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Docket 50-293

Response to NRC Staff Concerns Regarding the Inservice
Testing Program for Pumps and Valves,
2nd Ten Year Interval, Revision 1A (TAC # 52032)

- References: 1. Boston Edison Letter No. 85.194, dated 10/24/85, 2nd Ten Year IST Program Revision 1A
2. Boston Edison Letter No. 86.019, dated 02/27/86, corrected pages to Revision 1A
3. Boston Edison Letter No. 88.048, dated 03/14/88, 2nd Ten Year Inservice Testing Program for Pumps and Valves, Revision 1B

This letter submits responses to the NRC staff concerns regarding Revision 1A (References 1 and 2) of the Inservice Testing (IST) Program for pumps and valves for Pilgrim Nuclear Power Station.

In a January 14, 1988 meeting with the NRC on the IST Program, Boston Edison Company described its plan for upgrading the current IST Program (Revision 1A). This upgrade establishes a more viable pump and valve testing program, while amending Revision 1A with minimal impact on the current NRC review of the IST Program.

The plan consists of two phases.

- Phase One includes two submittals:
 - a) This letter, which addresses NRC concerns identified during the review of References 1 and 2, provides additional cross-references to relief requests, test requirements, and test descriptions/definition, and
 - b) Revision 1B, an interim IST Program with minimum scope changes (Reference 3).

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BOSTON EDISON COMPANY

March 14, 1988
U. S. Nuclear Regulatory Commission

Page 2

- Phase Two will include Revision 2 to the IST Program and will be submitted shortly after our receipt of the NRC's Safety Evaluation Report of Revision 1B. Revision 2 will maintain the upgrades made to the program in Revision 1B and will include changes in scope to incorporate plant design changes and the addition of existing components.

To assist your review of Phase One a brief description of each attachment is provided below. Pertinent sections in the attachments that correlate to the changes being made in the Revision 1B submittal are highlighted in boldface type.

Attachment A:

IST Submittal Programmatic Upgrades

Provides clarification of major program changes by stating an issue of concern with the historical position (Revision 1A) and current position (Revision 1B). Some of the concerns addressed within this attachment have been identified during NRC reviews and meetings.

Attachment B:

Response to Identified IST Program Anomalies

Explains how program Revision 1B addresses sixteen previously identified program anomalies by providing an individual response for each item.

Attachment C:

Relief Request Cross-Reference

Provides a status of the initial relief request (IST Program Revision 1A), changes made to establish a Revision 1B relief request and comments from the NRC review of Revision 1A.

Attachment D:

Testing Requirement Cross - Reference

Provides the correlation between ASME Code test requirements with the IST Program Revision 1B and Revision 1A. The test name that accomplishes the particular ASME Code test requirement is identified for use in review.

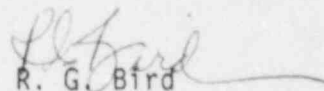
BOSTON EDISON COMPANY
March 14, 1988
U. S. Nuclear Regulatory Commission

Page 3

Attachment F:

Test Description/Definition Cross-Reference

Provides a cross-reference of the test name and description between IST submittal Revision 1A and Revision 1B. The information within this attachment is identical to Revision 1B, Table-Inservice Valves Test (pages 3-5 and 3-6) and Revision 1A, Table 3.1-1, Inservice Valve Tests (page 3-5).


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Attachments: A) IST Submittal Programmatic Upgrades
B) Response to IST Program Anomalies Identified by NRC Reviews and Meetings
C) Relief Request Cross-Reference
D) Test Requirement Cross-Reference
E) Test Description/Definition Cross-Reference

GGW/amm/1689

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ATTACHMENT A

IST Submittal Programmatic Upgrades

Major conceptual improvements have been incorporated into the IST Submittal Revision No. 1B. The concerns that these improvements address and the impacted Revision No. 1A position are identified within this attachment.

Concern No. 1: Implementation of Subsection IWP requirements for measuring the pump mechanical characteristics for vibration and bearing temperature.

Position Rev. 1A: The program requested relief from both ASME Code required vibration and bearing temperature. Measurement of velocity parameters shall be utilized as an alternate test for ASME Code required displacement with the owner established acceptable ranges. ASME Code bearing temperatures were deleted as a useful parameter with no alternate testing.

Reference: Relief Request RP-2.

Position Rev. 1B: The Program measures **vibration** as displacement (mils) and conforms to ASME Code allowable ranges (IWP-3100-2).

Reference: Page 2-2; Section 2.1.4, Vibration and Section 2.1.5, Allowable Ranges of Test Quantities.

The program shall not require measurement of **bearing temperatures** with alternate testing requiring measurement of velocity concurrent with displacement. The owner shall establish an overall vibration (vector sum of all the vibrations) alert condition of 0.314 in/sec for each pump. Exceeding the alert value will require further investigation utilizing spectrum analysis to determine bearing status.

Reference: Relief Request RP-2, Alternate Testing.

Concern No. 2: Implementation of Subsection IWP requirements for measuring the pump hydraulic characteristic for differential pressure (Pd).

Position Rev. 1A: The program required discharge pressure to be used when determining acceptable performance instead of differential pressure. Inlet pressure will be controlled to ensure repeatability. Use of discharge pressure will simplify the pump acceptance analyses.

