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NUCLEAR ENGINEERING & SERVICES DEPARTMENT

May 17, 1991

Docket Nos. 50-277
50-278

License Nos. DPR-44
DPR-56

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Peach Bottom Atomic Power Station, Units 2 and 3
Response to Request for Additional Information
Concerning the Containment Leakage Testing Program
Technical Specifications

REFERENCES:

1) Letter from E. J. Bradley (PECo) to E. C. Rusche (NRC), dated November 18, 1976

2) Letter from E. J. Bradley (PECo) to H. R. Denton (NRC), dated April 19, 1984

3) Letter from E. J. Bradley (PECo) to H. R. Denton (NRC), dated October 10, 1986

4) Letter from J. W. Gallagher (PECo) to T. E. Murley (NRC), dated April 21, 1988

5) Letter from E. P. Fogarty (PECo) to T. E. Murley (NRC), dated June 23, 1988

6) Letter from G. Y. Suh (NRC) to G. A. Hunger, Jr. (PECo), dated November 21, 1990

7) Letter from G. Y. Suh (NRC) to G. J. Beck (PECo), dated January 9, 1991

Dear Sir:

As identified in the Reference 7 letter, the Staff review of the Technical Specification Amendment Applications (References 1, 2, and 3) concerning the containment leakage testing program has identified the need for additional information and changes to reflect the exemptions to 10 CFR 50, Appendix J provided in the Reference 6 letter. Attachment A is our response to the request for additional information.

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Also attached (Attachment 3) are revised Technical Specification pages 168, 170, 185, 187a, 187b, 188, 188a, 188b, 188c, and 192. As discussed in our response to Question 1, we request that Technical Specification page 168a provided in the Reference 3 submittal be deleted.

We note that this response is three days late. This issue was discussed in a telephone conversation between J. A. Basilio (PECo) and R. J. Clark (NRC) on May 15, 1991. We regret any inconvenience this may have caused.

If you have any questions or require additional information, please do not hesitate to contact us.

Very truly yours,

G. J. Beck
Manager
Licensing Section
Nuclear Engineering & Services

TRL:lc

Attachment

cc: T. T. Martin, Administrator, Region I, USNRC
J. J. Lyash, USNRC Senior Resident Inspector, PB

COMMONWEALTH OF PENNSYLVANIA:

: ss.

COUNTY OF CHESTER :

D. R. Helwig, being first duly sworn, deposes and says:

That he is Vice President, Nuclear Engineering and Services Department of Philadelphia Electric Company, the Applicant herein; that he has read the enclosed Technical Specification pages for Peach Bottom Units 2 and 3 Facility Operating License Nos. DPR-44 and DPR-56 and knows the contents thereof; and that the statements and matters set forth therein are true and correct to the best of his knowledge, information and belief.

D R Helwig

Vice President

Subscribed and sworn to
before me this 16th day
of May 1991.

Catherine A. Mendez

Notary Public

NOTARIAL SEAL
CATHERINE A. MENDEZ, Notary Public
Tredyffrin Twp., Chester County
My Commission Expires Sept. 4, 1993

Question

1. "Proposed TS 4.7.A.2.e. would allow the isolation of certain leakage paths during an integrated leakage rate test and does not require the performance of a Type A test following repair and/or adjustment of certain leakage paths. In addition, for each leakage path that remains isolated during the integrated leakage rate test, the proposed TS does not require the performance of local leakage rate measurements prior to effecting repairs in order to determine the as-found condition. The licensee also proposes to change the technical specifications bases on page 192 to reflect the proposed changes to TS 4.7.A.2.e. The staff notes that the approach outlined in proposed TS 4.7.A.2.e. reflects the approach described in proposed revisions to 10 CFR 50, Appendix J (51 FR 39538, October 29, 1986) with the exception of as-found condition determination. The proposed Appendix J revisions have not been issued as a final rule revision. Please discuss whether the proposed changes to TS 4.7.A.2.e. are consistent with section III.A.1.(a) of 10 CFR 50, Appendix J. It should be noted that concerns also exist for TS 4.7.A.2.e. as currently approved, which supports the need for an appropriate revision to this TS section. The staff also notes that the proposed TS is unclear in its use of the term "subsequent ILRT". Please clarify whether a "subsequent ILRT" refers to the continuation of a suspended integrated leakage rate test or to the performance of a new Type A test."

Response

As provided in the revised Technical Specification page 168, Technical Specification 4.7.A.2.e has been clarified to delete reference to detailed ILRT (Integrated Leak Rate Test) testing methodology. ILRT testing methodology is not included in the Standard Technical Specifications (NUREG-0123, Revision 3). Proposed pages 168, 168a, and Bases page 192 provided in the Reference 3 Technical Specification Amendment Application should be replaced by page 168 and Bases page 192 in Attachment B of this letter.

Question

2. "On proposed technical specifications (TS) page 184 for Table 3.7.2, please provide a discussion to support the addition of penetration numbers N-25, N-26, N-205A/B, N-212, and N-214."

