Attachment I to JPN-96-016

PROPOSED TECHNICAL SPECIFICATION CHANGES

(JPTS-96-003)

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

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Amendment No. ~~7, 22, 93, 130~~,

LIST OF TABLES

4.0 BASES

A. This specification provides that surveillance activities necessary to insure the Limiting Conditions for Operation are met and will be performed during the OPERATIONAL CONDITIONS (modes) for which the Limiting Conditions for Operation are applicable. Provisions for additional surveillance activities to be performed without regard to the applicable OPERATIONAL CONDITIONS (modes) are provided in the individual Surveillance Requirements.

B. Specification 4.0.B establishes the limit for which the specified time interval for Surveillance Requirements may be extended. It permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operating conditions that may not be suitable for conducting the surveillance (e.g., transient conditions or other ongoing surveillance or maintenance activities). It also provides flexibility to accommodate the length of a fuel cycle for surveillances that are performed at each refueling outage and are specified with a 24 month surveillance interval. It is not intended that this provision be used repeatedly as a convenience to extend surveillance intervals beyond that specified for surveillances that are not performed during refueling outages. The limitation of this specification is based on engineering judgement and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the Surveillance Requirements. The limit on extension of the normal surveillance interval ensures that the reliability confirmed by surveillance activities is not significantly reduced below that obtained from the specified surveillance interval. The exceptions to Specification 4.0.B are those surveillances for which the 25% extension of the interval specified does not apply. These exceptions are stated in the individual Technical Specifications. The requirements of regulations take precedence over the Technical Specifications. Therefore, when a test interval is specified in the regulations, the test interval cannot be extended under the provisions of 4.0.B, and the surveillance requirement will be identified as an exception. An example of an exception when the test interval is not specified in the regulations is the Note in Specification 6.20, "Primary Containment Leakage Rate Testing Program," which states "The provisions of Specification 4.0.B do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program." This exception is provided because the program already includes provisions for extension of intervals.

C. This specification establishes the failure to perform a Surveillance Requirement within the allowed surveillance interval, defined by the provisions of Specification 4.0.B, as a condition that constitutes a failure to meet the OPERABILITY requirements for a Limiting Condition for Operation. Under the provisions of this specification, systems and components are assumed to be OPERABLE when Surveillance Requirements have been satisfactorily performed within the specified time interval. However, nothing in this provision is to be construed as implying that systems or components are OPERABLE when they are found or known to be inoperable although still meeting the Surveillance Requirements. This specification also clarifies that the ACTION requirements are applicable when Surveillance Requirements have not been completed within the allowed surveillance interval and that the time limits of the ACTION requirements apply from the point in time it is identified that a surveillance has not been performed and not at the time that the allowed surveillance was exceeded. Completion of the Surveillance Requirement within the allowable outage time limits of the ACTION requirements restores compliance with the requirements of Specification 4.0.C. However, this does not negate the fact that the failure to have performed the surveillance within the allowed surveillance interval, defined by the provisions of Specification 4.0.B, was a violation of the OPERABILITY requirements of a Limiting Condition for Operation that is subject to enforcement action. Further, the failure to

4.0 BASES - Continued

C. Continued

perform a surveillance within the provisions of Specification 4.0.B is a violation of a Technical Specification requirement and is, therefore, a reportable event under the requirements of 10 CFR 50.73(a)(2)(i)(B) because it is a condition prohibited by the plant Technical Specifications.

If the allowable outage time limits of the ACTION requirements are less than 24 hours or a shutdown is required to comply with ACTION requirements, a 24-hour allowance is provided to permit a delay in implementing the ACTION requirements. This provides an adequate time limit to complete Surveillance Requirements that have not been performed. The purpose of this allowance is to permit the completion of a surveillance before a shutdown is required to comply with ACTION requirements or before other remedial measures would be required that may preclude completion of a surveillance. The basis for this allowance includes consideration for plant conditions, adequate planning, availability of personnel, the time required to perform the surveillance and the safety significance of the delay in completing the required surveillance. This provision also provides a time limit for the completion of Surveillance Requirements that become applicable as a consequence of OPERATIONAL CONDITION (mode) changes imposed by ACTION requirements and for completing Surveillance Requirements that are applicable when an exception to the requirements of Specification 4.0.C is allowed. If a surveillance is not completed within the 24-hour allowance, the time limits of the ACTION requirements are applicable at that time. When a surveillance is performed within the 24-hour allowance and the Surveillance Requirements are not met, the time limits of the ACTION requirements are applicable at the time the surveillance is terminated.

C. Continued

Surveillance Requirements do not have to be performed on inoperable equipment because the ACTION requirements define the remedial measures that apply. However, the Surveillance Requirements have to be met to demonstrate that inoperable equipment has been restored to OPERABLE status.

D. This specification establishes the requirement that all applicable surveillances must be met before entry into an OPERATIONAL CONDITION or other condition of operation specified in the Applicability statement. The purpose of this specification is to ensure that system and component OPERABILITY requirements or parameter limits are met before entry into an OPERATIONAL CONDITION or other specified condition associated with plant shutdown as well as startup.

Under the provisions of this specification, the applicable Surveillance Requirements must be performed within the specified surveillance interval to ensure that the Limiting Conditions for Operation are met during initial plant startup or following a plant outage.

When a shutdown is required to comply with ACTION requirements, the provisions of this specification do not apply because this would delay placing the facility in a lower CONDITION of operation.

3.7 (cont'd)

(2) During testing which adds heat to the suppression pool, the water temperature shall not exceed 10°F above the normal power operation limit specified in (1) above. In connection with such testing, the pool temperature must be reduced to below the normal power operation limit specified in (1) above within 24 hours.

(3) The reactor shall be scrammed from any operating condition if the pool temperature reaches 110°F. Power operation shall not be resumed until the pool temperature is reduced below the normal power operation limit specified in (1) above.

(4) During reactor isolation conditions, the reactor pressure vessel shall be depressurized to less than 200 psig at normal cooldown rates if the pool temperature reaches 120°F.

2. Primary containment integrity shall be maintained at all times when the reactor is critical or when the reactor water temperature is above 212°F, and fuel is in the reactor vessel, except while performing low power physics tests at atmospheric pressure at power levels not to exceed 5 MWt.

4.7 (cont'd)

2. a. Perform required visual examination and leakage rate testing of the Primary Containment in accordance with the Primary Containment Leakage Rate Testing Program.

b. Demonstrate leakage rate through each MSIV is $\leq$ 11.5 scfh when tested at $\geq$ 25 psig. The testing frequency is in accordance with the Primary Containment Leakage Rate Testing Program.

c. Once per 24 months, demonstrate the leakage rate of 10AOV-68A,B for the Low Pressure Coolant Injection system and 14AOV-13A,B for the Core Spray system to be less than 11 scfm per valve when pneumatically tested at $\geq$ 45 psig at ambient temperature, or less than 10 gpm per valve if hydrostatically tested at $\geq$ 1000 psig at ambient temperature.

Pages 167 through 175 Have Been Deleted

4.7 BASES (cont'd)

assumption of no holdup in the secondary containment, resulting in a direct release of fission products from the primary containment through the filters and stack to the environs. Therefore, the specified primary containment leak rate and filter efficiency are conservative and provide additional margin between expected offsite doses and 10CFR100 guidelines.

