining vertical line shaft pumps, as a vertically suspended pump, where the pump driver and pumping element are connected by a line shaft within an enclosing column which contains the pump bearings, making pump bearing vibration measurements impracticable".

ASME Oma-1988, Part 6 directs vibration measurements for centrifugal pumps be taken in a plane approximately perpendicular to the rotating shaft in two orthogonal directions on each accessible pump bearing housing. Measurements are also to be taken in the axial direction on each accessible pump thrust bearing housing. For vertical line shaft pumps Oma-1988, Part 6, directs that vibration measurements be taken on the upper motor bearing housing in three orthogonal directions, one of which is the axial direction.

For pumps categorized as vertical line shaft pumps, Oma-1988, Part 6 has a tighter hydraulic acceptance ranges. NUREG-1482 cites NUREG/CP-0111 for the basis of this change as being due to inherent deficiencies in vibration testing such that degradation will be identified sooner through changes in hydraulic parameters.

PUMP TECHNICAL POSITION
TP-PA-4 (continued)

Byron Station's RH and CS pumps do not meet the definitions of vertical line shaft pumps as provided in NUREG-1482. While the pumps are in a vertical configuration, the entire pump/motor is accessible and vibrations are being taken where needed. These pumps are single-stage centrifugal pumps with no bearings, and the pump impeller is mounted directly to the motor shaft. These pumps do not suffer from the concerns for vertical line shaft pumps as defined in NUREG-1482, and as such are appropriately classified as centrifugal pumps. Byron meets the OM-6 requirements for centrifugal pumps by recording vibrations on the lower motor bearing in three directions and upper motor bearing in two directions.

POSITION:

Byron Station categorized the RH and CS pumps as centrifugal pumps for testing in accordance with ASME/ANSI Oma-1988, Part 6, Inservice Testing of Pumps in Light-Water Reactor Power Plants.

VALVE TECHNICAL POSITION
TP-VA-1

TITLE:

Method of Stroke Timing Valves

VALVES AFFECTED:

Power Operated Valves Requiring Stroke Time Testing

CODE REQUIREMENT(S)/DISCUSSION:

The use of the control board open and closed lights to determine the stroke time of power-operated valves is the issue discussed in this Technical Position. Paragraph 1.3 of OMa-1988, Part 10, defines "full-stroke time" as "the time interval from initiation of the actuating signal to the indication of the end of the operating stroke." It is common industry practice to measure stroke time as the time interval between placing the operator switch on the control board in the "close" or "open" position and indication that the valve is open or closed on the control board (switch to light).

POSITION:

The way in which the limit switches that operate the remote position indicator lights are set may result in "closed" or "open" indication before the valve obturator has actually completed its travel. This is not considered to be a problem, as the purpose of the test is to determine if degradation of the valve operator system is occurring, which is determined by observing changes in stroke time relative to the reference stroke time. Stroke time measurements may be rounded to the nearest tenth (0.1) of a second. Standard rounding techniques are to be used when rounding stop watch readings during valve stroke time testing (e.g., 10.45 rounds to 10.5 and 10.44 rounds to 10.4). Reference values will be established to the nearest tenth of a second although stroke times may be recorded to the hundredths place (0.01). This technique satisfies OM-10, paragraph 4.2.1.4(b), in that all power operated valves will be measured to at least the nearest second.

For those specific cases in which a valve must be stroke timed locally, the stroke timing will begin with the initiation of the actuating signal and end with the completion of valve movement in the field.

VALVE TECHNICAL POSITION
TP-VA-2

TITLE:

Method of Fail Safe Testing Valves.

VALVES AFFECTED:

See IST Valve Tables (FC = Fail Safe Test closed; FO = Fail Safe Test open)

CODE REQUIREMENT(S)/ DISCUSSION:

Paragraph 4.2.1.6 of OM-10 states that "Valves with fail-safe actuators shall be tested by observing the operation of the actuator upon loss of valve actuator power in accordance with the exercising frequency of paragraph 4.2.1.1 of OM-10.

POSITION:

Most valves with fail-safe positions have actuators that use the fail-safe mechanism to stroke the valve to the fail-safe position during normal operation. For example, an air-operated valve that fails closed may use air to open the valve against spring pressure. When the actuator is placed in the closed position, air is vented from the diaphragm and the spring moves the obturator to the closed position.

In the cases where normal valve operator action moves the valve to the closed position by de-energizing the operator electrically, by venting air or both (e.g., an electric solenoid in the air system of a valve operator moves to the vent position on loss of power), no additional fail-safe testing is required. Valves with fail-safe actuators that do not operate as part of normal actuator operation must be tested by other means.

Using a valve remote position indicator as verification of proper fail-safe operation is acceptable, provided the indicator is periodically verified to be operating properly as required by OM-10, paragraph 4.1.

The fail-safe test is generally performed at the same frequency as the stroke time exercise test. Where the exercise test is performed less frequent than every 3 months, a cold shutdown justification, refueling outage justification, or relief request has been written. The same justifications for the stroke timing would also apply to the fail-safe tests.