Response

Penetrations N-25, 26, 205 A/B, 212, and 214 have been added to Technical Specification Table 3.7.2 (page 184) because of the valve to pipe connection(s) which contain testable 'O-Ring' seals. These connections represent potential leakage pathways and are therefore Type B tested. These tests are included in the current LLRT (Local Leak Rate

Test) program. As shown below, the penetrations mentioned in Question No. 2 have all been tested since initiation of the LLRT program but were not included in the original Table 3.7.2.

Penetration	Original Test Dates Unit 2	Unit 3
N-25	10-30-75	12-21-73
N-26	10-27-75	02-03-74
N-205A	10-27-75	02-02-74
N-205B	11-06-75	01-09-74
N-212	05-19-76	01-08-76
N-214	11-05-75	01-16-76

Question

3. "On page 9 of the November 1986 submittal, it is stated that Note (12) does not apply to butterfly valves AO-2502B and AO-3502B. Please discuss why the note is no longer applicable and discuss how Type C testing is performed for these valves. If these valves are subjected to reverse direction testing, provide justification for your proposed test method."

Response

Note 12 does not apply to butterfly valves AO-2(3)502B because the original Fisher valves with inflatable seals were replaced with C&S (Clow) valves under Modification No. 842C. The Clow valves do not have inflatable seals.

The Clow valves are tested in the reverse direction as stated in Note 22 for Technical Specification Table 3.7.4. Local leak rate testing is done by applying pressure between valve AO-2(3)502B and the vacuum breaker located between the valve and the reactor building. As stated in Note 22, testing of the butterfly valve in the reverse direction is acceptable since the valve provides bi-directional sealing. The valve manufacturer has stated that there is no significant difference in the sealing capability of the valve regardless of the direction in which pressure is applied.

Question

4. "Please discuss whether the footnote on proposed TS page 187a relating to anti-syphon devices should be modified to reflect recently completed modifications."

Response

The asterisk footnote on proposed Technical Specification page 187a has been deleted as identified in the attached Technical Specification page 187a. Modification No. 1716

which has removed the anti-syphon device has been completed negating the need for this note.

Question

5. "On proposed TS page 170, TS 4.7.A.4.c. and a portion of TS 4.7.A.4.b. were deleted with no applicable discussion. Please clarify or revise."

Response

Technical Specification 4.7.A.4.c and a portion of Technical Specification 4.7.A.4.b were inadvertently deleted from the October 10, 1986 Technical Specification Amendment Application. This error has been corrected on the attached Technical Specification page 170.

Question

6. "For the following penetrations and listed valves, please explain why these valves, which are listed in the current TS Table 3.7.4, no longer appear in the proposed Table 3.7.4. If the containment boundary was redefined in these cases, please provide a discussion to justify the designation of the proposed containment isolation valves. The discussion should also address whether the new containment boundary continues to meet applicable design criteria and regulatory requirements of the facility's licensing bases.

- N-9A: MO-23-20, MO-23-21, MO-2663
- N-9B: MO-13-20, MO-13-30, MO-2663
- N-13A: MO-10-154B, SV-4222
- N-13B: MO-10-154A, SV-4221
- N-16A: MO-14-11B, SV-4224
- N-16B: MO-14-11A, SV-4225
- N-39A: SV-4948B
- N-39B: SV-4948A
- N-211A: SV-4950B
- N-211B: SV-4950A"

Response

Containment boundaries for penetrations N-9A/B, 13A/B, 16A/B, 39A/B, and 211A/B have been redefined.

The penetration N-9A/B containment boundary consists of one check valve inside and one check valve or motor operated valve outside primary containment depending on the particular branch, as detailed in UFSAR Table 7.3.1, Section 5.2.3.5, and Figure 7.3.11c.

The penetrations N-13A/B and 16A/B containment boundary consists of one check valve and one air operated valve inside, and one motor operated valve outside primary containment as detailed in UFSAR Table 7.3.1 and Figure

7.3.11f. We also note that UFSAR Table 7.3.1 incorrectly designates certain valves for penetrations N-13A/B and N-16A/B as not being Type C tested. The UFSAR will be corrected to identify that these valves are Type C tested.

The penetrations N-39A/B and 211A/B containment boundary consists of two motor operated valves or one check valve with a solenoid valve in series outside primary containment, as detailed in UFSAR Table 7.3.1, and Figures 7.3.11w and 7.3.11ff, respectively.

These redefined boundaries satisfy the proposed general design criteria of 10 CFR 50, Appendix A (July 1967), as described in the UFSAR Section Appendix H. These containment isolation boundary valves are included in the local leak rate testing requirements as required by UFSAR Table 7.3.1, satisfying 10 CFR 50, Appendix J.

Question

7. "For the following penetrations and listed valves, please explain why these valves (which are listed in the facility's updated final safety analysis report in Table 7.3.1, titled "Primary Containment Isolation Valves") do not appear in the proposed TS Table 3.7.4.

- N-9A: feedwater startup bypass check valve
- N-42: check valve 11-17
- N-205A: globe valve
- N-236B: two check valves"

Response

N-9A: Feedwater Startup Bypass Check Valve

This check valve should not be in the UFSAR or the Technical Specifications. This check valve is outside the outboard containment isolation boundary. The UFSAR will be revised.

N-42: Check Valve 2-11-17

This check valve should not be in the UFSAR or the Technical Specifications. This check valve is not considered a containment isolation boundary. The UFSAR will be revised.