The leakage rate testing program was originally based on NRC guidelines for development of leak rate testing and surveillance schedules for reactor containment vessels. Containment structural integrity is currently verified with visual inspections and containment leak tightness is verified by the leakage rate surveillance testing described in the JAFNPP Primary Containment Leakage Rate Testing Program.

The following are the exemptions to 10 CFR 50 Appendix J, Option A, that have been approved by the NRC, and remain applicable to Option B of 10 CFR 50, Appendix J:

1 The Type C exceptions listed on Table 4.7-2, "Exception to Type C Test", as of the date of issuance of Amendment 194 (July 29, 1993).

2. Valves which are sealed with fluid from a seal system, such as the liquid in the suppression chamber are not required to be Type C tested. This exemption was approved by the NRC in the original Technical Specifications (SR 4.7.A.2.c(3)).

3. The MSIVs are tested at a pressure less than P_a and $\geq$ 25 psig, with a leakage rate acceptance criteria of $\leq$ 11.5 scfh per valve. This exemption was approved by the NRC in the original Technical Specifications (Table 4.7-2).

The Program as implemented meets the requirements of Option B of 10 CFR 50 Appendix J (16) and Regulatory Guide 1.163 (13), with the exception stated in Specification 6.20. This exception applies to valves currently installed in this configuration, and does not apply to new installations. This exception is consistent with TS Table 4.7-2, previously contained in the TS, which allows reverse direction testing of valves as an exception to the requirements of the draft Appendix J, on the basis that pressurization direction was not a requirement at the time of plant design.

B. Standby Gas Treatment System and
C. Secondary Containment

Initiating reactor building isolation and operation of the Standby Gas Treatment System to maintain at least a 1/4 in. of water vacuum within the secondary containment provides an adequate test of the operation of the reactor

Pages 198 through 213 Have Been Deleted

6.19 POSTACCIDENT SAMPLING PROGRAM

A program shall be established, implemented, and maintained which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines and particulates in plant gaseous effluents, and containment atmosphere samples under accident conditions. The program shall include the following:

A) Training of personnel,

B) Procedures for sampling and analysis,

C) Provisions for maintenance of sampling and analysis

6.20 PRIMARY CONTAINMENT LEAKAGE RATE TESTING PROGRAM

A program shall be established to implement the leakage rate testing of the Primary Containment as required by 10 CFR 50.54 (o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program", dated September 1995, as modified by the exception that Type C testing of valves not isolable from the containment free air space may be accomplished by pressurization in the reverse direction provided that testing in this manner provides equivalent or more conservative results than testing in the accident direction. If potential atmospheric leakage paths (e.g., valve stem packing) are not subjected to test pressure, the portions of the valve not exposed to test pressure shall be subjected to leakage rate measurement during regularly scheduled Type A testing. A list of these valves, the leakage rate measurement method, and the acceptance criteria, shall be contained in the Program.

A. The peak Primary Containment internal pressure for the design basis loss of coolant accident (P_a), is 45 psig.

B. The maximum allowable Primary Containment leakage rate (L_a), at P_a, shall be 1.5% of primary containment air weight per day.

C. The leakage rate acceptance criteria are:

1. Primary containment leakage rate acceptance criteria is $\leq$ 1.0 L_a. During unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $\leq$ 0.60 L_a for the Type B and Type C tests and $\leq$ 0.75 L_a for the Type A tests;

2. Airlock testing acceptance criteria are:

   a. Overall airlock leakage rate is $\leq$ 0.05 L_a when tested at $\geq$ P_a,

   b. For each door seal, leakage rate is $\leq$ 120 scfd when tested at $\geq$ P_a.

3. MSIV leakage rate acceptance criteria is $\leq$ 11.5 scfh for each MSIV when tested at $\geq$ 25 psig.

D. The provisions of Specification 4.0.B do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program.

E. The provisions of Specification 4.0.C are applicable to the Primary Containment Leakage Rate Testing Program.

7.0 REFERENCES

(1) E. Janssen, "Multi-Rod Burnout at Low Pressure," ASME Paper 62-HT-26, August 1962.

(2) K.M. Backer, "Burnout Conditions for Flow of Boiling Water in Vertical Rod Clusters," AE-74 (Stockholm, Sweden), May 1962.

(3) FSAR Section 11.2.2.

(4) FSAR Section 4.4.3.

(5) I.M. Jacobs, "Reliability of Engineered Safety Features as a Function of Testing Frequency," Nuclear Safety, Vol. 9, No. 4, July-August 1968, pp 310-312.

(6) Deleted

(7) I.M. Jacobs and P.W. Mariott, APED Guidelines for Determining Safe Test Intervals and Repair Times for Engineered Safeguards - April 1969.

(8) Bodega Bay Preliminary Hazards Report, Appendix 1, Docket 50-205, December 28, 1962.

(9) C.H. Robbins, "Tests of a Full Scale 1/48 Segment of the Humbolt Bay Pressure Suppression Containment," GEAP-3596, November 17, 1960.

(10) "Nuclear Safety Program Annual Progress Report for Period Ending December 31, 1966, Progress Report for Period Ending December 31, 1966, ORNL-4071."

(11) Section 5.2 of the FSAR.

(12) TID 20583, "Leakage Characteristics of Steel Containment Vessel and the Analysis of Leakage Rate Determinations."

(13) Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program", dated September 1995.

(14) Section 14.6 of the FSAR.

(15) ASME Boiler and Pressure Vessel Code, Nuclear Vessels, Section III. Maximum allowable internal pressure is 62 psig.

(16) 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors, Option B - Performance Based Requirements", Effective Date October 26, 1995

(17) Deleted

Attachment II to JPN-96-016

REVISED SAFETY EVALUATION FOR PROPOSED TECHNICAL SPECIFICATION CHANGES (JPTS-96-003)

(Changes are identified by revision bars located in the right margin)

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

I. DESCRIPTION OF THE PROPOSED CHANGES

These proposed Technical Specification (TS) changes support adoption of the primary containment leakage rate testing requirements of Option B to 10 CFR 50, Appendix J (Option B), and clarify the numerical value of the allowable containment leakage rate (L_a) as 1.5 percent per day. The specific changes are as follows:

1. Page iv, Table of Contents, add 6.20, "Primary Containment Leakage Rate Testing Program" and "page 258e" to the Table of Contents.

2. Page vi, List of Tables, denote that Table 4.7-2, "Exception to Type C Tests," is deleted. The revised text reads:

   "4.7-2 (DELETED) 211"

3. Bases 4.0.B, page 30e, insert the following after the current discussion:

   "The exceptions to Specification 4.0.B are those surveillances for which the 25% extension of the interval specified does not apply. These exceptions are stated in the individual Technical Specifications. The requirements of regulations take precedence over the Technical Specifications. Therefore, when a test interval is specified in the regulations, the test interval cannot be extended under the provisions of 4.0.B, and the surveillance requirement will be identified as an exception. An example of an exception when the test interval is not specified in the regulations is the Note in Specification 6.20, "Primary Containment Leakage Rate Testing Program," which states "The provisions of Specification 4.0.B do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program." This exception is provided because the program already includes provisions for extension of intervals."