VALVE TECHNICAL POSITION
TP-VA-4

TITLE:

Method of Position Indication Testing

VALVES AFFECTED:

All valves with Remote Position Indicators

CODE REQUIREMENT(S) / DISCUSSION:

OMa-1988, Part 10, paragraph 4.1, states that "valves with remote position indicators shall be observed at least once every 2 years to verify that valve operation is accurately indicated."

POSITION:

In reference to Steven Weinman (Boiler and Pressure Vessel Committee) reply letter to Russell J. Tamminga (ComEd), dated November 14, 1988, concerning Inquiry number IN88-015, the following question was answered:

> Question: Is it the intent of Section XI, IWV-3300 that for valves having remote position indicators at multiple locations (such as in the control room and also on a remote shutdown panel and/or sampling panel) that only the remote position indicator at the location utilized in exercising the valve (IWV-3412) and timing the stroke of the valve (IWV-3413) be verified that the valve operation is accurately indicated?
>
> Reply: Yes

This Inquiry also applies to the applicable sections in OMa-1988, Part 10:
1. Paragraph 4.1, Valve Position Verification
2. Paragraph 4.2.1, Valve Exercising Test
3. Paragraph 4.2.1.4, Power-Operated Valve Stroke Testing

In summary, the remote position indicator utilized during valve exercising (OM-10, paragraph 4.2.1) and stroke timing (OM-10, paragraph 4.2.1.4) is the indicator which is used to verify that valve operation is accurately indicated (OM-10, paragraph 4.1). However, if a valve is stroke time tested locally or manually exercised locally, a remote position indication test is not required.

VALVE TECHNICAL POSITION
TP-VA-4 (continued)

The remote position indication test is to be performed as follows:

> An individual is dispatched to the valve to locally observe the valve movement and he/she establishes communication with an individual at the remote position indicator. As the valve is exercised in both directions, the individual at the remote position indicator verifies that the indicator shows the proper position by communicating with the local observer, who is observing the valve stem movement. When the valve stem movement cannot be directly observed, indirect means may be employed to verify the change in valve position. These may include observations such as changes in system pressure or establishment/cessation of flow.

Note: Byron Station's conversion from the 1983 Edition of Section XI of the ASME Code to the 1989 Edition of Section XI of the ASME Code, which references OMa-1988, Part 10, for valves, has not been interpreted as requiring an expansion of scope for the sole purpose of performing an indication test on a valve (reference Table 1 of OM-10). It is Byron's interpretation that the intent of OM-10 was not to expand the scope of the IST Program due to position indication testing alone. A joint, "living" bases document between Byron/Braidwood has been created to maintain the bases for inclusion/exclusion of valves in the IST Program.

VALVE TECHNICAL POSITION
TP-VA-5
PRECONDITIONING

Preconditioning is a current issue in the nuclear industry. Recently the NRC has issued Information Notice 97-16, Preconditioning of Plant Structures, Systems, and Components before ASME Code Inservice Testing or Technical Specification Surveillance Testing. This section provides an overview of how Byron Station and the IST Program address this issue.

Preconditioning is a concern to the validity of Inservice Testing. Two of the primary interrelationships between the IST Program and preconditioning are the scheduling of work and the surveillance procedures themselves.

Preconditioning is the unacceptable practice of grooming a component prior to a surveillance in such a way that the results of the surveillance are invalidated. It is an activity performed immediately prior that enhances performance and which prevents from accurately determining if the system, structure, or component would have been capable of meeting the established acceptance criteria in an undisturbed condition.

Work activities are scheduled and controlled at Byron Station by the Work Control Department. For major Technical Specification pump systems, work windows are established in which to perform maintenance. Normally these work windows are at a significantly reduced frequency from the IST test frequency for the pumps. For work activities which can potentially affect pump performance, the ASME Code requires having the appropriate IST tests conducted afterwards to determine if the performance characteristics were affected. As such, these work windows have the surveillance test scheduled after the pump/system maintenance to test pump operability. It is required that the IST tests be successfully passed prior to declaring the pump operable. The review process for these surveillances assesses to determine if new reference values are required. Because of the normally greater frequency of conducting IST pump surveillances, most of these surveillances are in work windows in which maintenance on the associated equipment is not scheduled.

There is no work window program, which schedules valve maintenance in conjunction with periodic valve surveillances. Post maintenance testing is performed after work, which can affect the performance of the valves. This testing is assigned on a case-by-case basis depending on the work conducted.

Byron Station has been identifying potential preconditioning concerns and changing surveillances to address these issues. Examples of this are stroke tests for valves requiring testing in both directions. The surveillances are being revised to stroke these valves in the first direction of opportunity to not precondition the valve. Surveillances for check valves are having precautions placed in them to not move the valve disc or affect the parts prior to inspection which may constitute preconditioning.