N-205A: Globe Valve (Instrument Line)

The globe valve for this penetration is considered a containment isolation boundary and is identified in UFSAR Table 7.3.1. This boundary is included in the Type A test as identified in UFSAR Table 7.3.1. However, this line is not local leak rate tested and it has been our practice to not list instrument lines in Technical Specification Table 3.7.4 ("Primary Containment Testable Isolation Valves").

As discussed in the Standard Review Plan (NUREG-0800), Section 6.2.6, "Containment Leakage Testing", "leak testing of instrumentation lines that penetrate containment may be done in conjunction with either the local leak rate tests or the containment integrated leak rate test. Instrumentation lines that are not locally leak tested should not be isolated from the containment atmosphere during the performance of the CILRT."

N-236B: Two Check Valves

These two check valves are considered containment isolation boundaries and have been added to Technical Specification Table 3.7.4 for penetration N-236B, page 187b. The UFSAR is correct in that it states that no local leak rate tests are performed on these two check valves. This line discharges below the minimum torus level and would not need to be tested per 10 CFR 50, Appendix J, Section III.C.3.

Question

8. "For the following penetrations and listed valves, please explain why these valves appear in the current and proposed TS Table 3.7.4, but are not listed in UFSAR Table 7.3.1. Please discuss whether a UFSAR revision is appropriate.

- N-225: MO-13-39
- N-227: MO-23-57"

Response

N-225: MO-13-39; RCIC Pump Suction

UFSAR Table 7.3.1 will be revised to include valve MO-13-39. MO-13-39 is the outboard containment isolation boundary for penetration N-225 and should be identified in UFSAR Table 7.3.1 as not requiring a local leak rate test. This line discharges below the minimum torus water level and is not required to be tested per 10 CFR 50, Appendix J, Section III.C.3.

N-227: MO-23-57; HPCI Pump Suction

UFSAR Table 7.3.1 will be revised to include valve MO-23-57. MO-23-57 is the outboard containment isolation boundary for penetration N-227 and should be identified in UFSAR Table 7.3.1 as not requiring a local leak rate test. This line discharges below the minimum torus water level and is not required to be tested per 10 CFR 50, Appendix J, Section III.C.3.

Question

9. "For the footnote on proposed TS page 185, please specify the refueling outage referred to in the footnote. For each penetration affected by the footnote, please revise Table 3.7.4, as appropriate, to indicate which containment isolation valves will be subjected to Type C testing prior to the "next refueling outage.""

Response

The footnote on page 185 should read "effective isolation boundary for this penetration following the 8th refueling outage on Unit 3" for penetration 16A and 16B. This footnote has been revised on attached Technical Specification page 185. Additionally, penetration 13A and 13B have been revised to reflect the removal of this footnote. The modification referred to in the footnote will permit Type C testing of the penetrations.

Question

10. "Contrary to the discussion on page 8 of the October 1986 submittal, the facility's updated final safety analysis report indicates that valve MO-12-15 is a gate valve in Table 7.3.1. Please discuss whether a revision to the UFSAR is appropriate."

Response

UFSAR Table 7.3.1 will be revised to indicate that MO-12-15 (penetration N-14) is a gate valve for Unit 2 and a globe valve for Unit 3.

Question

11. "Proposed footnote (15) appears to exclude from Type C testing the following stop check valves: 13-9, 23-12, 23-13, and 13-10. These valves, however, are listed as primary containment isolation valves in both UFSAR Table 7.3.1 and in proposed TS Table 3.7.4. Please provide additional justification to support exclusion of these valves from local leak rate testing."

Response

As stated in Note 15, the stop check valves serve as block valves to allow testing of the outboard check valve. As described below, these valves are not considered testable containment isolation boundaries, and therefore do not require Type C testing.

For penetration N-217B, Check Valves 23-12 and 13-9 are not considered testable containment isolation boundaries. As shown in the attached diagram, these valves are on separate branch lines that connect to penetration N-217B (see Figure 1).

For penetration N-217B, HPCI portion, the inboard testable containment isolation boundary is MO-23-4244a and the outboard testable isolation boundary is Check Valve 23-65.

For penetration N-217B, RCIC portion, the inboard testable containment isolation boundary is MO-13-4244 and the outboard testable isolation boundary is Check Valve 13-50.

For penetrations N-212 and N-214, the lines discharge below the minimum torus water level and do not need to be tested in accordance with 10 CFR 50, Appendix J, Section III.C.3.

Check Valve 13-10 is not considered a testable containment isolation boundary and is listed in the UFSAR as not requiring a local leak rate test. This line discharges below the minimum torus water level and therefore does not need to be Type C tested per 10 CFR 50, Appendix J, Section III.C.3.

Check Valve 23-13 is not considered a testable containment isolation boundary and is listed in the UFSAR as not requiring a local leak rate test. This line discharges below the minimum torus water level and therefore does not need to be Type C tested per 10 CFR 50, Appendix J, Section III.C.3.