Reference: Relief Request RP-7.

Position Rev. 1B: The program measures **differential pressure** directly or by measuring inlet pressure (Pi) and discharge pressure (P) with performance of a calculation.

Reference: Page 2-2; Section 2.1.4, Differential Pressure and Relief Request RP-3.

ATTACHMENT A

IST Submittal Programmatic Upgrades

- CONTINUED -

- Concern No. 3: Addition of diesel fuel oil transfer pumps to the IST Program and testing in accordance with ASME Code, Subsection IWP.
- Position Rev. 1A: The program had alternate testing. During the diesel generator operability tests the refilling of the day tank will be verified and shall prove the pump operability.
- Reference: Relief Request RP-8.
- Position Rev. 1B: The Program has incorporated the diesel fuel oil transfer pumps and testing shall be in accordance with ASME Code, Subsection IWP. The system design does not allow monitoring of flow rate (internally) within the system. An external flow rate measurement device will be utilized having excellent repeatability but reduced accuracy. The reduced accuracy will require a variance in corrective action ranges.
- Reference: Relief Request RP-8.
- Concern No. 4: Testing of Containment Isolation Valves in accordance with 10CFR50, Appendix J and the impact on the IST Program which requires testing in accordance with ASME Code, Subsection IWV.
- Position Rev. 1A: The program incorporated Type 'C' Tested Local Leak Rate Test valves. The corrective action requirements of ASME Code, Paragraph IWV-3427 were being exempted with the alternate testing identifying compliance to Technical Specification limits.
- Reference: Relief Request RV-1.
- Position Rev. 1B: The program incorporated Type 'C' Tested Local Leak Rate Test valves as; Category A, Test Requirement of LJ and meets the requirements of Subsubarticle IWV-3420.
- Reference: Pages 3-1 through 3-4; Sections 3.1.2, 3.1.3, 3.1.4; Table Inservice Valve Tests - Test LJ and Section 3.3 appropriate pages with LJ for test requirement.
- Concern No. 5: Testing of Pressure Isolation Valves (PIV) in accordance with ASME Code, Subsubarticle IWV-3420. Pressure Isolation Valves provide protection from overpressurization of low pressure design systems and/or intersystem loss of coolant accidents for liquid interfacing systems.
- Position Rev. 1A: Not Addressed.

ATTACHMENT A

IST Submittal Programmatic Upgrades

- CONTINUED -

Position Rev. 1B: The program has identified Pressure Isolation Valves as test requirement LP. These Pressure Isolation Valves fully comply with ASME Code, Subsubarticle IWV-3420. The Pressure Isolation Valve is one of two normally closed valves to provide pressure isolation. Therefore, relief is requested for cold shutdown exercise testing of PIVs which are capable of being exercised during normal plant operations.

Reference: Pages 3-1 through 3-4; Table, Inservice Valve Tests - Test LP and Section 3.3 appropriate pages with LP for test requirement.

IMPORTANT: Relief Request RV-46 is developed specifically to address this concern.

Concern No. 6: Testing of Instrument Isolation (pressure/containment) Excess Flow Check Valves in accordance with ASME Code, Subsubarticle IWV-3420.

Position Rev. 1A: The program addressed the instrument isolation excess flow check valves as a generic issue and utilized compliance to the Technical Specifications as adequate testing. Individual valves were not identified.

Reference: Page 3-3; Section 3.1.2, Excess Flow Check Valves

Position Rev. 1B: The program has identified Instrument Isolation Excess Flow Check Valves as test requirement LX. These instrument isolation valves fully comply with ASME Code, Subsubarticle IWV-3420. Each valve has been identified within Section 3.3.

Reference: Pages 3-1 through 3-4; Table, Inservice Valve Tests - Test LX and Section 3.3 appropriate pages with LX for test requirement and Relief Request RV-42.

IMPORTANT: Relief Request RV-42 is developed specifically to address testing concerns.

Concern No. 7: Implementation of IWV-3522, Exercising Procedure as it applies to IWV-3522(a), Normally Open Valves and IWV-3522(b) Normally Closed Valves.

Position Rev. 1A: Individual check valves are designated as CT-O or CT-C. This designation identifies the direction a check valve will be exercised. Some check valves were identified as CT-O and CT-C.

Reference: Section 3.3 appropriate pages with CT-O and CT-C test requirement.

ATTACHMENT A

IST Submittal Programmatic Upgrades

- CONTINUED -

Position Rev. 1B: Individual check valves are given a test requirement of FC. The FC identifies a check valve exercise to assure freedom of motion preventing sticking/seizure of parts from prolonged immobility. The direction of exercise is determined by the valve's position during normal plant operation. IWV-3522(a), Normally Open Valves receive a reverse flow exercise. IWV-3522(b), Normally Closed Valves receive a forward flow exercise. If a check valve has other safety requirements such as verifying leak tightness, the test requirement of LJ, LP and/or LX will be identified.

Reference: Page 3-6, Test Description - Test FC. Section 3.3 appropriate pages with FC Test Requirement including Remarks Column of either Forward or Reverse Flow.