VALVE TECHNICAL POSITION
TP-VA-5
PRECONDITIONING (continued)

The identification and addressing of preconditioning concerns at Byron Station is an ongoing concern. The first step in addressing potential preconditioning concerns is at the individual's level with supervisory involvement as necessary. Activities that are determined to violate the Byron Station Preconditioning Policy are documented through the Problem Identification Form (PIF) or Engineering Request processes. Engineering will review potential violations of the preconditioning policy for appropriate disposition.

Byron Site Policy Memo 600.12, Preconditioning Position , establishes the preconditioning program at Byron Station. Refer to this Memo for guidance regarding preconditioning. (Note: The definition and reference to this policy is required by NTS # 454-556-98-PRECON-03)

VALVE TECHNICAL POSITION
TP-VA-6

TITLE:

Testing of Valves with both active and passive safety functions

VALVES AFFECTED

Power operated valves requiring stroke time testing

CODE REQUIREMENT(S)/DISCUSSION:

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

POSITION:

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

These valves are typically emergency core cooling system valves which require changing position during different phases of the accident. After the original source of injection water is depleted (RWST), the valves are positioned to allow injection from another source (containment sump). The valves are never returned to their original position.

Based on ASME Inquiry OMI 98-07, these valves with passive functions in one direction and active in the other, will be exercised to only their active position. If these valves have positioned indication, the position indication verification will include verification of both positions.

VALVE TECHNICAL POSITION
TP-VA-7

TITLE:

Testing of Skid Mounted Components

VALVES AFFECTED:

1/2DG5205A	1/2DG5210A
1/2DG5205B	1/2DG5210B
1/2DG5206A	1/2DG5211A
1/2DG5206B	1/2DG5211B
1/2DG5207A	1/2DG5212A
1/2DG5207B	1/2DG5212B
1/2DG5208A	1/2SA181A
1/2DG5208B	1/2SA181B
1/2DG5209A	1/2SA181C
1/2DG5209B	1/2SA181D

CODE REQUIREMENT(S)/DISCUSSION:

These valves are not within the scope of the Inservice Testing Program per 10 CFR50.55(a), however they are included in the Program as skid mounted components.

POSITION:

The valves listed above will be tested as part of the major component (Diesel Generator) in accordance with the station Technical Specifications. Successful completion of the diesel generator surveillance test adequately tests these skid-mounted components. Degradation and/or failure of these valves is assessed during operability testing of the diesel generator. These valves are not individually exercised, however they are exercised when the diesel generator is started for surveillance testing.

ATTACHMENT 11

CORPORATE TECHNICAL POSITION INDEX

Note: NES-MS-08.2 states: "Only Corporate Technical Positions that are applicable to specific groups of components (e.g., excess flow check valves) at the stations should be listed. Generic technical positions affecting all pumps or valves at ComEd stations do not need to be referenced in IST Program Plans.

Designator	Description	Approval Date
TP-CWE-IST-98-01 Interim Status	Instrument Accuracy Requirements for Pump Testing	9/28/98
TP-CWE-IST-98-03 Revision 2	Elimination of PIT and Exercise Testing for Safety and Relief Valves	1/20/99
TP-CWE-IST-99-01 Revision 0	Repair Activities for Valves Exceeding Seat Leakage Test Acceptance Criteria	2/1/99
TP-CWE-IST-00-02 Revision 0	Check Valve Condition Monitoring	8/30/00
TP-EXE-IST-00-04 Revision 1	Exelon IST Program Technical Position Classification of Skid Mounted Components	6/8/01
TP-EXE-IST-01-01	Exelon IST Program Technical Position: Non-Safety Check Valve Exercise Testing By Normal Operations	4/9/01
TP-EXE-IST-01-03	Exelon IST Program Technical Position: Justification for Exception to Exercise Check Valves After Reassembly	4/9/01
TP-EXE-IST-01-02	Exelon IST Program Technical Position: Thermal Relief Valve Scoping	4/27/01

ATTACHMENT 12

CORPORATE TECHNICAL POSITIONS

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 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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Reviewed by: ____ Harry Palas ______________________ 9 / 28 / 98
Harry Palas

TP-CWE-IST-98-03
Final Status
January 20, 1999
Revision 0

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 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"

Assumptions

None

Status

Final

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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.
- 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

Status

Final

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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.
  - 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"

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

Status

Final

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Reviewed by: ____ Brian D. Bunte __________________ 8 / 14 / 00
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Exelon IST Program Technical Position
Classification of Skid Mounted Components

Purpose

The purpose of this technical position is to clarify requirements for classification of various components including Diesel Oil Transfer Pumps as skid mounted components, and to clarify testing requirements of check valves designated as skid mounted.