   Note: This change results in the last five lines of the second column being moved to Page 30f.

4. Pages 166 through 174, delete the following SRs:

   4.7.A.2.a (1) through (10),
   4.7.A.2.b (1), (2)
   4.7.A.2.c (1) through (5),
   4.7.A.2.e (1) through (6),
   4.7.A.2.f.

5. Page 166, insert the following new SRs:

   "4.7.A.2.a Perform required visual examination and leakage rate testing of the Primary Containment in accordance with the Primary Containment Leakage Rate Testing Program."

   4.7.A.2.b Demonstrate leakage rate through each MSIV is ≤ 11.5 scfh when tested at ≥ 25 psig. The testing frequency is in accordance with the Primary Containment Leakage Rate Testing Program.

6. Page 167, add note stating that pages 167 through 175 have been deleted. Add note under the page number stating "(Next Page is 176)."

7. Page 172, relocate SR 4.7.A.2.d (1) to page 166 and renumber as SR 4.7.A.2.c. Make editorial changes to improve readability. The revised SR reads:

   "4.7.A.2.c Once per 24 months, demonstrate the leakage rate of valves 10AOV-68A,B for the Low Pressure Coolant Injection system and 14AOV-13A,B for the Core Spray system to be less than 11 scfm per valve when pneumatically tested at ≥ 45 psig at ambient temperature, or less than 10 gpm per valve if hydrostatically tested at ≥ 1000 psig at ambient temperature."

8. Page 174, delete asterisked notes for one-time exemptions from the Type A,B and C testing requirements of 10 CFR 50 Appendix J.

9. Page 175, delete the intentionally blank page.

10. Bases 4.7.A, Page 194, delete the primary containment leakage rate testing discussion which starts on the first column, second paragraph. Replace with:

    "The leakage rate testing program was originally based on NRC guidelines for development of leak rate testing and surveillance schedules for reactor containment vessels. Containment structural integrity is currently verified with visual inspections and containment leak tightness is verified by the leakage rate surveillance testing described in the JAFNPP Primary Containment Leakage Rate Testing Program.

The following are the exemptions to 10 CFR 50 Appendix J, Option A, that have been approved by the NRC, and remain applicable to Option B of 10 CFR 50, Appendix J:

1. The Type C exceptions listed on Table 4.7-2, "Exception to Type C Tests," as of the date of issuance of Amendment 194 (July 29,1993).

2. Valves which are sealed with fluid from a seal system, such as the liquid in the suppression chamber are not required to be Type C tested. This exemption was approved by the NRC in the original Technical Specifications (SR 4.7.A.2.c(3)).

3. The MSIVs are tested at a pressure less than P_a and $\geq$ 25 psig, with a leakage rate acceptance criteria of $\leq$ 11.5 scfh per valve. This exemption was approved by the NRC in the original Technical Specifications (Table 4.7-2).

The Program as implemented meets the requirements of Option B of 10 CFR 50 Appendix J (16) and Regulatory Guide 1.163 (13), with the exception stated in Specification 6.20. This exception applies to valves currently installed in this configuration, and does not apply to new installations. This exception is consistent with TS Table 4.7-2, previously contained in the TS, which allows reverse direction testing of valves as an exception to the requirements of the draft Appendix J, on the basis that pressurization direction was not a requirement at the time of plant design."

11. Page 198, Change page "209" to page "213," and change next page from "210" to "214" to reflect the deletion of page 211 through 213b discussed in Item 13.

12. Page 210, Delete the intentionally blank page.

13. Page 211 through 213b, Table 4.7-2 "Exception to Type C Tests," delete pages and relocate Table in its entirety to the Containment Leakage Rate Testing Program.

14. Page 258e, Administrative Controls, add new section 6.20 entitled "Primary Containment Leakage Rate Testing Program." The new section reads:

"6.20 Primary Containment Leakage Rate Testing Program

A program shall be established to implement the leakage rate testing of the Primary Containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, as modified by the exception that Type C testing of valves not isolable from the containment free air space may be accomplished by pressurization in the reverse direction provided that testing in this manner provides equivalent or more conservative results than testing in the accident direction. If potential atmospheric leakage paths (e.g., valve stem packing) are not subjected to test pressure, the portions of the valve not exposed to test pressure shall be subjected to leakage rate measurement during regularly scheduled Type A testing. A list of these valves, the leakage rate measurement method, and the acceptance criteria, shall be contained in the Program.

A. The peak Primary Containment internal pressure for the design basis loss of coolant accident (P_a), is 45 psig.

B. The maximum allowable Primary Containment leakage rate (L_a), at P_a, shall be 1.5% of primary containment air weight per day.

C. The leakage rate acceptance criteria are:

1. Primary containment leakage rate acceptance criteria is $\leq$ 1.0 L_a. During unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $\leq$ 0.60 L_a for the Type B and Type C tests and $\leq$ 0.75 L_a for the Type A test;

2. Airlock testing acceptance criteria are:

   a. Overall airlock leakage rate is $\leq$ 0.05 L_a when tested at $\geq$ P_a,

   b. For each door seal, leakage rate is $\leq$ 120 SCFD when pressurized to $\geq$ P_a.

3. MSIV leakage rate acceptance criteria is $\leq$ 11.5 scfh for each MSIV when tested at $\geq$ 25 psig

D. The provisions of Specification 4.0.B do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program.

E. The provisions of Specification 4.0.C are applicable to the Primary Containment Leakage Rate Testing Program."

15. Page 285, delete Reference 13 as it no longer applies under Option B, and replace with reference to Regulatory Guide 1.163. The revised Reference 13 reads:

"(13) Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995."

16. Page 285, revise Reference 16 to reflect new revisions to 10 CFR 50 Appendix J. The revised reference reads:

"(16) 10 CFR Part 50 Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors, Option B-Performance Based Requirements," Effective date October 26, 1995.

17. Page 285, delete Reference 17 as it no longer applies under Option B, and replace with "Deleted."

II. PURPOSE OF THE PROPOSED CHANGES

The proposed changes to the TS support adoption of the primary containment leakage rate testing requirements of Option B at the FitzPatrick plant, and clarify the numerical value of the allowable containment leakage rate (L_a) as 1.5% per day.

The original FitzPatrick TS were written prior to the effective date of the 10 CFR 50 Appendix J regulation. Therefore, to ensure adequate primary containment leak rate testing, many of the requirements of the draft Appendix J requirements were incorporated directly into the Specifications. Exceptions were included as part of the initial issuance of the TS. Consequently, primary containment leak rate testing requirements duplicate those contained in the draft Appendix J (Option A), with approved exemptions.