Concern No. 8: Incorporation of systems important to safety that are not classified as ASME Safety Class 1, 2 or 3.

Position Rev. 1A: Numerous non-safety class systems/components were incorporated into the program identified as ISI Class NC. Major systems incorporated were Instrument Air System (31), Transversing In-Core Probe (45), Radwaste Collection System (20), Post Accident Purge and Vent (45 & 9), Containment Atmosphere Control (45 & 9) and Diesel Oil Transfer System (38).

Reference: Section 3.3 appropriate pages with NC-ISI Class.

Position Rev. 1B: The program identifies components by their most current ISI safety classification. Differences between the inservice examination and inservice testing boundaries may exist due to size exemptions and different submittal dates. As a major pump and valve component upgrade the NC components listed within Position Rev. 1A have been reclassified as safety class. Other systems and components reclassified were Diesel Generator Air Start and Turbo Assist Systems (47), Post Accident Sampling (5065), Compressed Air (31) and Reactor Plant Instrumentation (261, 263).

Reference: Section 3.3 appropriate pages within the ISI Class Column.

ATTACHMENT B

RESPONSE TO IST PROGRAM ANOMALIES IDENTIFIED BY NRC REVIEWS AND MEETINGS

The IST Submittal Revision No. 1B has incorporated the responses identified within this attachment. Further clarification of these items may be identified within Attachment A, IST Submittal Programmatic Upgrades.

- References:
- (a) Submitted - Inservice Testing Program for Pumps and Valves, Revision No. 1A.
 - (b) Submitted - Inservice Testing Program for Pumps and Valves, Revision No. 1B.
 - (c) ASME Boiler and Pressure Vessel Code, Section XI, Subsections IWV and IWP (1980 Edition through 1980 Winter Addenda)
 - (d) Draft 2 - Regulatory Guide and Value/Impact Statement, Identification of Valves for Inclusion In Inservice Testing Programs
 - (e) NRC Staff Guidance for Preparing Pump and Valve Testing Programs and Associated Relief Request, November 1978.

To adequately address the upcoming NRC review, the following responses are provided for the sixteen (16) anomalies identified:

- Item No. 1. The licensee did not provide adequate technical justifications for not measuring the Code required parameters for the following safety related pumps and relief is not recommended from the Code requirements.

	Pumps	Parameters Not Measured	Relief Request Evaluation
a.	Reactor building closed cooling water pumps	Bearing temperature	2.1.1
b.	Residual heat removal pumps	Differential pressure	2.6.1
c.	High pressure coolant injection pumps	Differential pressure	2.6.1
d.	Reactor core isolation cooling pumps	Differential pressure	2.6.1
e.	Core spray pumps	Differential pressure	2.6.1
f.	Standby liquid control pumps	Differential pressure	2.6.1

ATTACHMENT B

RESPONSE TO IST PROGRAM ANOMALIES IDENTIFIED
BY NRC REVIEWS AND MEETINGS

-CONTINUED-

- Response No. 1a. Pump Relief Request No. 2 (RP-2) shall provide measurement of velocity amplitude in lieu of bearing temperature measurement. Velocity will be measured at the same locations as displacement amplitude per IWP-4500, Vibration (Reference: Attachment A, Concern No. 1).
- 1b. Retracted Pump Relief Request No. 7 (RP-7) and differential
through pressure shall be measured (Reference: Attachment A, Concern
1e. No. 2).
- 1f. Pump Relief Request No. 3 (RP-3) was revised to provide adequate justification for relief from measurement or observation of inlet pressure and differential pressure of the Standby Liquid Control Pumps.
- Item No. 2. The licensee's proposed allowable ranges for pump vibration in velocity units do not conform with the limits established by the staff, therefore, the licensee should measure pump vibration in accordance with the Code requirements (see NRC Review, Section 2.2.1).
- Response No. 2. Pump vibration measurements shall comply with Table IWP-3100-2, allowable ranges of test quantities. Velocity measurements shall be performed as an augmented requirement for bearing temperatures only, thereby allowing the owner to establish course of corrective action (Reference: Attachment A, Concern No. 1).
- Item No. 3. Lack of installed instrumentation is not a basis for permanent relief from measuring Code required parameters and the licensee should make the necessary system modifications prior to the end of the next refueling outage (RO#7) to allow measurement of Code parameters for the diesel oil transfer pumps. Interim relief should be granted for the balance of the current fuel cycle (see NRC Review, Section 2.7.1).
- Response No. 3. Pump Relief Request No. 8 (RP-8) was revised to request relief from requirements other than measured code required parameters. Pump test parameters for the diesel fuel oil transfer pumps shall be measured (Reference: Attachment A, Concern No. 3).
- Item No. 4. The staff agrees with the licensee's basis for not exercising RBCCW valves 4002, 4085A, 4085B, 4009A and 4009B during power operation or cold shutdowns with the recirculations pumps remain in operation, however, during cold shutdowns when the recirculation pumps are secured these valves should be exercised (see NRC Review, Sections 3.3.1.1, 3.3.3.1 and 3.3.3.2).