Background

The ASME Code allows classification of some components as skid mounted when their satisfactory operation is demonstrated by the performance of major components. Testing of the major component is sufficient to satisfy IST testing requirements for skid mounted components. In the 1996a addenda to the ASME OM Code (endorsed by 10CFR50.55(a) in October 2000), the term skid-mounted was clarified by the addition of ISTA paragraph 1.7:

> ISTA 1.7 Definitions
>
> *Skid mounted components and component sub assemblies* – components integral to or that support operation of major components, even though these components may not be located directly on the skid. In general, these components are supplied by the manufacturer of the major component. Examples include: diesel skid-mounted fuel oil pumps and valves, steam admission and trip throttle valves for high-pressure coolant injection or auxiliary feedwater turbine-driven pumps, and solenoid-operated valve provided to control the air-operated valve.

This definition was further clarified in the 1998 ASME OM Code:

> ISTA-2000 DEFINITIONS
>
> *Skid mounted pumps and valves* – pumps and valves integral to or that support operation of major components, even though these components may not be located directly on the skid. In general, these pumps and valves are supplied by the manufacturer of the major component. Examples include:
> (a) diesel fuel oil pumps and valves;
> (b) steam admission and trip throttle valves for high-pressure coolant injection pumps;
> (c) steam admission and trip throttle valves for auxiliary feedwater turbine driven pumps;
> (d) solenoid-operated valves provided to control an air-operated valve.

In section 3.4 of NUREG 1482, the NRC supports the designation of components as skid mounted:

> The staff has determined that the testing of the major component is an acceptable means for verifying the operational readiness of the skid-mounted and component subassemblies if the licensee documents this approach in the IST Program. This is acceptable for both Code class components and non-Code class components tested and tracked by the IST Program.

Subsection ISTC of OMa-1996, "Inservice Testing of Valves in Light-Water Reactor Power Plants", Paragraph 1.2, "Exclusions" states:

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

Position

The 1998 ASME OM Code definition of skid mounted should be used for classification of components in the Exelon Inservice Testing Program. In addition, for a component to be considered skid mounted:

- The major component associated with the skid mounted component must be surveillance tested at a frequency sufficient to meet ASME OM Code test frequency for the skid mounted component.
- Satisfactory operation of the skid mounted component must be demonstrated by satisfactory operation of the major component.
- The IST Bases Document should describe the bases for classifying a component as skid mounted, and the IST Program Plan should reference this technical position for the component.

For Stations committed to the 1996 addenda of the 1995 OM Code for Inservice Exercise Testing of Category C Check Valves (ISTC 4.5 and Appendix II), testing as required by ISTC 4.5 does not apply for check valves designated as skid mounted.

Justification

Classification of components as skid mounted eliminates the need for testing of sub components that are redundant with testing of major components provided testing of the major components demonstrates satisfactory operation of the "skid mounted" components.

As recognized in section 3.4 of NUREG 1482:

> Various pumps and valves procured as part of larger component subassemblies are often not designed to meet the requirements for components in ASME code classes 1, 2, and 3.

References

All references are called out in the text of the technical position.

Assumptions

None

Status

Final

Prepared by: _____John Kowalski______________________ 6 / 8 / 01
John Kowalski, LaSalle IST Program Coordinator

Reviewed by: _____David Sun______________________ 6 / 8 / 01
David Sun, Exelon IST Program Manager

Exelon IST Program Technical Position
Non-Safety Check Valve Exercise Testing By Normal Operations

Purpose

The purpose of this Technical Position is to establish the Company position for the verification of the non-safety exercise testing of check valves by normal plant operations. This is applicable to check valves in the Inservice Testing (IST) Program as related to the ASME OMa Code-1996 Addenda to the ASME OMa Code-1995.

Applicability

This Technical Position is NOT applicable to testing the safety function (position) of IST Check Valves. Safety function here means the function of the valve that meets a scoping requirement to be in the IST Program. This Technical Position is applicable to testing the **non-safety function** (position) of IST check valves. This Technical Position is applicable to check valves tested under Subsection ISTC, and to Appendix II (Condition Monitoring), of the ASME OMa Code-1996 Addenda.

Background

The ASME OMa Code-1996 Addenda in section ISTC 4.5.3, "Valves in Regular Use," states the following:

> "Check valves that operate in the course of plant operation at a frequency that would satisfy the exercising requirements of this Subsection need not be additionally exercised if the observations otherwise required for testing are made and analyzed during such operation and are recorded in the plant records at intervals not greater than specified in para. ISTC 4.5.1."

Section 4.5.1 indicates that check valves shall be exercised nominally every 3 months with exceptions (for extended exercise periods) referenced.

Section 4.5.4 (2) states that,

> "Check valves that have a safety function in only the open direction shall be exercised by initiating flow and observing that the obturator has traveled to either the full open position or to the position required to perform its intended function(s) (see para. ISTC 1.1), and verify closure."

Section 4.5.4 (3) states that,

> "Check valves that have a safety function in only the close direction shall be exercised by initiating flow and observing that the obturator has traveled to at least the partially open position[2],..."