Question

12. "For valve MO-23-31 (Unit 2, penetration N-233) and valve MO-23-31 (Unit 3, penetration N-235), proposed TS Table 3.7.4 assigns footnote (17) which would exclude these valves from Type C testing given that the associated lines discharge below the minimum torus water level. This does not appear to be consistent with the information provided in an April 21, 1988 letter which requested certain exemptions from Appendix J requirements. In the April 1988 letter, valves MO-23-31 for Units 2 and 3 were discussed as gate valves which would be tested in the reverse direction, and were not discussed among the valves whose associated lines terminated below the minimum torus water level. Please address this apparent discrepancy and explain whether

footnote (10) for reverse direction testing of gate valves or footnote (17) is more appropriate."

Response

Note 17 is more appropriate. Further review has determined that this line discharges below the minimum torus water level and would not require local leak rate testing per 10 CFR 50, Appendix J, Section III.C.3.

Question

13. "Footnote (5) on proposed TS page 188 would delete the reference to testing during each operating cycle. Please provide a justification for this change."

Response

The proposed wording change has been deleted in the attached Technical Specification page 188.

Question

14. "The following proposed footnotes refer to Appendix J exemptions: (10), (13), (16), (17), (18), and (21). As discussed in the staff's safety evaluation related to Appendix J exemptions, issued November 21, 1990, Type C testing in the proposed manner do not constitute Appendix J exemptions. Please revise these footnotes if appropriate."

Response

Notes 10, 13, 16, 17, 18, and 21 have been revised on the attached Technical Specification pages to conform with the staff's safety evaluation related to Appendix J exemptions, issued November 21, 1990 (Reference 6).

Question

15. "Footnote (10) applies to reverse direction testing of gate valves given that the stem force is greater than ten times the test differential pressure normal force. Do valves MO-23-31 for Units 2 and 3 need to be added to the list of valves in the proposed footnote? Do valves MO-10-31A/B belong in the list, given that the April 1988 submittal indicated that the stem force was only eight times greater than the differential pressure normal force? Does valve MO-10-32 belong in the list, given that the April 1988 submittal did not appear to include this valve in its discussion of applicable gate valves?"

Response

Further review has shown that the lines for valves MO-23-31 for Units 2 and 3 discharge below the minimum suppression

pool water level and are not required to be Type C tested in accordance with 10 CFR 50, Appendix J, Section III.C.3. Therefore, Note 17 would apply to these valves.

Note 10 has been revised to clarify that the stem force for valves MO-10-31 A and B is 7.97 times greater that the test differential pressure.

Note 10 does apply to valve MO-10-32 for Unit 2. MO-10-32 and its associated outboard containment isolation valve MO-10-33 have been abandoned in place since the RHR head spray line is no longer in use. The valves are adminstratively controlled in the closed position and have their power supply breakers locked open. Note 10 has been revised to indicate that valve MO-10-32 is only for Unit 2.

For Unit 3, both MO-10-32 and MO-10-33 have been removed by a modification. The penetration has been capped and is included in the Type A ILRT and is Type B tested.

Question

16. "Footnote (11) applies to globe valves tested in the reverse direction. The following valves listed in proposed footnote (11) are shown as diaphragm control valves in UFSAR Table 7.3.1: AO-4240, AO-5240, AO-4247, AO-5247, AO-20-82, AO-20-94, AO-2509, AO-3509, AO-2-39, AO-2-316, AO-2513, and AO-3513. Please provide verification that the footnote is applicable to these valves."

Response

Note 11 is applicable to these valves. The corresponding valves identified in UFSAR Table 7.3.1 should be specified as globe valves. The UFSAR will be corrected.

Question

17. "Footnote (16) applies to gate valves tested in the reverse direction. The normal force ratio values given in the proposed footnote differ from the values stated in the April 1988 submittal. Please verify the accuracy of the values given in the proposed footnote, or revise as appropriate."

Response

Note 16 has been revised to reflect the accurate values for gate valves MO-14-70, MO-23-58 and MO-13-41 (penetrations N-225 and N-227). In accordance with 10 CFR 50 Appendix J, Section III.C.3, the associated lines with these valves discharge below minimum torus water level and therefore do not need to be local leak rate tested. Note 16 has been revised to remove reference to reverse direction testing.

Question

18. "Footnote 17 states that Section XI testing will be performed in lieu of Appendix J testing. Please discuss whether this implies that Section XI testing can be substituted for Appendix J testing, or revise the footnote as appropriate. In addition, footnote (17) states that the applicable valves do not serve a safety function. Please discuss whether the applicable valves are considered to be non-safety related, or revise the footnote as appropriate."

Response

Note 17 has been revised on the attached Technical Specification page 188b. Note 17 identifies valves that terminate below minimum suppression pool water level. Therefore, Type C testing is not required for these valves.

Question

19. "The second half of the last paragraph on proposed TS Bases page 192 is related to an Appendix J exemption to exclude MSIV measured leakage from the local leak rate test limit of 0.60 La. Staff review of the requested exemption is continuing. In the interim, the proposed addition to the TS Bases should be deferred."

Response

The proposed changes to Technical Specification page 192 concerning this issue have been deleted.