To simplify implementation of Option B, and prevent conflicts with the TS currently based on Option A, the Authority proposes to delete the following SRs:

4.7.A.2.a(1) through (10)	Type A testing requirements - Option A Section III.A.
4.7.A.2.b(1) and (2)	Type B testing requirements - Option A Section III.B.
4.7.A.2.c(1), (2)	Type C testing requirements - Option A Section III.C

4.7.A.2.c(3)	Approved exemption that eliminates Type C testing for valves that are sealed from a seal system, such as the water in the suppression chamber. This exemption is retained and relocated to the Program.
4.7.A.2.c.4	Reference to Table 4.7-2, "Exception to Type C tests." The Table is relocated to the Program.
4.7.A.2.e(1), (2)	Periodic retest schedule requirements - Option A Section III.D
4.7.A.2.e(3) through (4)	Requirements for Type B tests of airlocks and testing of airlock seals. These SRs were exemptions from Option A testing requirements that are no longer required for implementation of Option B. Acceptance criteria is relocated to proposed Specification 6.20.
4.7.A.2.e(5)	Type C retest schedule - Option A Section III.D.
4.7.A.2.f	Containment modification requirements - Option A Section IV.A

The Authority proposes to relocate Table 4.7-2, "Exception to Type C Tests," from the TS to the Program. This table lists the approved exemptions to Appendix J for Type C tests at the FitzPatrick Plant, and is still applicable to Option B.

The above SRs and Table are replaced by: (1) New SR 4.7.A.2 (a) which requires visual examination and leak rate testing of the Primary Containment in accordance with the Program; and (2) New SR 4.7.A.2 (b) which incorporates an existing exemption for Type C testing of Main Steam Isolation Valves (MSIV) directly into the TS for consistency with References 2 and 3. A description of the Program, including plant specific leakage limits, is contained in new Specification 6.20. Regulatory Guide 1.163 (Reference 1) is incorporated, by reference, into new Specification 6.20 as required by Option B, Paragraph V.B.1.

Implementation of Option B requirements will be controlled under the Primary Containment Leakage Rate Testing Program (the Program), in accordance with the requirements of Option B, Regulatory Guide 1.163 (Reference 1), and exemptions from Option A currently approved by the NRC for the FitzPatrick plant. The proposed TS changes are consistent with guidelines provided in NUREG-1433 (Reference 2) and NRC letter dated November 2, 1995 (Reference 3), to the extent practicable. There are differences between the FitzPatrick TS and Reference 2 relating to Containment Systems that will be resolved in our upcoming Improved Standard Technical Specifications conversion effort. These differences do not adversely affect the TS changes required to support implementation of Option B at the FitzPatrick plant.

III. SAFETY IMPLICATIONS OF THE PROPOSED CHANGES

This section discusses the safety implications of the TS changes relating to implementation of Option B at the FitzPatrick Plant and the clarification of the L_a numerical definition.

1. Option B Implementation

The testing requirements of 10 CFR 50, Appendix J, ensure that leakage through the primary containment, including systems and components that penetrate the primary containment, does not exceed the allowable leakage rate values specified in the TS and bases. This ensures that an adequate primary containment boundary is maintained during and after an accident, thereby assuring that the primary containment function assumed in the safety analyses is maintained.

A revision to 10 CFR 50, Appendix J, to allow a performance-based approach to containment leakage rate testing became effective on October 26, 1995. The revision added Option B "Performance Based Requirements" to Appendix J to allow licensees to voluntarily replace the prescriptive testing requirements of Appendix J with testing requirements based on both overall and individual component leakage rate performance. Option B allows plants with satisfactory Integrated Leak Rate Testing (ILRT) performance history to reduce the Type A testing frequency from three tests in ten years to one test in ten years. For Type B and Type C tests, the testing frequency can be reduced based on the leak rate test history of each component. The Authority has elected to perform Type A, Type B and Type C containment leak rate testing on a performance basis.

Regulatory Guide 1.163 (Reference 1) was issued by the NRC Staff as an acceptable method for implementing Option B. It states that NEI 94-01 (Reference 4) provides methods acceptable to the NRC staff for complying with Option B, with the four exceptions listed in Section C of the Regulatory Guide. The Authority will comply with the methods outlined in the Regulatory Guide, with the exception of Type C testing of containment isolation valves in the reverse (non-accident) direction identified in proposed Specification 6.20.

The adoption of a performance-based primary containment leakage rate testing program does not change the method by which leakage rate testing is performed. The tests will continue to be performed at full pressure (P_a) or greater, with the exception of existing NRC approved exemptions. Plant specific limits for allowable leakage rates (L_a) and required test pressure (P_a) are retained in the proposed TS and are not changed as a result of adopting Option B testing requirements. Testing methods will continue to be in accordance with existing leak rate testing requirements, as modified by exemptions previously approved by the NRC.

These changes do not alter the plant design, only the frequency of measuring primary containment leakage. Therefore, the proposed changes do not directly result in an increase in containment leakage. However, decreasing the test frequency can increase the probability that a large increase in containment leakage could go undetected for an extended period of time. NUREG-1493, "Performance- Based Containment Leak-Test Program, Final Report," (Reference 7) made the following observations with regard to the decreased test frequency:

- Reducing the Type A (ILRT) testing frequency from the current three per ten years to one per 20 years was found to lead to an imperceptible increase in risk. The estimated increase in risk is small because ILRTs identify only a few potential leakage paths that can not be identified by Type B and Type C testing, and the leaks that have been found by Type A tests have only been marginally above existing requirements. Given the insensitivity of risk to containment leakage rate, and the small fraction of leakage detected solely by Type A testing, increasing the interval between ILRT testing has minimal impact on public risk.

- While Type B and C tests identify the vast majority (greater than 95 percent) of all potential leakage paths, performance-based alternatives to current local leakage testing requirements are feasible without significant risk impacts. The risk model used in NUREG-1493 suggests that the number of components tested would be reduced by about 60 percent with less than a three-fold increase in the incremental risk due to containment leakage. Since under existing requirements leakage contributes less than 0.1 percent of overall accident risk, the overall impact is very small.

Option B states that specific exemptions to Option A of Appendix J, that have been formally approved by the NRC or AEC, are still applicable to Option B if necessary, unless specifically revoked by the NRC. The following exemptions to Option A will be retained in the Option B Program:

1. The Type C exceptions listed on Table 4.7-2, "Exception to Type C Tests," as of the date of issuance of Amendment 194 (July 29,1993).

2. Valves which are sealed with fluid from a seal system, such as the liquid in the suppression chamber are not required to be Type C tested. This exemption was approved by the NRC in the original Technical Specifications (SR 4.7.A.2.c(3)).

3. The MSIVs are tested at a pressure less than P_a and $\geq$ 25 psig, with a leakage rate acceptance criteria of $\leq$ 11.5 scfh. This exemption was approved by the NRC in the original Technical Specifications (Table 4.7-2).

These exemptions focus on the testing methodology aspects of Appendix J and are unaffected by the adoption of Option B testing frequency requirements. A list of approved exemptions will be contained in the Bases of the FitzPatrick TS, Section 4.7.A. The details of these exemptions will be contained in the Program.

Changes to the Program will be controlled in accordance with the requirements of 10 CFR 50.59, "Changes, tests and experiments." Thus, a determination of whether Program changes require prior NRC approval will be performed. In addition, 10 CFR 50 Appendix J Option B requires Licensee compliance with containment leakage rate testing requirements as stated in the regulation, and included by reference in the proposed TS. Changes to the Program that conflict with the requirements of Option B, or documents referenced in Specification 6.20, require prior NRC approval. The combination of the 10 CFR 50.59 change process and the NRC approval process assure proper control of changes to the Primary Containment Leakage Rate Testing Program.