Footnote 2 to this section indicates that the partially open position should correspond to the normal or expected system flow. NOTE: "Normal or expected," system flow rate may vary with plant conditions and configurations. The open safety function of a check valve usually requires meeting a specified, required limiting accident flow rate. As Operators are trained in recognizing normal plant conditions, Operator judgement is acceptable in ascertaining whether the non-safety open check valve position is providing normal or expected flow rates or plant conditions.

As stated in these two sections the non-safety function is satisfactorily demonstrated by verifying closure, or passing normal or expected flow to verify opening, as applicable.

Position

Verification of the non-safety position of IST check valves may be performed through the execution of a dedicated surveillance. Alternately this verification may be satisfied as follows:

- An appropriate means shall be determined which establishes how the open/closed non-safety function of the specified check valve is demonstrated during normal operations. The position determination may be by direct indicator, or by other positive means such as changes in system pressure, flow rate, level, temperature, seat leakage, etc. This determination shall be documented in the respective Condition Monitoring Plan in the "Bases for Testing and Inspection Strategy," for valves in the Condition Monitoring Program. For check valves governed by Subsection ISTC and not in Condition Monitoring this determination shall be documented in the respective IST Bases Document valve group in the, "Bases Statement," section.
- Automated processes may be used to provide for the "observation and analysis," that a check valve is appropriately satisfying its' non-safety position function. An example of this would be a check valve that has a safety function in only the close direction and normally has flow through it to maintain normal plant operations. If the check valve is not opening to pass flow, alarms or indications would identify the problem to the Operator who is trained to respond to such situations and take appropriate actions. Condition Reports are normally written for abnormal plant conditions attributable to material condition concerns such as check valve failures.
- The "observation and analysis," of logs and other such records is satisfied by Operator reviews. Operating personnel are trained to look for off-normal data and adverse trends and take actions as appropriate. This would effectively determine if a check valve were satisfactorily fulfilling its' non-safety function.
- The open/closed non-safety function shall be recorded at a periodicity required by ISTC 4.5.1, with exceptions as provided, in plant records such as Operator logs, Electronic Rounds, chart recorders, automated data loggers, etc. NOTE: The safety

function testing of these valves constitutes requiring a Quality Record. Records as indicated above are appropriate for the non-safety testing. Should any concerns arise regarding the material condition/operation of these check valves a Condition Report is written which is a Quality Record. The method in which the check valve position is recorded shall be included in the Condition Monitoring Plan or Bases Document sections as indicated above.

Justification

This Technical Position requires that the method of determining the non-safety position be established. The plant systems and Operator actions provide for the observations and analysis that the valve is satisfying its' non-safety function. Finally, the recording of parameters demonstrating valve position is satisfied at a frequency specified in ISTC 4.5.1. These actions collectively satisfy demonstrating the non-safety position of IST check valves in regular use as required by ISTC 4.5.3.

Assumptions

None

Status

Final

Prepared by: ____ William A. Bielasco ________________ 4 / 9 / 01
William A. Bielasco
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Reviewed by: ____ David Sun ________________________ 4 / 9 / 01
David Sun
Exelon IST Program Manager

Exelon IST Program Technical Position
Justification for Exception to Exercise Check Valves after Reassembly

Code Requirements

The governing Code for this issue is found in the ASME OMa Code –1996 Addenda to ASME OM Code-1995, "Code for Operation and Maintenance of Nuclear Power Plants, Section ISTC, "Rules for Inservice Testing of Light-Water Reactor Power Plants."

Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Power Plants," para. ISTC 6.2, "Test Plans," subpara. (e) requires documenting for check valves, "…justification for not performing an exercise test to at least a partially open position after reassembly or periodic exercising in accordance with para. ISTC 4.5.2;"

Subsection ISTC, "Inservice Testing of Valves in Light-Water Reactor Power Plants," para.ISTC4.5.4 subpara. (c)(4) states, "Before return to service, valves that were disassembled for examination or that received maintenance that could affect their performance, shall be exercised if practicable (see nonmandatory Appendix J, Check Valve Testing Following Valve Reassembly)".

Discussion of Code Requirement

Performing a partial open exercise after reassembly provides some assurance of the functionality of the check valve and that it has been installed in the proper flow direction.

Position

There are numerous measures in place to assure that check valves are maintained properly and installed in the proper orientation and flow direction. As such there is justification to not exercise the check valves after reassembly.

Justification

The following justifications demonstrate that exercising check valves after reassembly is unnecessary.

<u>Match Marking:</u> Match marking is the maintenance activity where the component (such as a check valve) and adjoining pipe section are marked adjacently. When the component is reinstalled it is done so the match marks align. This assures the component was reinstalled in the proper orientation/flow direction as when it was removed. The Nuclear Generation Group Maintenance Standards under "Expectations," regarding the execution of work states that parts should be match marked prior to disassembly to ensure

proper orientation upon reassembly. Periodically a "Scorecard," which is a checklist used for supervisory oversight to assure proper maintenance practices, is performed. The Scorecard has an item requiring assessment that components have been match marked prior to disassembly to help ensure proper reassembly. During practical exercises in the training of maintenance workers they are assessed to assure that they follow match-marking practices where appropriate.