Question

20. "On proposed TS Bases page 192a, the licensee proposes to delete the following with respect to certain isolation valves that are tested by pressurizing the volume between the inboard and outboard isolation valves: "Additionally, the measured leak rate for such a test is conservatively assigned to both of the valves equally and not divided between the two." Please discuss whether this reflects a change in test methodology, and provide justification for the proposed deletion."

Response

Test methodology has not changed. The deleted words refer to the method used in calculating maximum pathway leakage. Minimum pathway leakage, which is calculated differently, is also recorded but is not discussed in the original Technical Specifications. The description of the method for testing maximum pathway leakage was removed to avoid confusion between the two testing methodologies. It is noted that the

Standard Technical Specifications (NUREG-0123, Revision 3) do not contain testing methodologies.

Question

21. "Please indicate the proposed effective date for the requested license amendments, taking into consideration procedural and administrative changes which may be needed to implement the associated TS changes."

Response

The proposed license amendment with the attached revised Technical Specifications pages may become effective immediately. PECo currently intends to perform a consolidation of the material related to the Appendix J program at PBAPS into a single reference document in order to provide quicker and easier access to Appendix J information. As a part of this review, information relating to Appendix J contained in the PBAPS Technical Specifications, UFSAR and plant procedures will be consolidated into a single document, and discrepancies will be identified and resolved. Upon completion of this review and consolidation, a Technical Specification Amendment will be submitted to remove the valve tables related to 10 CFR 50, Appendix J from the Technical Specifications. The consolidated list will then be placed into the UFSAR.

ATTACHMENT B

LIMITING CONDITIONS FOR OPERATION | SURVEILLANCE REQUIREMENTS

3.7.A Primary Containment (Cont'd.) | 4.7.A Primary Containment (Cont'd.)

e. Except for the initial ILRT, all ILRT's shall be performed without any preliminary leak detection surveys and leak repairs immediately prior to the test.

LIMITING CONDITIONS FOR OPERATION

3.7.A Primary Containment (Cont'd.)

3. Pressure Suppression Chamber-Reactor Building Vacuum Breakers

a. Except as specified in 3.7.A.3.b below, two pressure suppression chamber-reactor building vacuum breakers shall be operable at all times when primary containment integrity is required. The setpoint of the differential pressure instrumentation which actuates the pressure suppression chamber-reactor building vacuum breakers shall be 0.5 ± 0.25 psid.

b. From and after the date that one of the pressure suppression chamber-reactor building vacuum breakers is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless such vacuum breaker is sooner made operable provided that the repair procedure does not violate primary containment integrity.

4. Drywell-Pressure Suppression Chamber Vacuum Breakers

a. When primary containment is required, all drywell-suppression chamber vacuum breakers shall be operable and positioned in the fully closed position (except during testing) except as specified in 3.7.A.4.b and c below.

b. Drywell-suppression chamber vacuum breaker(s) may be "not fully seated" as shown by position indication if testing confirms that the bypass area is less than or equivalent to a one-inch diameter hole. Testing shall be initiated withing 8 hours of initial detection of a "not fully seated" position

SURVEILLANCE REQUIREMENTS

4.7.A Primary Containment (Cont'd.)

h. Drywell Surfaces

The interior surfaces of the drywell and torus shall be visually inspected each operating cycle for evidence of deterioration. In addition, the external surfaces of the torus below the water level shall be inspected on a routine basis for evidence of torus corrosion or leakage.

3. Pressure Suppression Chamber-Reactor Building Vacuum Breakers

a. The pressure suppression chamber-reactor building vacuum breakers and associated instrumentation including setpoint shall be checked for proper operation every refueling outage.

4. Drywell-Pressure Suppression Chamber Vacuum Breakers

a. Each drywell-suppression chamber vaccuum breaker shall be exercised through an opening-closing cycle once a month.

b. When it is determined that a vacuum breaker is inoperable for opening at a time when operability is required, all other operable vacuum breakers shall be exercised immediately and every 15 days thereafter until the inoperable vacuum breaker has been returned to normal service.

c. Once per operating cycle each vacuum breaker shall be visually inspected

TABLE 3.7.4

PRIMARY CONTAINMENT TESTABLE ISOLATION VALVES

Pen No.		Notes
7A to D	A0-2-80A to D	1,2,3,4,5,9,11
	A0-2-86A to D	1,2,3,4,5
8	M0-2-74	1,2,4,5,9,10
	M0-2-77	1,2,4,5
9A	M0-23-19; M0-2-38A	1,2,4,5
	Check Valves 2-28A and 2-96A	1,2,4,5
9B	M0-13-21; M0-2-38B; M0-12-68	1,2,4,5
	Check Valves 2-28A and 2-96B	1,2,4,5
10	M0-13-15	1,2,4,5,9,10
	M0-13-16	1,2,4,5
11	M0-23-15	1,2,4,5,9,10
	M0-23-16	1,2,4,5
	A0-4807 (Unit #2)	1,2,4,5
12	M0-10-18;	1,2,4,5,9,10
	M0-10-17	1,2,4,5
13A	M0-10-25B; A0-10-46B; A0-10-163B	1,2,4,5
13B	M0-10-25A; A0-10-46A; A0-10-163A	1,2,4,5
14	M0-12-15 (Unit #2)	1,2,4,5,9,10
	M0-12-15 (Unit #3)	1,2,4,5,9,11
	M0-12-18	1,2,4,5
16A	M0-14-11B; MO-14-12B	1,2,4,5
	(M0-14-12B; A0-14-13B; A0-14-15B)*	(1,2,4,5)*
16B	M0-14-11A; M0-14-11B	1,2,4,5
	(M0-14-12A; A0-14-13A; A0-14-15A)*	(1,2,4,5)*
17	M0-10-32	1,2,4,5,9,10
	M0-10-33	1,2,4,5
18	A0-20-82	1,2,4,5,9,11
	A0-20-83	1,2,4,5
19	A0-20-94	1,2,4,5,9,11
	A0-20-95	1,2,4,5
21	Service Air System Inner Globe Valve	1,2,4,5,9,11
	Service Air System Outer Globe Valve	1,2,4,5