Current SR 4.7.A.2.d (1) requires pneumatic or hydrostatic leakage rate testing of the LPCI and Core Spray injection testable check valves. These valves are pressure isolation valves that separate the high pressure reactor coolant system from the low pressure LPCI and Core Spray systems. The leakage test required by SR 4.7.A.2.d (1) is not a requirement of 10 CFR 50 Appendix J, therefore, it is not relocated from the TS. Editorial changes to improved readability are made to the SR, and it is moved to page 166 and renumbered as SR 4.7.A.2.c.

Based on the above discussion, removal of the containment leakage rate testing details, except for plant specific limits, from the TS is acceptable. The proposed TS and the Program comply with Regulatory Guide 1.163 (Reference 1) requirements, with the exception of reverse direction Type C testing of valves described in Section III.3 of this safety evaluation, and contain sufficient controls to ensure that the primary containment structural integrity is inspected and maintained, and that leakage is limited to values assumed in the plant safety analyses. Required surveillances will continue to be performed in accordance with TS, written procedures, and instructions auditable by the NRC. Primary containment leakage rate requirements continue to remain an integral part of FitzPatrick plant operation. The changes to current SR 4.7.A.2.d.(1) are editorial in nature and do not change any TS requirement.

2. Clarification of the Numerical Definition of La

Proposed Specification 6.20 defines the value of the allowable containment leakage rate (L_a) as 1.5 percent of primary containment air weight per day. This is a clarification of the numerical value of L_a for the FitzPatrick plant. This clarification was previously submitted as part of a proposed TS amendment (Reference 5), and subsequently withdrawn (Reference 6) because additional evaluation was required to quantify the effects of a 1.5 percent per day leakage rate on safety-related equipment located in the reactor building. The Authority has reviewed the environmental qualification of safety-related equipment in the reactor building and has identified two component types that require further evaluation as a result of this clarification. Appropriate action will be taken to qualify these component types prior to implementation of a 1.5 percent per day allowable leakage rate.

Current SR 4.7.A.2.a (8) defines the Type A acceptance criteria as less than 0.75 L_a and not greater than the design leakage rate, L_d (0.5%/day). This SR was contained in the original TS and was written to support the pre-operational test. The SR is consistent with the pre-operational leakage rate test requirements of Option A, paragraph III.A.4(b)(2), and conservative with respect to the retest leakage rate requirement of Option A, paragraph III.A.5(b)(2), which defines the acceptance criteria as less than $0.75L_a$. For purposes of establishing Type A, B and C leakage test acceptance criteria, the allowable containment leakage rate has been limited to 0.5 weight percent of the contained air volume per day so as not to conflict with SR 4.7.A.2.a (8). This interpretation is conservative with respect to the TS Bases, and the current licensing basis.

This clarification potentially affects the off-site dose consequences of postulated accidents which are directly related to containment leakage rate. The FitzPatrick accident analyses assumed an allowable leakage rate (L_a) of 1.5 weight percent per day. The limitation on containment leakage rate ensures that total leakage will not exceed the value assumed in the accident analyses at the peak accident pressure (P_a) of 45 psig. The margin of safety for the off-site dose consequences of postulated accidents directly related to the containment leakage rate is maintained by meeting the $1.0L_a$ acceptance criteria stated in proposed Specification 6.20.

The effects of this clarification are: 1) The value of the As-Left Type A test leakage criteria of 0.75 L_a is 1.125 percent per day; 2) The value of the combined Type B and C test leakage acceptance criteria of 0.6 L_a is 0.9 percent per day; and 3) The value of the "As-found" Type A test acceptance criteria is 1.5 percent per day (L_a). The value of 1.5 percent per day is consistent with the accident analyses, and Option B, and does not constitute an increase in the allowable leakage rates as analyzed in the UFSAR. Therefore, this change does not adversely impact plant safety.

3. Exception Regarding Reverse Direction Testing of 17 Primary Containment Isolation Valves

Periodic Type C testing in the reverse (non-accident) direction for 17 primary containment isolation valves does not expose potential atmospheric leakage paths (e.g., valve stem packing) to test pressure. Therefore, it can not be quantitatively shown that Type C test results are not affected in a non-conservative manner by directionality. Section 8.0 of Reference 4 requires that potential leakage paths to atmosphere be quantitatively determined. Reverse direction testing of these valves is required due the inability to isolate the valves from the containment and the lack of test connections. These valves are reverse direction tested in accordance with the FitzPatrick TS Table 4.7-2, "Exception to Type C Tests."

The affected valves are listed in Table 1 of this safety evaluation. Type C testing in the reverse direction for these valves provides equivalent or more conservative results than testing in the accident direction, with respect to seat leakage. With respect to the globe valves, the test pressurization is under the seat, which tends to unseat the valve. With respect to the butterfly valves, measured leakage is independent of the direction of test pressure from both a force exerted and seating surface standpoint.

Modifications have been considered that would allow testing in the accident direction or allow potential leakage to atmosphere to be quantitatively determined. The addition of block valves and test connections to allow accident direction testing would increase design complexity, provide additional potential leakage pathways, and increase loading on piping penetrating primary containment. Valve stem packing modifications to allow potential leakage to be quantitatively determined would increase design complexity, and provide additional potential leakage pathways. For these reasons, compliance with Reference 1 would incur an undue cost without a commensurate improvement in safety.

There are no safety implications associated with these changes because:

1. Testing of these 17 valves (Listed in Table 1) during the 1995 Integrated Leakage Rate Test (ILRT) verified that the packing glands were insignificant contributors to the overall integrated leakage rate. The 1995 as-left ILRT leakage rate was 0.0629% weight/day, which was well below the current TS acceptance criteria of 0.5% weight/day.

2. Adding the results of the 1995 As-Left Type A, B, and C tests together (approximately 2188 SCFD) results in a leakage total well below $0.6L_a$ (3216 SCFD). This very conservatively shows that significant margin exists to exceeding TS or Appendix J limits.

3. Review of past ILRT results indicates that the 17 valves have not been the cause of an ILRT failure. Based on a review of the maintenance history for each valve, recurring packing or body to bonnet leaks are not expected.

4. The valve stem packing and body to bonnet gaskets are resilient materials designed to conform to sealing surfaces. The valves are installed in systems which are not normally subjected to design flows, temperatures, or pressures. During normal operation, the valve stem packing and body to bonnet gaskets are exposed to the primary containment atmosphere, which has a low oxygen content. Based on this, the degradation of the valve stem packing or body to bonnet gaskets due to continuous exposure to a harsh environment is not a concern.

5. From a risk perspective evaluation, the elimination of modifications that would allow testing in the accident direction or allow potential leakage to atmosphere to be quantitatively determined, can be justified using the technical bases provided for NUREG-1493 (Reference 7). Past studies show that overall reactor accident risks are not sensitive to variations in containment leakage rate. This is because reactor accident risks are dominated by accident scenarios in which the containment fails or is bypassed. Such scenarios, even though they are of very low probability, dominate the predicted accident risks due to their high consequences. FitzPatrick Individual Plant Examination (IPE) results are consistent with these past technical studies (See Table 2).