ATTACHMENT B

RESPONSE TO IST PROGRAM ANOMALIES IDENTIFIED BY NRC REVIEWS AND MEETINGS

-CONTINUED-

Response No. 4. Valve Relief Request No.s 2 and 43 (RV-2, RV-43) were changed to **comply** with the NRC position of exercising valves during cold shutdown when recirculation pumps are not required but not to exceed a refueling outage.

Item No. 5. The licensee's bases for relief were judged to contain inadequate technical justifications to grant relief from the Section XI exercising requirements for the following valves:

	System	Valves	Relief Request	Relief Request Evaluation
a.	HPCI	2301-7 2301-39	RV-15 RV-31	3.7.2.1 3.7.2.3
b.	RCIC	1301-50 1301-27	RV-15 RV-31	3.8.2.1 3.8.2.3
c.	Nuclear boiler	202-5A 202-5B	RV-23 RV-23	3.11.2.1 3.11.2.1
d.	Containment atmospheric dilution system	5081A and B 5082A and B 5083A and B 5084A and B 5085A and B 5086A and B 5087A and B	RV-37 RV-37 RV-37 RV-37 RV-37 RV-37 RV-37	3.15.1.1 3.15.1.1 3.15.1.1 3.15.1.1 3.15.1.1 3.15.1.1 3.15.1.1

Response No. 5a. Valve Relief Request No.s 15 and 31 (RV-15, RV-31) were changed to **comply** with standard NRC positions on exercising.
and
5b. RV-15 provides manual exercise during cold shutdown for the 2301-7 and 1301-50. RV-31 exercises valves during refueling by disassembly or other positive means for the 2301-39 and 1301-27.

5c. Valve Relief Request No. 23 (RV-23) was revised to **comply** with the NRC position of exercising valves during cold shutdown when a reactor recirculation pump is not required, but not to exceed a refueling outage.

5d. Valve Relief Request No. 37 (RV-37) was retracted and valves **shall** be tested per ASME Code, Section XI, requirements.

ATTACHMENT B

RESPONSE TO IST PROGRAM ANOMALIES IDENTIFIED
BY NRC REVIEWS AND MEETINGS

-CONTINUED-

Item No. 6. The licensee's proposed testing of valves 2301-39 and 1301-27 results in a small percentage of the design accident flow through these valves and the licensee did not provide sufficient information to demonstrate that the test flow will fully open the valve disks (see NRC Review, Sections 3.7.2.3 and 3.8.2.3).

Response No. 6. **Complies** with NRC positions reference response 5a and 5b.

Item No. 7. The setpoint for the HPCI turbine exhaust line vacuum relief valve VRV-9066 cannot be tested given the current system design. The licensee will make valve or system modifications which will make testing possible prior to startup from RO#7 (see NRC Review, Section 3.7.2.4).

Response No. 7. The HPCI vacuum relief valve VRV-9066 was permanently removed during RFO #7. Valve Relief Request No. 41 (RV-41) was **revised** to allow exercising during cold shutdown of newly installed (per Plant Design Change Procedure) HPCI Turbine Exhaust Line Vacuum Relief valves.

Item No. 8. The licensee requested relief from the stroke time trending and corrective action requirements of IWV-3417(a) for the RCIC turbine trip and governor valves and assigned a stroke time limit of 5 seconds of these valves. The NRC position on stroke times for rapid acting valves (see NRC Review, Section 3.2.1) is that rapid acting valves are those with stroke time limits of 2 seconds or less and that valves with limits; greater than 2 second should comply with the Code requirements.

Response No. 8. Valve Relief Requests No.s 16 and 39 (RV-16, RV-39) were **revised** since these turbine governor valves are considered unique valves important to safety.

Item No. 9. The licensee did not provide an adequate technical justification for not measuring the stroke times for the scram discharge volume isolation valves quarterly during power operations or during cold shutdowns. The isolation valves are listed below and are discussed in NRC Review, Section 3.10.1.1.

302-21A	302-22A	302-23A	302-24A
302-21B	302-22B	302-23B	302-24B

Response No. 9. Valve Relief Request No. 20 (RV-20) was **retracted** with valve testing required every three months.

ATTACHMENT B

RESPONSE TO IST PROGRAM ANOMALIES IDENTIFIED BY NRC REVIEWS AND MEETINGS

-CONTINUED-

Item No. 10. The proposed alternate testing for the hydraulic control unit valves #138 (see NRC Review, Section 3.10.2.1) may not verify closure of these valves.

Response No 10. Valve Relief Request No. 22 (RV-22) was revised to identify exercising by meeting surveillance requirements of PNPS Technical Specification Section.

Item No. 11. The licensee's IST program does not verify closure of the following safety related valves. These check valves do perform a safety function in the closed position. The licensee currently only verifies that one of two series check valves closes.

	<u>System</u>	<u>Valve</u>
a.	Residual heat removal system	1001-103 (revised 1001-363A) 1001-104 (revised 1001-362B)
b.	Core spray system	1400-100 (revised 1400-212A) 1400-102 (revised 1400-212B)

Response No 11. Valve Relief Request No. 47 (RV-47) was added to comply with the NRC position of exercising these valve in the closed direction by disassembly or other positive means each refueling outage.