* Effective isolation boundary for this penetration following the 8th Refueling Outage on Unit 3.

TABLE 3.7.4

PRIMARY CONTAINMENT TESTABLE ISOLATION VALVES

Pen No.		Notes
205A	A0-2502B (Unit #2); A0-3502B (Unit #3)	1,2,4,5,9,22
	Check Valve 9-26B	1,2,4,5
210A	M0-10-34B	1,2,4,5,9,11
	Check Valve 10-19B,D	17
210B	M0-10-34A	1,2,4,5,9,11
	Check Valve 10-19A,C	17
211A	M0-10-38B	1,2,4,5,9,11
	M0-10-39B; M0-10-34B; Check Valve	1,2,4,5
	SV-4951B (Unit #2); SV-5951B (Unit #3)	1,2,4,5
211B	M0-10-38A	1,2,4,5,9,11
	M0-10-39A; M0-10-34A; Check Valve	1,2,4,5
	SV-4951A (Unit #2); SV-5951A (Unit #3)	1,2,4,5
212,	A0-4240 (Unit #2); A0-5240 (Unit #3)	1,2,4,5,9,11
214,	A0-4241 (Unit #2); A0-5241 (Unit #3)	1,2,4,5
217B	A0-4247 (Unit #2); A0-5247 (Unit #3)	1,2,4,5,9,11
	A0-4248 (Unit #2); A0-5248 (Unit #3)	1,2,4,5
	M0-4244 (Unit #2); M0-5244 (Unit #3)	1,2,4,5,14
	M0-4244A (Unit #2); M0-5244A (Unit #3)	1,2,4,5,14
	Check Valve 13-50; Check Valve 23-65	1,2,4,5
	Check Valve 13-9; Check Valve 23-12	15
216	Check Valve 23-62	17
218A	A0-2968 (Unit #2); A0-3968 (Unit #3)	1,2,4,5
	Check Valve	1,2,4,5
218B	SV-2671A (Unit #2); SV-3671A (Unit #3)	1,2,4,5
	SV-2978A (Unit #2); SV-3978A (Unit #3)	1,2,4,5
218C	ILRT System-Two Globe Valves	1,2,4,5,13
219	A0-2511 (Unit #2); A0-3511 (Unit #3)	1,2,4,5,9,12
	A0-2512 (Unit #2); A0-3512 (Unit #3)	1,2,4,5
	A0-2513 (Unit #2); A0-3513 (Unit #3)	1,2,4,5,9,11
	A0-2514 (Unit #2); A0-3514 (Unit #3)	1,2,4,5
	SV-2671F (Unit #2); SV-3671F (Unit #3)	1,2,4,5
	SV-2978F (Unit #2); SV-3978F (Unit #3)	1,2,4,5
	SV-4960A (Unit #2); SV-5960A (Unit #3)	1,2,4,5
	SV-4961A (Unit #2); SV-5961A (Unit #3)	1,2,4,5
	SV-4966A (Unit #2); SV-5966A (Unit #3)	1,2,4,5
	SV-8101 (Unit #2); SV-9101 (Unit #3)	1,2,4,5

TABLE 3.7.4

PRIMARY CONTAINMENT TESTABLE ISOLATION VALVES

Pen No.		Notes
221	Check Valve 13-38	17
	Check Valve 13-10	15
223	Check Valve 23-56	17
	Check Valve 23-13	15
224	MO-14-26A; Check Valve 14-66A; (Unit #2)	17
	Check Valve 14-66C; 3 Check Valves (Unit #2)	17
225	MO-14-71; MO-13-39	17
	MO-13-41; MO-14-70	1,2,4,5,9,16
226A to D	MO-10-13A to D; RV-10-72A to D	17
227	MO-23-57	17
	MO-23-58	1,2,4,5,9,16
228A to D	MO-14-7A to D	17
229	Check Valve 14-66B (Unit #2)	17
	2 Check Valves (Unit #2 only)	17
	Check Valve 14-66D (Unit #2)	17
230	Check Valve 13-29	17
233	MO-23-31 (Unit #2)	17
234	MO-14-26B (Unit #2)	17
	2 Check Valves (Unit #2)	17
	PASS Check Valve (Unit #2)	17
234A	MO-14-26B (Unit 3)	17
	3 Check Valves (Unit #3)	17
234B	MO-14-26A (Unit #3)	17
	2 Check Valves (Unit #3)	17
	Pass & Check Valve (Unit #3)	17
235	MO-23-31 (Unit #3)	17
236A	Check Valve 14-66B (Unit #3)	17
	Check Valve 14-66D (Unit #3)	17
236B	Check Valve 14-66A (Unit #3)	17
	Check Valve 14-66C (Unit #3)	17
	2 Check Valves (Unit #3)	17

NOTES FOR TABLES 3.7.2 THROUGH 3.7.4

(1) Minimum test duration for all valves and penetrations listed is one hour.