   Certain NRC sponsored studies (References 8 and 9) indicate that overall plant risk is not sensitive to changes in containment leak rates. From Table 3 the incremental risk from leakage in the range of 1% to 10% per day is small. FitzPatrick and Peach Bottom are both BWR 4 plants with MARK I containments. Similar results are expected for FitzPatrick.

The analysis described above provides justification that potential leakage paths to atmosphere for these 17 valves is inconsequential. The Authority proposes that a soap bubble test be performed on the pressurized stem/bonnet boundaries of the 17 valves during regularly scheduled Type A testing. To provide a direct indication of the leak-tightness of the packing and body to bonnet, the Authority will use the acceptance criteria of zero bubbles for this test. Type C testing will be performed, as a post work test, following work activities that affect the potential atmospheric leakage paths on any of the 17 valves. A soap bubble test will then be performed on the subject valve(s) at regularly scheduled Type A test intervals. These requirements will be contained in the Program.

IV. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

The Authority has evaluated the proposed TS Amendment and determined that it does not represent a significant hazards consideration. Based on the criteria for defining a significant hazards consideration established in 10 CFR 50.92, operation of the James A. FitzPatrick Nuclear Power Plant in accordance with the proposed amendment will not:

1) Involve a significant increase in the probability or consequences of an accident previously evaluated because:

The proposed changes do not involve a change to the design or operation of the plant. The systems affected by this proposed TS change are not assumed in any safety analyses to initiate any accident sequence. Therefore, the probability of any accident previously evaluated is not increased by this proposed TS change. The clarification of the allowable containment leakage rate (L_a) is consistent with the accident analyses. There is no change to the consequences of an accident previously evaluated because maintaining leakage within limits assumed in the accident analyses ensures that the dose consequences resulting from an accident are not increased. The proposed TS changes maintain an equivalent level of reliability and availability for all affected systems. The ability of the affected systems associated with maintaining leak rate integrity to perform their intended function is unaffected by the proposed TS changes. Implementation of these changes will provide continued assurance that specified parameters associated with containment integrity will remain within acceptance limits, and as such, will not significantly increase the consequences of a previously evaluated accident.

2) Create the possibility of a new or different kind of accident from any accident previously evaluated because:

The proposed changes allow adoption of those requirements specified in Option B to 10 CFR 50, Appendix J, and do not involve a change to the plant design and operation. As a result, the proposed changes do not affect the parameters or conditions that could contribute to the initiation of any accidents. The methods of performing primary containment leakage rate testing are not changed. No new accident modes are created by allowing extended intervals for Type A, B and C testing, or by clarifying the numerical value of the allowable containment leakage rate (L_a). No safety-related equipment or safety functions are altered, or adversely affected, as a result of these changes. The proposed changes will not introduce failure mechanisms beyond those already considered in the current plant safety analyses. Extension of the test intervals, and clarification of the allowable leakage rate, does not contribute to the possibility of a new or different kind of accident or malfunction from those previously analyzed.

3) Involve a significant reduction in the margin of safety because:

The proposed changes affect the frequency of primary containment leakage rate testing, and the numerical definition of the allowable containment leakage rate (L_a). The design of the FitzPatrick plant is not changed. The methodology for test performance is unchanged and Type A, B and C tests will continue to be performed at $\geq P_a$. The proposed changes provide sufficient controls to ensure that proper maintenance and repairs are performed on the primary containment, and systems and components penetrating the primary containment. The reliability of containment systems assumed to operate in the plant safety analyses is not reduced. The numerical value of L_a specified in Specification 6.20 is consistent with the accident analyses, therefore, the dose consequences of any analyzed accidents are not increased. Therefore, the proposed changes provide continued assurance of the leak tightness of the containment without adversely affecting the public health and safety and, as such, will not involve a significant reduction in the margin of safety.

This proposed amendment does not involve a significant relaxation of the criteria used to establish safety limits, a significant relaxation of the bases for the limiting safety system settings or a significant relaxation of the bases for the limiting conditions for operations. Therefore, based on the criteria established in 10 CFR 50.92(c), the proposed change does not constitute a significant hazards consideration.

V. IMPLEMENTATION OF THE PROPOSED CHANGES

Implementation of the proposed changes will not adversely affect the ALARA or Fire Protection Programs at the FitzPatrick plant, nor will the changes affect the environment.

The Authority requests NRC approval of this proposed amendment prior to July 1, 1996 in order to adopt these changes prior to the upcoming Fall 1996 Refueling Outage.

VI. CONCLUSION

Based on the discussions above, the adoption of Option B to 10 CFR 50, Appendix J, requirements into the TS will not decrease the effectiveness of containment leakage rate testing. Operating limitations will continue to be imposed, and required surveillances will continue to be performed in accordance with Technical Specifications, written procedures and instructions auditable by the NRC. The assumptions in the FitzPatrick licensing bases are not invalidated by the proposed Technical Specification changes.

The Plant Operating Review Committee (PORC) and the Safety Review Committee (SRC) have reviewed these proposed changes to the Technical Specifications and have concluded that they do not involve an unreviewed safety question, or a significant hazards consideration, and will not endanger the health and safety of the public.

VII. REFERENCES

1. Regulatory Guide 1.163, Performance-Based Containment Leak-Test Program, dated September 1995.

2. NUREG-1433, Standard Technical Specifications, Revision 1, dated April 1995.

3. NRC Letter to Mr. David J. Modeen (NEI), Regarding the Industry's Proposed Technical Specifications for Implementing Option B of Appendix J, dated November 2, 1995.

4. NEI 94-01, Industry Guideline for Implementing Performance-Based Option of 10 CFR 50 Appendix J, Rev. 0, dated July 26, 1995.

5. NYPA letter, J.C. Brons to the NRC (JPN-90-008), "Proposed Change to the Technical Specifications Regarding Containment Leak Rate Testing Requirements (JPTS-84-012)," dated January 16, 1990.

6. NYPA letter, R.E. Beedle to the NRC (JPN-92-016), "Withdrawal of Amendment Application (JPTS-84-012)," dated March 31,1992.

7. NUREG-1493, Performance-Based Containment Leak-Test Program, Final Report, dated September 1995

8. NUREG/CR-4330, "Review of Light Water Reactor Regulatory Requirements, Assessment of Selected Regulatory Requirements that may have Marginal Importance to Risk - Reactor Containment Leakage Rates - Main Steam Isolation Valve Leakage Control Systems - Fuel Design Safety Reviews," Volume 2, dated June 1, 1986.

9. NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants, Final Summary Report," dated December 1, 1990.

Table 1
Additional Information on Valves

1.	Valve Number and Title:	27AOV-112 - DRYWELL PURGE AND INERT ISOLATION VALVE
	Description:	24", BUTTERFLY VALVE
	Vendor:	FISHER CONTROLS CO.
2.	Valve Number and Title:	27AOV-113 - DRYWELL VENT AND PURGE EXHAUST INNER ISOLATION VALVE
	Description:	24", BUTTERFLY VALVE
	Vendor:	FISHER CONTROLS CO.
3.	Valve Number and Title:	27AOV-101A - TORUS VACUUM BREAKER VB-6 ISOLATION VALVE
	Description:	20", BUTTERFLY VALVE
	Vendor:	FISHER CONTROLS CO.
4.	Valve Number and Title:	27AOV-101B - TORUS VACUUM BREAKER VB-7 ISOLATION VALVE
	Description:	20", BUTTERFLY VALVE
	Vendor:	FISHER CONTROLS CO.
5.	Valve Number and Title:	27AOV-117 - TORUS EXHAUST INNER ISOLATION VALVE
	Description:	20", BUTTERFLY VALVE
	Vendor:	FISHER CONTROLS CO.
6.	Valve Number and Title:	27MOV-117 - TORUS VENT AND PURGE EXHAUST ISOLATION VALVES (27AOV-117 AND 27AOV-118) INNER BYPASS VALVE
	Description:	3", BUTTERFLY VALVE
	Vendor:	FISHER CONTROLS CO.
7.	Valve Number and Title:	27AOV-116 - TORUS PURGE AND INERT ISOLATION VALVE
	Description:	20", BUTTERFLY VALVE
	Vendor:	FISHER CONTROLS CO.
8.	Valve Number and Title:	27AOV-131A - CAD TRAIN A NITROGEN MAKE-UP ISOLATION VALVE
	Description:	1.5", GLOBE VALVE
	Vendor:	MASONEILAN INTERNATIONAL INC.

9.	Valve Number and Title:	27AOV-131B - CAD TRAIN B NITROGEN MAKE-UP ISOLATION VALVE
	Description:	1.5", GLOBE VALVE
	Vendor:	MASONEILAN INTERNATIONAL INC.
10.	Valve Number and Title:	10MOV-31A - RHR A CONTAINMENT SPRAY INBOARD ISOLATION VALVE
	Description:	10", GLOBE VALVE
	Vendor:	ANCHOR-DARLING IND.
11.	Valve Number and Title:	10MOV-31B - RHR B CONTAINMENT SPRAY INBOARD ISOLATION VALVE
	Description:	10", GLOBE VALVE
	Vendor:	ANCHOR-DARLING IND.
12.	Valve Number and Title:	10MOV-38A - RHR A TO TORUS SPRAY ISOLATION VALVE
	Description:	4", GLOBE VALVE
	Vendor:	WILLIAM POWELL CO.
13.	Valve Number and Title:	10MOV-38B - RHR B TO TORUS SPRAY ISOLATION VALVE
	Description:	4", GLOBE VALVE
	Vendor:	WILLIAM POWELL CO.
14.	Valve Number and Title:	27AOV-132A - CAD TRAIN A TORUS NITROGEN MAKE-UP ISOLATION VALVE
	Description:	1.5", GLOBE VALVE
	Vendor:	MASONEILAN INTERNATIONAL INC.
15.	Valve Number and Title:	27AOV-132B - CAD TRAIN B TORUS NITROGEN MAKE-UP ISOLATION VALVE
	Description:	1.5", GLOBE VALVE
	Vendor:	MASONEILAN INTERNATIONAL INC.
16.	Valve Number and Title:	16-1AOV-101A - DRYWELL PRESSURE SENSING
	Description:	3/8", PLUG TYPE GLOBE VALVE
	Vendor:	COPES-VULCAN INC.
17.	Valve Number and Title:	16-1AOV-102B - TORUS PRESSURE SENSING
	Description:	3/8", PLUG TYPE GLOBE VALVE
	Vendor:	COPES-VULCAN INC.

Table 2
Conditional Containment Failure Probability Given Core Damage[1]

Time/Containment Location	Conditional Probability
Early/Drywell Failure	0.536
Early/Wetwell Failure	0.068
Late/Drywell Failure	0.116
Late/Wetwell Failure	0.144
No Failure	0.136

Table 3
Post Core Damage (Level 3) Comparison of Results

Leak Rate % /day	Population Dose, person-rem/reactor year			
	Peach Bottom		Grand Gulf	
	NUREG/CR-4330[2]	NUREG-1150[3]	NUREG/CR-4330	NUREG 1150
0.5	151	28.3	250	5.66
1	151		250	
5	153	28.3	254	5.67
10	153		254	
50	174	28.4	288	5.81
100	174		288	

[1]Containment venting considered as failure.

[2]See Reference 8

[3]See Reference 9

Attachment III to JPN-96-016

MARKUP OF TECHNICAL SPECIFICATION PAGES

(JPTS-96-003)

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

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Amendment No. 7, 22, 93 130

LIST OF TABLES

4.0 BASES

A. This specification provides that surveillance activities necessary to insure the Limiting Conditions for Operation are met and will be performed during the OPERATIONAL CONDITIONS (modes) for which the Limiting Conditions for Operation are applicable. Provisions for additional surveillance activities to be performed without regard to the applicable OPERATIONAL CONDITIONS (modes) are provided in the individual Surveillance Requirements.

B. Specification 4.0.B establishes the limit for which the specified time interval for Surveillance Requirements may be extended. It permits an allowable extension of the normal surveillance interval to facilitate surveillance scheduling and consideration of plant operating conditions that may not be suitable for conducting the surveillance (e.g., transient conditions or other ongoing surveillance or maintenance activities). It also provides flexibility to accommodate the length of a fuel cycle for surveillances that are performed at each refueling outage and are specified with a 24 month surveillance interval. It is not intended that this provision be used repeatedly as a convenience to extend surveillance intervals beyond that specified for surveillances that are not performed during refueling outages. The limitation of this specification is based on engineering judgement and the recognition that the most probable result of any particular surveillance being performed is the verification of conformance with the Surveillance Requirements. The limit on extension of the normal surveillance interval ensures that the reliability confirmed by surveillance activities is not significantly reduced below that obtained from the specified surveillance interval.

C. This specification establishes the failure to perform a Surveillance Requirement within the allowed surveillance

C. Continued

interval, defined by the provisions of Specification 4.0.B, as a condition that constitutes a failure to meet the OPERABILITY requirements for a Limiting Condition for Operation. Under the provisions of this specification, systems and components are assumed to be OPERABLE when Surveillance Requirements have been satisfactorily performed within the specified time interval. However, nothing in this provision is to be construed as implying that systems or components are OPERABLE when they are found or known to be inoperable although still meeting the Surveillance Requirements. This specification also clarifies that the ACTION requirements are applicable when Surveillance Requirements have not been completed within the allowed surveillance interval and that the time limits of the ACTION requirements apply from the point in time it is identified that a surveillance has not been performed and not at the time that the allowed surveillance was exceeded. Completion of the Surveillance Requirement within the allowable outage time limits of the ACTION requirements restores compliance with the requirements of Specification 4.0.C. However, this does not negate the fact that the failure to have performed the surveillance within the allowed surveillance interval, defined by the provisions of Specification 4.0.B, was a violation of the OPERABILITY requirements of a Limiting Condition for Operation that is subject to enforcement action. Further, the failure to perform a surveillance within the provisions of Specification 4.0.B is a violation of a Technical Specification requirement and is, therefore, a reportable event under the requirements of 10 CFR 50.73(a)(2)(i)(B) because it is a condition prohibited by the plant Technical Specifications.