Item No. 12. The licensee has included the RCIC pump and many of the RCIC valves in Revision 1A of their IST program, however, operation of the following RCIC valves appears to be necessary for the system to fulfill its function. These valves should be included in the IST program and be tested in accordance with the Code unless the licensee requests specific relief and the NRC approves the relief.

	<u>Valve</u>	<u>Function</u>	<u>P&ID</u>	<u>Coordinates</u>
a.	1301-34	RCIC turbine steam supply drain isolation valve	M245	J-13
b.	2" 223 (Revised 47)	Minimum flow bypass check valve	M245	J-7
c.	1301-63	RCIC condensate pump discharge check valve	M246	K-6
d.	VRV-9067	RCIC turbine exhaust line vacuum relief valve	M245	H-6

ATTACHMENT B

RESPONSE TO IST PROGRAM ANOMALIES IDENTIFIED
BY NRC REVIEWS AND MEETINGS

-CONTINUED-

- Response No. 12a. Valves were incorporated into the IST Program meeting
through ASME Code test requirements.
12c.
- 12d. Valve Relief Request No. 48 (RV-48) was added to exercise the
valve during cold shutdown.
- Item No. 13. No quantitative testing is currently performed on the excess
flow check valves at Pilgrim; the operators make a judgment
that there is a "marked decrease in flow." These valves
should be included in the IST program and be quantitatively
tested.
- Response No 13. Valves were incorporated into IST program satisfying all the
IHW-3420, Valve Leak Rate Test requirements (Reference:
Attachment A, Concern No. 6).
- Item No. 14. The NRC staff position is that the diesel generator air start
solenoid valves perform a safety related function and should
be included in the IST program and be tested in accordance
with the Code. The licensee has not conformed to this staff
position.
- Response No 14. Valve Relief Request No. 45 (RV-45) was added and valve
operability shall be verified bi-monthly during diesel
generator technical specification alternate air bank start
surveillance testing. Diesel starting time shall be
monitored and trended.
- Item No. 15. The staff agrees with the licensee's basis for not exercising
core spray valves 1400-9A and 9B quarterly during power
operations, however, the relief request (RV-14) does not
contain an adequate technical justification for not
exercising these valves during cold shutdowns (see NRC
Review, Section 3.6.1.1.).
- Response No 15. Valve Relief Request No. 14 (RV-14) was revised to emphasize
the burden placed on the plant to perform cold shutdown
testing. A once per refueling outage testing frequency is
still requested with additional justification consistent to
the NRC position for granting relief.

ATTACHMENT B

RESPONSE TO IST PROGRAM ANOMALIES IDENTIFIED
BY NRC REVIEWS AND MEETINGS

-CONTINUED-

- Item No. 16. The licensee should conform with the corrective action requirements of IWV-3427 for all valves that are leak rate tested to verify their containment isolation function (see NRC Review, Sections 3.1.5 and 3.2.3.1).
- Response No 16. Valve Relief Request No. 1 (RV-01) was retracted and containment isolation valve leak rate testing shall comply with IWV-3427 requirements for corrective action (Reference: Attachment A, Concern No. 4).

ATTACHMENT C

Relief Request Cross-Reference

The following cross-reference provides; status of Initial Relief Requests vs. comments NRC Review Rev. No. 1A vs. changes in Current Relief Request.

PUMP RELIEF REQUEST

NO.	STATUS	CHANGED	NRC Review Rev. No. 1A
1	Revised	Changed for clarification, intent the same and requested relief from high allowable range.	Previously Approved Sect. 2.3.1.1
2	Revised	Changed to use velocity vs. bearing temperature (only).	Previously Approved Section 2.1.1.1
3	Revised	Changed to incorporate inlet pressure and calibration relief.	Previously Approved Section 2.5.1.1
4	Revised	Changed for clarification, intent the same.	Previously Approved Section 2.4.1.1
5	Revised	Changed for clarification, intent the same and requested relief from high allowable range.	Previously Approved Section 2.4.2.1
6	Revised	Changed for clarification, intent the same.	Previously Approved Section 2.4.3.1
7	Deleted	Pump differential pressure shall be measured.	Previously Approved Section 2.6.1.1
8	Revised	Complete rewrite.	Previously Section 2.7.1.1

ATTACHMENT C

Relief Request Cross-Reference

- CONTINUED -

VALVES RELIEF REQUEST

NO.	STATUS	CHANGED	NRC Review Rev. No. 1A
1	Deleted	Individual leak rates established.	Previously Approved Section 3.2.3.1
2	Revised	Changed to cold shutdown when reactor recirculation pumps & drywell coolers not required.	Previously Approved Section 3.3.1.1
3	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.3.2.1
4	Deleted	Changed by Plant Design Change.	Previously Approved Section Appendix B
5	Deleted	Meets Code requirements without relief.	Previously Section 3.2.2.1
6	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.4.1.1
7	Revised	Changed for clarification, intent the same. Listed valves, not their control valve test operator.	Previously Approved Section 3.5.2.1
8	Revised	Changed to incorporated all fast acting valves to comply with the NRC's position.	Previously Section 3.2.1
9	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.5.2.2
10	Deleted	Meets code requirements without relief.	Previously Approved Section 3.11.4.1
11	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.5.2.3
12	Revised	Changed for clarification, intent the same. Added the 1001-63 to relief request.	Previously Approved Section Appendix B

ATTACHMENT C
Relief Request Cross-Reference
- CONTINUED -

VALVE RELIEF REQUEST (CONT.)