Procedures/Work Instructions: There are detailed procedures and work instructions to address that check valve maintenance, reassembly, and reinstallation is properly conducted.

Maintenance Oversight: Maintenance First Line Supervisors are expected to provide adequate oversight to assure the work is properly conducted

Quality Assurance Program: A 10 CFR 50 Appendix B, Quality Assurance Program, is utilized at the stations to assure those quality standards are maintained.

Foreign Material Exclusion: A rigorous Foreign Material Exclusion program exists to assure no adverse impact to systems and components due to such intrusions. Keeping foreign material out of check valves assures they will not have their stroking or closure adversely impacted by those materials.

Training: Maintenance personnel are properly trained to assure they have the proper skills and follow procedures and instructions in working on plant components.

Condition Reports: Problems and concerns including those in the maintenance area are captured with Condition Reports. These are part of the corrective actions program to address such concerns.

Engineering Inspections: Engineering inspections are frequently performed to procedures and checklists to assure proper check valve maintenance and function. In addition to numerous checks to assess the material condition and functionality of the check valve, part of the Engineering inspection is to assess "as-found" and "as-left" manual full stroke capability.

Oversight Activities: Oversight activities by Quality Control, Nuclear Oversight, and other oversight organizations periodically review maintenance activities. This process helps assure the maintenance program is adequately functioning.

Applicability

This Technical Position applies to all MWROG nuclear power plants except Clinton Station.

Conclusion:

There are adequate measures in place to justify that partially open testing check valves after reassembly need not be performed.

Assumptions

None

Status

Final

Prepared by: ____ William A. Bielasco ________________ 4 / 9 / 01
William A. Bielasco
Byron Station IST Engineer

Reviewed by: ____ David Sun __________________________ 4 / 9 / 01

David Sun
Exelon IST Program Manager

TP-EXE-IST-01-02
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April 27, 2001
Revision 0

Exelon IST Program Technical Position
Thermal Relief Valve Scoping Purpose

The purpose of this technical position is to provide the bases for determining whether thermal relief valves should be included in the Inservice Testing (IST) Program.

Background

A thermal relief valve is a relief that protects the associated system from over pressurization due to thermal expansion. Whether these valves need to be included in the IST Program depends on the function of the system or subsystem they are in.

Position

- If a systems or subsystem does NOT perform a required function in shutting down a reactor to the cold shutdown condition, in maintaining the cold shutdown condition, or in mitigating the consequences of an accident, then the thermal relief valve(s) in those systems/subsystems need not be placed in the IST Program.
- If a system or subsystem performs a required function in shutting down a reactor to the cold shutdown condition, in maintaining the cold shutdown condition, or in mitigating the consequences of an accident, then the thermal relief valve(s) in those systems/subsystems shall be placed in the IST Program. Allowed exceptions to this requirement are the exclusion of valves which do not provide overpressurization protection to those systems (or portions thereof) as established by design requirements.
- Plants whose licensing basis is to achieve Hot Standby need not include systems/components used to bring the reactor from hot standby to cold shutdown in their IST programs.

Justification

ANSI/ASME OMa-1988, Part 10, “Inservice Testing of Valves in Light Water Reactor Power Plants,” Section 1.1, “Scope,” states the following:

> “The pressure-relief devices covered are those for protecting systems or portions of systems which perform a required function in shutting down a reactor to the cold shutdown condition, in maintaining the cold shutdown condition, or in mitigating the consequences of an accident”.

NUREG – 1482 "Guidelines for Inservice Testing at Nuclear Power Plants", Section 4.3.1 states the following:

> "The IST engineer may not have the documentation for the system design or development of the Section III overpressure analyses. However, if there are safety or relief valves that do not appear to perform a necessary safety or overpressure protection function, it may be possible to coordinate with a design engineering group for reanalyses. If the results of the overpressure protection "reanalysis" for a particular system indicate that a relief valve is not necessary, it may be removed from the scope of the IST program."

References

- ANSI/ASME OMa-1988, Part 10, "Inservice Testing of Valves in Light Water Reactor Power Plants"
- ANSI/ASME OM-1987, Part 1, "Requirements for Inservice Performance Testing of Nuclear Power Plant Pressure Relief Devices."
- NUREG 1482

Assumptions

None

Status

Final

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Reviewed by: ____ John Cockroft ___________________ 4 / 27 / 01
John Cockroft
Peach Bottom Station IST Engineer

ATTACHMENT 13

INSERVICE TESTING PUMP TABLE INDEX

(Page 1 of 1)

System Number	System Description
AF	Auxiliary Feedwater
CC	Component Cooling
CS	Containment Spray
CV	Chemical and Volume Control
DO	Diesel Oil
RH	Residual Heat Removal
SI	Safety Injection
SX	Essential Service Water
WO	Chilled Water