(2) Test pressures of at least 49.1 psig for all valves and penetrations except MSIV's which are tested at 25 psig.

(3) MSIV's acceptable leakage is 11.5 scfh/valve of air.

(4) The total acceptable leakage for all valves and penetrations other than the MSIV's is 0.60 La.

(5) Local leak tests on all testable isolation valves shall be performed each operating cycle but in no case at intervals greater than 2 years.

(6) Local leak tests on all testable penetrations shall be performed each operating cycle but in no case at intervals greater than 2 years.

(7) Personnel Air Locks shall be tested at 6-month intervals.

(8) The personnel air locks are tested at 49.1 psig.

(9) Identifies isolation valves that may be tested by applying pressure between the inboard and outboard valves.

(10) Gate valves are tested in reverse direction. Test acceptable since the normal force between the seat and the disc generated by stem action alone is greater than ten (10) times the normal force induced by test differential pressure except for valves MO-10-31A,B which is 7.97. This applies to the following valves:

MO-2-74
MO-13-15
MO-23-15
MO-10-32 (Unit #2)
MO-10-31A, B
MO-10-18
MO-12-15 (Unit #2)

NOTES FOR TABLES 3.7.2 THROUGH 3.7.4 (CONT'D)

(11) Globe valve which may be tested in reverse direction. Test acceptable since test pressure is applied under the valve seat. This applies to the following valves:

AO-02-80A to D	M0-12-15 (Unit #3)
A0-4240 (5240)	A0-20-94
A0-4247 (5247)	A0-2509 (3509)
M0-10-38A and B	A0-2-39
M0-10-34A and B	A0-2-316
A0-20-82	A0-2513 (3513)

Inner manual valve on penetration N-21.

(12) Butterfly valve tested in reverse direction. Test acceptable since valve is equipped with inflatable seals which provide equivalent bi-directional sealing. This applies to the following valves:

A0-2520 (3520)	A0-2506 (3506)
A0-2511 (3511)	A0-2521B (3521B)
A0-2502A (3502A)	

(13) Manual globe valves tested in reverse direction. This applies to valves on the following penetrations:

N-32C	(two valves)
N-218C	(two valves)
N-32D	(two valves)

These valves are locked closed except during ILRT's.

(14) Gate valve utilized for containment isolation in both directions. Test performed only in one direction. Valve normal force ratio is 17.9. Leakage path is between separate torus penetrations only.

NOTES FOR TABLES 3.7.2 THROUGH 3.7.4 (CONT'D)

(15) These stop-check valves serve as block valves to allow testing of the outboard check valve. The check function of these valves is not leak tested. This applies to the following valves:

Check Valve 13-9
Check Valve 23-12
Check Valve 23-13
Check Valve 13-10

(16) Although these valves do not meet the "factor of ten" criteria described in Note 10, substantial margin does exist as indicated below:

Valve	Normal Force Ratio
MO-14-70	4.48
MO-23-58	1.76
MO-13-41	3.07

These valves will remain covered following all accidents. Leakage in the proper direction through all valves is included in the Type A test results. Leakage through MO-23-58 would be into a closed system designed to handle contaminated fluids following an accident per NUREG-0737, Item III.D.1.1.

(17) These lines discharge below the minimum torus water level and will thus have a water seal after an accident. Therefore Type C testing of these valves is not required per Appendix J to 10 CFR 50, Section III.C.3.

NOTES FOR TABLES 3.7.2 THROUGH 3.7.4 (CONT'D)

(18) Individual valves on the CRD hydraulic control units are not Typed C tested. Leakage is tested during the Type A and reactor vessel hydrostatic testing.

(19) The TIP shear valves are not Type C tested because squib detonation is required for closure. This is an exemption to 10 CFR 50, Appendix J. These valves are located in small diameter (3/8") tubing lines. The possible leakage paths which include these valves are tested during the Type A tests.

(20) Explosive valve may be tested in reverse direction. Valve is normally closed and opens only on SLCS actuation.

(21) Inboard manual gate valve tested in the reverse direction. Valve is locked closed except during refueling outages when containment breathing air is required.

(22) Butterfly valve tested in reverse direction. Test acceptable since valve provides equivalent bi-directional sealing. This applies to valves AO-2502B and AO-3502B.

3.7.A & 4.7.A BASES (Cont'd.)

The primary containment leak rate test frequency is based on maintaining adequate assurance that the leak rate remains within the specification. The leak rate test frequency is based on the NRC guide for developing leak rate testing and surveillance of reactor containment vessels.