NO.	STATUS	CHANGED	NRC Review Rev. No. 1A
13	Revised	Changed to incorporate plant availability requirements - needs approval.	Previously Approved Section Appendix B
14	Revised	Changed to incorporate plant availability requirements - needs approval.	Previously Section 3.3.3.2
15	Revised	Changed to cold shutdown-normal feedwater system valve lineup.	Previously Section 3.7.2.1
16	Revised	Changed to comply with NRC's position.	Previously Approved Section 3.7.1.1
17	Deleted	Exercise quarterly (use exhaust pressure).	Previously Section 3.7.2.2
18	Deleted	Exercise quarterly (use level and pressure).	Previously Section 3.8.2.2
19	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.9
20	Deleted	Exercise quarterly.	Previously Section 3.10.11
21	Revised	Changed to incorporate Scram Header Discharge Check (114) and HCU Scram Accumulator Supply Check (115), intent the same.	Previously Approved Section 3.10.1.2
22	Revised	Changed to incorporate weekly ROD notching procedure for reverse flow exercise.	Previously Section 3.10.2.1
23	Revised	Changed to cold shutdown when reactor recirculation pumps not required.	Previously Section 3.11.2.1
24	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.11.3.1
25	Revised	Changed for clarification, intent the same.	Previously Approved Section Appendix B

ATTACHMENT C

Relief Request Cross-Reference

- CONTINUED -

VALVE RELIEF REQUEST (CONT.)

NO.	STATUS	CHANGED	NRC Review Rev. No. 1A
26	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.11.1.1
27	Revised	Changed test requirements, valves and category test using ADS Accumulator Drop Test.	Previously Approved Section 3.11.4.1
28	Revised	Changed for clarification, intent the same.	Previously Section 3.12.1.1
29	Deleted	Addressed in RV-08	Previously Approved Section 3.5.2.1
30	Deleted	Valves exempt - testing only	Previously Approved Section 3.5.1.1 & 3.5.2.4
31	Revised	Valve exercising by disassembly	Previously Approved Section 3.8.2.3 & 3.7.2.3
32	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.13.1.1
33	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.14.1.1
34	Revised	Changed for clarification, intent the same.	Previously Approved Section 3.7.1.2
35	Deleted	No remote lights for position indication test.	Not addressed
36	Revised	Changed for clarification, intent the same.	Previously Approved Section Appendix B

ATTACHMENT C

Relief Request Cross-Reference

- CONTINUED -

VALVE RELIEF REQUEST (CONT.)

NO.	STATUS	CHANGED	NRC Review Rev. No. 1A
37	Deleted	Concern addressed in RV-08.	Previously Approved Section 3.5.2.1
38	Revised	Changed to perform forward flow exercise during scram time testing restoration.	Previously Section 3.10.2.2
39	Revised	Changed to comply with NRC's position.	Previously Approved Section 3.7.1.1
40	Deleted	Perform forward flow exercise.	Not addressed
41	Revised	Design change incorporated - test cold shutdown.	Not addressed
42	Addition	NA (Incorporated Instrument Excess Flow Check Valves.)	Not addressed
43	Revised	Change to cold shutdown when Reactor recirculation pumps not required.	Previously Section 3.3.1.1
44	Addition	NA (Incorporated MSIV full-stroke exercise to satisfy forward flow exercise)	Previously Approved Section 3.11.4.1
45	Addition	NA (Incorporated Diesel Air Starting System)	Not Addressed
46	Addition	NA (Incorporated Pressure Isolation Valves)	Not Addressed
47	Addition	NA (Incorporated to resolve NRC review comments)	Not Addressed
48	Addition	NA (Incorporated to resolve NRC review comments)	Not Addressed
49	Addition	NA (Incorporated to allow forward flow exercise during cold shutdown)	Not Addressed

ATTACHMENT D

TESTING REQUIREMENT CROSS-REFERENCE

This attachment provides a cross-reference between IST Submittal Revision 1B and IST Submittal 1A test requirements, as identified in the ASME Boiler and Pressure Vessel Code, Subsection IWV (Inservice Testing of Valves in Nuclear Power Plants). This attachment is formatted in sections by Subarticles. Pertinent Subsubarticles and Paragraphs are tabulated with their corresponding test requirements.