ATTACHMENT 14

INSERVICE TESTING PUMP TABLE

Aux Feed Water (Page 1)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
1AF01PA	3	C	MOTOR		M-37	D-4	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
Pump Name AUXILIARY FEEDWATER 1A PUMP (MOTOR)												
1AF01PB	3	C	MOTOR		M-37	B-4	Differential Pressure	M3				
							Flow Rate	M3				
							Speed	M3				
							Vibration	M3				
Pump Name AUXILIARY FEEDWATER 1B PUMP (DIESEL)												
2AF01PA	3	C	MOTOR		M-122	E-5	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
Pump Name AUXILIARY FEEDWATER 2A PUMP (MOTOR)												
2AF01PB	3	C	MOTOR		M-122	B-5	Differential Pressure	M3				
							Flow Rate	M3				
							Speed	M3				
							Vibration	M3				
Pump Name AUXILIARY FEEDWATER 2B PUMP (DIESEL)												

Component Cooling Water (Page 1)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
0CC01P	3	C	MOTOR	N/A	M-66-3A	E-5	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name COMPONENT COOLING COMMON PUMP										
1CC01PA	3	C	MOTOR	N/A	M-66-3A	E-6	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name COMPONENT COOLING PUMP 1A										
1CC01PB	3	C	MOTOR	N/A	M-66-3A	E-7	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name COMPONENT COOLING PUMP 1B										
2CC01PA	3	C	MOTOR	N/A	M-66-3A	E-3	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name COMPONENT COOLING PUMP 2A										
2CC01PB	3	C	MOTOR	N/A	M-66-3A	E-2	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name COMPONENT COOLING PUMP 2B										

Containment Spray (Page 1)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
1CS01PA	2	C	MOTOR		M-46-1A	E-5	Differential Pressure	M3			PA-04	
							Flow Rate	M3			PA-04	
							Vibration	M3			PA-04	
		Pump Name CONTAINMENT SPRAY PUMP										
1CS01PB	2	C	MOTOR		M-46-1A	B-5	Differential Pressure	M3			PA-04	
							Flow Rate	M3			PA-04	
							Vibration	M3			PA-04	
		Pump Name CONTAINMENT SPRAY PUMP										
2CS01PA	2	C	MOTOR		M-129	E-5	Differential Pressure	M3			PA-04	
							Flow Rate	M3			PA-04	
							Vibration	M3			PA-04	
		Pump Name CONTAINMENT SPRAY PUMP										
2CS01PB	2	C	MOTOR		M-129	B-5	Differential Pressure	M3			PA-04	
							Flow Rate	M3			PA-04	
							Vibration	M3			PA-04	
		Pump Name CONTAINMENT SPRAY PUMP										

Charging (Page 1)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
1CV01PA	2	C	Motor		M-64-3A	D-5	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name	CENTRIFUGAL CHARGING PUMP									
1CV01PB	2	C	Motor		M-64-3A	C-5	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name	CENTRIFUGAL CHARGING PUMP									
2CV01PA	2	C	Motor		M-138-3A	D-5	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name	CENTRIFUGAL CHARGING PUMP									
2CV01PB	2	C	Motor		M-138-3A	C-5	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name	CENTRIFUGAL CHARGING PUMP									

Diesel Oil (Page 1)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
1DO01PA	3	PD	MOTOR	N/A	M-50-1B	E-4	Flow Rate	M3			EX00-04	
		Pump Name	DIESEL FUEL OIL TRANSFER PUMP									
1DO01PB	3	PD	MOTOR	N/A	M-50-1A	E-5	Flow Rate	M3			EX00-04	
		Pump Name	DIESEL FUEL OIL TRANSFER PUMP									
1DO01PC	3	PD	MOTOR	N/A	M-50-1B	E-4	Flow Rate	M3			EX00-04	
		Pump Name	DIESEL FUEL OIL TRANSFER PUMP									
1DO01PD	3	PD	MOTOR	N/A	M-50-1A	D-5	Flow Rate	M3			EX00-04	
		Pump Name	DIESEL FUEL OIL TRANSFER PUMP									
2DO01PA	3	PD	MOTOR	N/A	M-130-1A	C-5	Flow Rate	M3			EX00-04	
		Pump Name	DIESEL FUEL OIL TRANSFER PUMP									
2DO01PB	3	PD	MOTOR	N/A	M-130-1B	C-5	Flow Rate	M3			EX00-04	
		Pump Name	DIESEL FUEL OIL TRANSFER PUMP									
2DO01PC	3	PD	MOTOR	N/A	M-130-1A	C-5	Flow Rate	M3			EX00-04	
		Pump Name	DIESEL FUEL OIL TRANSFER PUMP									
2DO01PD	3	PD	MOTOR	N/A	M-130-1B	C-5	Flow Rate	M3			EX00-04	
		Pump Name	DIESEL FUEL OIL TRANSFER PUMP									