The penetration and air purge piping leakage test frequency, along with the containment leak rate tests, is adequate to allow detection of leakage trends. Whenever a bolted double-gasketed penetration is broken and remade, the space between the gaskets is pressurized to determine that the seals are performing properly. It is expected that the majority of the leakage from valves, penetrations and seals would be into the reactor building. However, it is possible that leakage into other parts of the facility could occur. Such leakage paths that may affect significantly the consequences of accidents are to be minimized.

The Main Steamline Isolation Valves (MSIV's) are angled in the main steam lines in order to afford better sealing in the direction of accident pressure. This being the case, local leak rate testing at a reduced pressure of 25 psig results in a conservative determination of the actual leakage through these valves. The 11.5 scf/hr acceptance criteria is effective and reliable in determining the status of the MSIV's and in verifying that substantial degradation of these valves has not occurred since the last Integrated Leakage Rate Test (ILRT). The 11.5 scf/hr criteria is likewise conservative because of the reduced test pressure. Additionally, the leakage path through the MSIV's is included during an ILRT; and therefore, the effect of this leakage on containment integrity is taken into account.

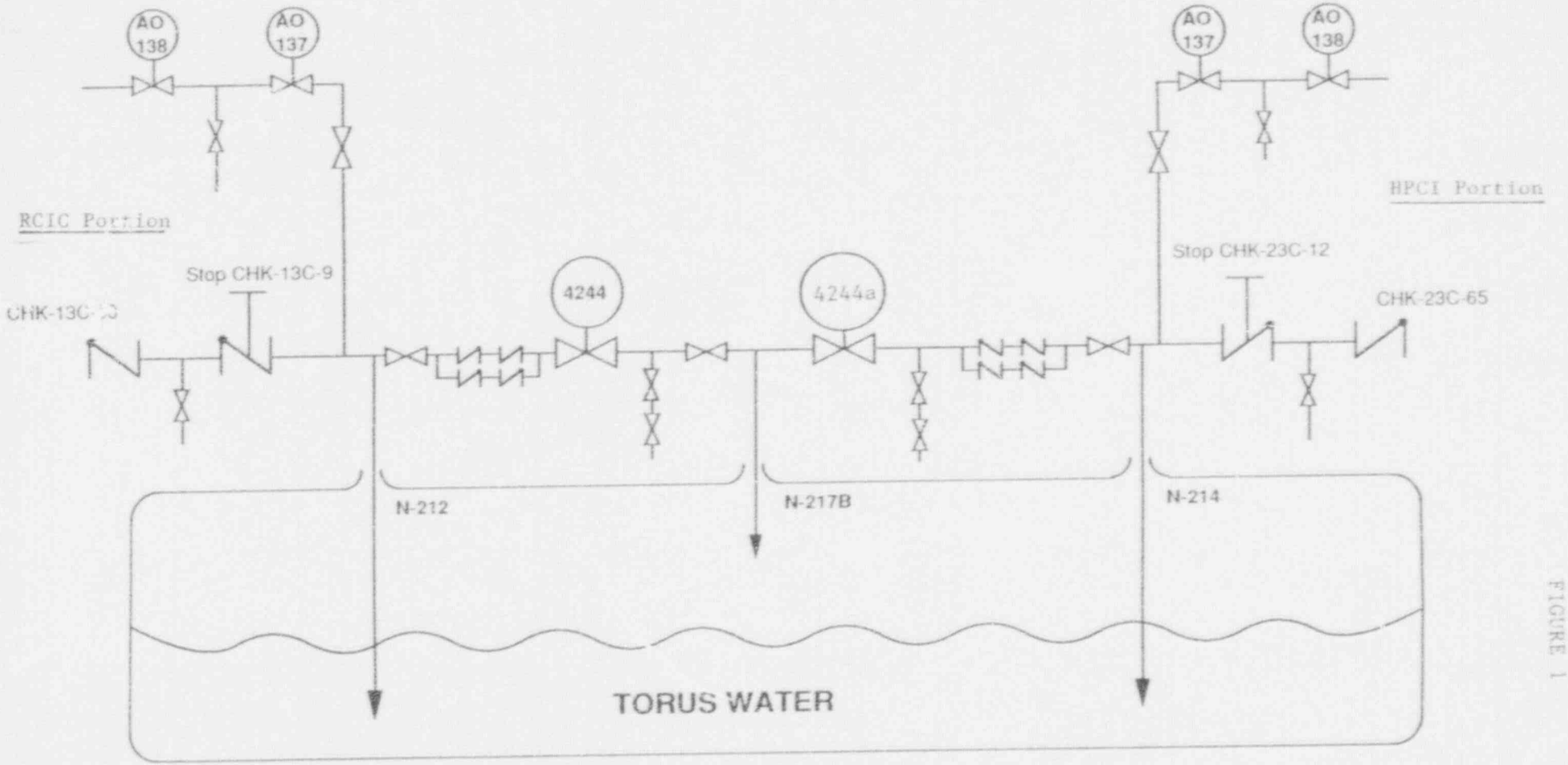
AO 138
AO 137
AO 137
AO 138
RCIC Portion
HPCI Portion
Stop CHK-13C-9
Stop CHK-23C-12
CHK-13C-
CHK-23C-65
4244
4244a
N-212
N-217B
N-214
TORUS WATER

FIGURE 1