Subarticle IWV-3300, Valve Position Indicator Verification

<u>Revision No. 1B</u>		<u>Revision No. 1A</u>	
<u>Test</u>	<u>Test Name</u>	<u>Test</u>	<u>Test Name</u>
PI	Position Indicator Verification	PIT	Position Indication Test

Subarticle IWV-3400, Inservice Category A and B Valves

<u>Revision No. 1B</u>		<u>Revision No. 1A</u>	
<u>Test</u>	<u>Test Name</u>	<u>Test</u>	<u>Test Name</u>

Subsubarticle IWV-3410, Valve Exercising Test Paragraph IWV-3412, Exercising Procedure

FE	Full Stroke Exercise	DT-O (OT)	Full Stroke Exercise Test to the Oper. Position
<u>NOTE:</u>	Exercise is from the normal position to the alternate position and back to normal position.	BT-C (CT)	Full Stroke Exercise Test to the Close Position
PE	Partial Stroke Exercise	PS	Partial Stroke Test

Paragraph IWV-3413, Power Operated Valves

ST	Stroke time	BT-O (OT)	Full Stroke Exercise Test to the Open Position
<u>NOTE:</u>	Stroke time shall be identified as O-Open or C-Close within Max. Stroke Time column.	BT-C (CT)	Full Stroke Exercise Test to the Close Position

Paragraph IWV-3415, Fail Safe Valves

FS	Fail Safe Test	FST	Fail Safe Test
<u>NOTE:</u>	Fail safe direction shall be identified as open or closed in Remarks column.		

ATTACHMENT D

TESTING REQUIREMENT CROSS-REFERENCE

-CONTINUED-

Subarticle IWV-3400, Inservice Category A and B Valves (Continued)

<u>Revision No. 1B</u>		<u>Revision No. 1A</u>	
<u>Test</u>	<u>Test Name</u>	<u>Test</u>	<u>Test Name</u>
Subsubarticle IWV-3420, Valve Leak Rate Test			
LJ	Containment Isolation Valves	AT-1	Type C Leak Test
LX	Miscellaneous Isolation Valves	AT-2	Vacuum Breaker Leak Test
LP	Pressure Isolation Valves	None	None

NOTE: Each test requirement shall meet the following paragraphs:

Paragraph IWV-3421, Scope
 Paragraph IWV-3422, Frequency
 Paragraph IWV-3423, Differential Test Pressure
 Paragraph IWV-3424, Seat Leakage Measurement
 Paragraph IWV-3425, Test Medium
 Paragraph IWV-3426, Analysis of Leakage Rates
 Paragraph IWV-3427, Corrective Action

Subarticle IWV-3500, Inservice Test, Category C Valves

<u>Revision No. 1B</u>		<u>Revision No. 1A</u>	
<u>Test</u>	<u>Test Name</u>	<u>Test</u>	<u>Test Name</u>
Subsubarticle IWV-3510, Safety Valve and Relief Valve Tests Paragraph IWV-3512, Test Procedure			
RT	Relief Set Point Test	CT-SP	Relief Valve Set Point Verification Test
Subsubarticle IWV-3520, Tests for Check Valves Paragraph IWV-3522, Exercising Procedure			
FC	Check Valve Exercise	CT-C	Check Valve Exercise Test to the Open Position
NOTE:	Subparagraphs IWV-3522(a), Normally Open Valves identified as Reverse Flow and IWV-3522 (b), Normally Closed Valves identified as Forward Flow in Remarks column.	CT-C	Check Valve Exercise Test to the Close Position
PC	Partial Check Exercise	PS	Partial Stroke Test
NOTE:	Direction of partial shall be the same as FC-Check Valve Exercise		

ATTACHMENT D

TESTING REQUIREMENT CROSS-REFERENCE

-CONTINUED-

Subarticle IWV-3600, Inservice Test Category D Valves

Revision No. 1B

Revision No. 1A

Test

Test Name

Test

Test Name

Subsubarticle IWV-3610, Explosively Actuated Valve Tests

EX

Explosive Test

DTX

Explosive Valve Test

Subsubarticle IWV-3620, Rupture Disk Test

RD

Rupture Disk Test

DTR

Rupture Disk Test

NOTE: Testable rupture disks would
be identified in the Actuator
column.

ATTACHMENT E

Test Description/Definition Cross-Reference

IST SUBMITTAL REVISION NO. 1B

<u>Test</u>	<u>Test Name</u>	<u>Test Description/Definition</u>
LJ	Containment Isolation Valves	Containment isolation valves will be seat leak tested in accordance with 10 CFR 50, Appendix J, Type C Leak Test.
LP	Pressure Isolation Valves	Pressure Isolation Valves will be seat leak tested in accordance with ASME Boiler and Pressure Vessel Code, Section XI, IWV-3420 Valve Leak Rate Test.
LX	Miscellaneous Isolation Valves	Other safety related valves - Miscellaneous Isolation Valves will be seat leak tested in accordance with 10 CFR 50, Appendix J or ASME Boiler and Pressure Vessel Code, Section XI.
FE	Full-Stroke Exercise	Exercise testing of Category A or B valves through one complete cycle of operation. 1) Normally open: Full Stroke exercise the valve closed then return to open position. 2) Normally closed: Full Stroke exercise the valve open then return to closed position.
ST	Stroke Time	Stroke time is the measurement of the time required to exercise test a Category A or B valve through an operation. Valve timing shall be to one direction to comply with ASME Boiler and Pressure Vessel Code, Section XI. 1) Stroke Direction (C) -Normally open: Full Stroke time close. 2) Stroke Direction (O) - Normally closed: Full Stroke time open. Additional stroke timing may be required by other documents (i.e., PNPS Technical Specifications and PNPS Final Safety Analysis Report).
PE	Partial Stroke Exercise	Partial stroke exercise testing will be performed to confirm partial stroke capability when Full Stroke Exercise is impractical.