Residual Heat Removal (Page 1)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
1RH01PA	2	C	MOTOR	N/A	M-62	E-3	Differential Pressure	M3			PA-04	
							Flow Rate	M3			PA-04	
							Vibration	M3			PA-04	
		Pump Name RESIDUAL HEAT REMOVAL PUMP										
1RH01PB	2	C	MOTOR	N/A	M-62	B-3	Differential Pressure	M3			PA-04	
							Flow Rate	M3			PA-04	
							Vibration	M3			PA-04	
		Pump Name RESIDUAL HEAT REMOVAL PUMP										
2RH01PA	2	C	MOTOR	N/A	M-137	E-3	Differential Pressure	M3			PA-04	
							Flow Rate	M3			PA-04	
							Vibration	M3			PA-04	
		Pump Name RESIDUAL HEAT REMOVAL PUMP										
2RH01PB	2	C	MOTOR	N/A	M-137	B-3	Differential Pressure	M3			PA-04	
							Flow Rate	M3			PA-04	
							Vibration	M3			PA-04	
		Pump Name RESIDUAL HEAT REMOVAL PUMP										

Safety Injection (Page 1)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
1SI01PA	2	C	MOTOR		M-61	E-5	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name SAFETY INJECTION PUMP										
1SI01PB	2	C	MOTOR		M-61	C-5	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name SAFETY INJECTION PUMP										
2SI01PA	2	C	MOTOR		M-136	B-4	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name SAFETY INJECTION PUMP										
2SI01PB	2	C	MOTOR		M-136	D-4	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name SAFETY INJECTION PUMP										

Service Water (Page 1)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
0SX02PA	3	V	DIESEL		M-42-6	B-8	Differential Pressure	M3				
							Flow Rate	M3				
							Speed	M3				
							Vibration	M3			PA-01	
		Pump Name ESSENTIAL SERVICE WATER MAKE-UP PUMP										
0SX02PB	3	V	DIESEL		M-42-6	B-6	Differential Pressure	M3				
							Flow Rate	M3				
							Speed	M3				
							Vibration	M3			PA-01	
		Pump Name ESSENTIAL SERVICE WATER MAKE-UP PUMP										
1SX01PA	3	C	MOTOR		M-42-1B	E-6	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name ESSENTIAL SERVICE WATER PUMP										
1SX01PB	3	C	MOTOR		M-42-1A	E-6	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name ESSENTIAL SERVICE WATER PUMP										
1SX04P	3	C	MOTOR		M-42-3	C-3	Differential Pressure	M3				
							Flow Rate	M3				
							Speed	M3				
							Vibration	M3				
		Pump Name 1B DIESEL AFW ESW BOOSTER PUMP										
2SX01PA	3	C	MOTOR		M-42-1B	B-6	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name ESSENTIAL SERVICE WATER PUMP										
2SX01PB	3	C	MOTOR		M-42-1A	B-6	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name ESSENTIAL SERVICE WATER PUMP										

Service Water (Page 2)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
2SX04P	3	C	MOTOR		M-126-1	C-6	Differential Pressure	M3				
							Flow Rate	M3				
							Speed	M3				
							Vibration	M3				

Pump Name 2B DIESEL AFW SX BOOSTER PUMP

Chilled Water (Page 1)

Pump EPN	Safety Class	Pump Type	Pump Driver	Nominal Speed	P&ID	P&ID Coor.	Test Type	Test Freq.	Relief Request	Deferred Just.	Tech. Pos.	Notes
0WO01PA	3	C	MOTOR	N/A	M-118-1	D-7	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name CONTROL ROOM CHILLED WATER PUMP										
0WO01PB	3	C	MOTOR	N/A	M-118-1	B-7	Differential Pressure	M3				
							Flow Rate	M3				
							Vibration	M3				
		Pump Name CONTROL ROOM CHILLED WATER PUMP										

ATTACHMENT 15

INSERVICE TESTING VALVE TABLE INDEX
(Page 1 of 2)

System Number	System Description
AF	Auxiliary Feedwater
CC	Component Cooling
CS	Containment Spray
CV	Chemical and Volume Control
DG	Diesel Generator Starting Air (includes select Service Air valves)
DO	Diesel Oil
FC	Fuel Pool Cooling
FP	Fire Protection
FW	Feedwater
GW	Radioactive Waste Gas
IA	Instrument Air
MS	Main Steam
OG	Off Gas
RP	Process Radiation Monitoring
PS	Process Sampling
RC	Reactor Coolant (includes select Pressurizer (RY) valves)
RE	Reactor Building and Containment Equipment Drains
RF	Reactor Building and Containment Floor Drains

ATTACHMENT 15

INSERVICE TESTING VALVE TABLE INDEX

(Page 2 of 2)

System Number	System Description
RH	Residual Heat Removal
SA	Service Air
SD	Steam Generator Blowdown
SI	Safety Injection
SX	Essential Service Water
VQ	Primary Containment Purge
WM	Make-up Demineralizer
WO	Chilled Water