ATTACHMENT E

Test Description/Definition Cross-Reference

-Continued-

IST SUBMITTAL REVISION NO. 1B

<u>Test</u>	<u>Test Name</u>	<u>Test Description/Definition</u>
FC	Check Valve Exercise	Exercise Category C (i.e., check valves) valve is to assure freedom of motion preventing sticking/seizure of parts from prolonged immobility. 1) Forward Flow Direction (F) - Normally closed: Flow Stroke open. 2) Reverse Flow Direction (R) - Normally open: Flow Stroke close.
PC	Partial Check Exercise	Partial (valve checked in same flow direction) exercise is when a Category C valve can only be partially exercised.
RD	Rupture Detonate Test	Rupture Test of all Category "D": <u>Non-Testable</u> valves were performed by the manufacturer or the start-up testing program and no additional testing shall be required; <u>Testable</u> valves were performed by the start-up testing program and shall be routinely scheduled by BECo.
EX	Explosive Test	Testing of explosive charges by firing per ASME Section XI with at least 20% of the charges in a batch shall be fire every 2 years with no charge exceeding 10 years.
RT	Relief Set Point Test	Relief and Safety Valve set point will be verified in accordance with ASME Boiler and Pressure Vessel Code, Section XI (IWB-3511), ASME PTC 25.3-1976 and PNPS Technical Specifications.
FS	Fail Safe Test	Valves with fail safe actuators (e.g., air operated, spring loaded, solenoid operated and hydraulic operated) will be tested to verify proper fail safe operation upon loss of actuator power.
PI	Position Indicator Verification	Valves with remote position indicators will be checked to verify that remote valve position indicators accurately reflect valve position.

ATTACHMENT E

Test Description/Definition Cross-Reference

-Continued-

IST SUBMITTAL REVISION NO. 1A

<u>Test</u>	<u>Test Name</u>	<u>Test Description/Definition</u>
AT-1	Type C Leak Test	Containment isolation valves will be seat leak tested in accordance with Technical Specification requirements and Appendix J, 10CFR50.
AT-2	Vacuum Breaker Leak Test	The suppression chamber-drywell vacuum breakers will be leak tested in accordance with PNPS Technical Specification, Section 4.7.A.
BT-0	Full Stroke Exercise Test to the Open Position	Exercise testing in the open direction, verified by stroke time measurement, will be performed to confirm the full stroke capability of each valve. The stroke direction tested and timed (open) is based on the direction the valve disk must travel to fulfill a safety function. The maximum allowable stroke time is specified by the owner.
BT-C	Full-Stroke Exercise Test to the Close Position	Exercise testing in the close direction, verified by stroke time measurement, will be performed to confirm the full stroke capability of each valve. The stroke direction tested and timed (close) is based on the direction the valve disk must travel to fulfill a safety function. The maximum allowable stroke time is specified by the owner.
BT-OT	Full Stroke Exercise Test to the Open Position	Exercise testing in the open direction, verified by stroke time measurement, will be performed to confirm the full stroke capability of each valve. The stroke direction tested and timed (open) is based on the direction the valve disk must travel to fulfill a safety function. The maximum allowable stroke time is specified by Technical Specifications.
BT-CT	Full-Stroke Exercise Test to the Close Position	Exercise testing in the close direction, verified by stroke time measurement, will be performed to confirm the full stroke capability of each valve. The stroke direction tested and timed (close) is based on the direction the valve disk must travel to fulfill a safety function. The maximum allowable stroke time is specified by Technical Specifications.
CT-0	Check Valve Exercise Test to the Open Position	Check valves will be exercised from the full closed to the full open position. Verification of safety basis system flow through a check valve shall be adequate demonstration that the valve is full open. The stroke direction tested (open) is based on the direction the valve disk must travel to fulfill a safety function.

ATTACHMENT E

Test Description/Definition Cross-Reference

-Continued-

1ST SUBMITTAL REVISION NO. 1A

<u>Test</u>	<u>Test Name</u>	<u>Test Description/Definition</u>
CT-C	Check Valve Exercise Test to the Close Position	Check valves will be exercised from the full open to the full closed positions. The stroke direction tested (closed) is based on the direction the valve disk must travel to fulfill a safety function.
CT-SP	Relief Valve Set Point Verification Test	Relief and safety valve set points will be verified in accordance with IWV-3510.
DTR	Rupture Disk Test	Rupture disks will be tested in accordance with manufacturer's instructions, if applicable.
PS	Partial Stroke Test	Partial stroke close valve to assure that motion in the desired direction can be attained.
DTX	Explosive Valve Test	Explosive valves will be tested in accordance with IWV-3610.
FST	Fail-Safe Test	All valves with fail-safe actuators will be tested to verify proper fail-safe operation upon loss of actuator power.
PAS	Passive Valve Operational Check	Operational checks shall verify the position of passive valves before operations are performed and after operations are completed. Passive valves are valves that are not required to change position to accomplish their safety function.
PIT	Position Indication Check	All valves stroke timed with position indicators will be checked to verify that remote valve indicators accurately reflect valve operation.