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INSERT A

INSERT A:

"The exceptions to Specification 4.0.B are those surveillances for which the 25% extension of the interval specified does not apply. These exceptions are stated in the individual Technical Specifications. The requirements of regulations take precedence over the Technical Specifications. Therefore, when a test interval is specified in the regulations, the test interval cannot be extended under the provisions of 4.0.B, and the surveillance requirement will be identified as an exception. An example of an exception when the test interval is not specified in the regulations is the Note in Specification 6.20, "Primary Containment Leakage Rate Testing Program", which states "The provisions of Specification 4.0.B do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program." This exception is provided because the program already includes provisions for extension of intervals."

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4.0 BASES - Continued

C. Continued

If the allowable outage time limits of the ACTION requirements are less than 24 hours or a shutdown is required to comply with ACTION requirements, a 24-hour allowance is provided to permit a delay in implementing the ACTION requirements. This provides an adequate time limit to complete Surveillance Requirements that have not been performed. The purpose of this allowance is to permit the completion of a surveillance before a shutdown is required to comply with ACTION requirements or before other remedial measures would be required that may preclude completion of a surveillance. The basis for this allowance includes consideration for plant conditions, adequate planning, availability of personnel, the time required to perform the surveillance and the safety significance of the delay in completing the required surveillance. This provision also provides a time limit for the completion of Surveillance Requirements that become applicable as a consequence of OPERATIONAL CONDITION (mode) changes imposed by ACTION requirements and for completing Surveillance Requirements that are applicable when an exception to the requirements of Specification 4.0.C is allowed. If a surveillance is not completed within the 24-hour allowance, the time limits of the ACTION requirements are applicable at that time. When a surveillance is performed within the 24-hour allowance and the Surveillance Requirements are not met, the time limits of the ACTION requirements are applicable at the time the surveillance is terminated.

C. Continued

Surveillance Requirements do not have to be performed on inoperable equipment because the ACTION requirements define the remedial measures that apply. However, the Surveillance Requirements have to be met to demonstrate that inoperable equipment has been restored to OPERABLE status.

D. This specification establishes the requirement that all applicable surveillances must be met before entry into an OPERATIONAL CONDITION or other condition of operation specified in the Applicability statement. The purpose of this specification is to ensure that system and component OPERABILITY requirements or parameter limits are met before entry into an OPERATIONAL CONDITION or other specified condition associated with plant shutdown as well as startup.

Under the provisions of this specification, the applicable Surveillance Requirements must be performed within the specified surveillance interval to ensure that the Limiting Conditions for Operation are met during initial plant startup or following a plant outage.

When a shutdown is required to comply with ACTION requirements, the provisions of this specification do not apply because this would delay placing the facility in a lower CONDITION of operation.

(2) During testing which adds heat to the suppression pool, the water temperature shall not exceed 10F above the normal power operation limit specified in (1) above. In connection with such testing, the pool temperature must be reduced to below the normal power operation limit specified in (1) above within 24 hours.

(3) The reactor shall be scrammed from any operating condition if the pool temperature reaches 110F. Power operation shall not be resumed until the pool temperature is reduced below the normal power operation limit specified in (1) above.

(4) During reactor isolation conditions, the reactor pressure vessel shall be depressurized to less than 200 psig at normal cooldown rates if the pool temperature reaches 120F.

2. Primary containment integrity shall be maintained at all times when the reactor is critical or when the reactor water temperature is above 212°F, and fuel is in the reactor vessel, except while performing low power physics tests at atmospheric pressure at power levels not to exceed 5 MWt.

INSERT B

2. The primary containment integrity shall be demonstrated as follows:

a. Type A Test (primary Containment Integrated Leakage Rate Test)

(1.) Containment inspection shall be performed as a prerequisite to the performance of Type A tests. During the period between the initiation of the containment inspection and the performance of the Type A test, no repairs or adjustments shall be made.

INSERT B:

"4.7.A.2.a Perform required visual examination and leakage rate testing of the Primary Containment in accordance with the Primary Containment Leakage Rate Testing Program.

4.7.A.2.b Demonstrate leakage rate through each MSIV is $\leq$ 11.5 scfh when tested at $\geq$ 25 psig. The testing frequency is in accordance with the Primary Containment Leakage Rate Testing Program.

4.7.A.2.c Once per 24 months, demonstrate the leakage rate of 10AOV-68A,B for the Low Pressure Coolant Injection system and 14AOV-13A,B for the Core Spray system to be less than 11 scfm per valve when pneumatically tested at $\geq$45 psig at ambient temperature, or less than 10 gpm per valve if hydrostatically tested at $\geq$1000 psig at ambient temperature."

4.7 (cont'd)

(2.) Closure of containment isolation valves for the Type A test shall be accomplished by normal operation and without any preliminary exercising.

(3.) The containment test conditions shall stabilize for a period of about 4 hours prior to the start of a leakage rate test.

(4.) Components to be tested as part of the containment shall be vented to the containment atmosphere.

(5.) Test methods are to comply with ANSI N45.4-1972 paragraph 5 and leak rate calculations will comply with the intent of ANSI N45.4-1972 paragraph 5. The mass of air in the containment will be calculated hourly and the leak rate determined by a linear least squares fit to the mass or air as a function of time.

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(Next Page is 176)

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(6.) The accuracy of the Type A test shall be verified by a supplemental test as described in Appendix C of ANSI N45.4-1972, or the metered addition of air into the containment after the end of the Type A test.

(7.) Test Pressure

(a.) An initial test shall be performed at a 23 psig (Pt, reduced pressure) which is greater than 0.50 Pa to measure a leakage rate Ltm.

(b.) A second test shall be performed at 45 psig (Pa peak pressure) to measure a leakage rate Lam.

(c.) The leakage characteristics yielded by measurements Ltm and Lam shall establish the maximum allowable test leakage rate Lt of not more than La (Ltm/Lam). In the event Ltm/Lam is greater than 0.7, Lt shall be specified as equal to La $\sqrt{(Pt/Pa)}$.

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(8.) Acceptance Criteria

Reduced pressure tests. (Pt) The leakage rate Ltm shall be less than 0.75 Lt.

Peak pressure test. (Pa) The leakage rate Lam shall be less than 0.75 (La) and not greater than Ld, which is 0.5 weight percent of the contained air per 24 hr at the test pressure Po.

(9.) Periodic leakage rate test shall be performed at reduced pressure (Pt) or at peak pressure (Pa).

(10.) Additional requirements

If any periodic Type A test fails to meet the applicable acceptance criteria the test schedule applicable to subsequent Type A tests will be reviewed and approved by the Commission.

If two consecutive periodic Type A tests fail to meet the acceptance criteria, a

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4.7 (cont'd)

Type A test shall be performed at each plant shutdown for refueling or approximately every 18 months, whichever occurs first, until two consecutive Type A tests meet the acceptance criteria.

b. Type B tests (Local leak rate testing of containment penetrations)

(1.) All preoperational and periodic Type B tests shall be performed by local pneumatic pressurization of the containment penetrations, either individually or in groups, at a pressure not less than Pa, and the gas flow to maintain Pa shall be measured.

(2.) Acceptance criteria

The combined leakage rate of all penetrations and valves subject to Type B and C tests shall be less than 0.60 La, with the exception of the valves sealed with fluid from a seal system.

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4.7 (cont'd)

c. Type C tests

(1.) Type C tests shall be performed by local pressurization. The pressure shall be applied in the same direction as that when the valve would be required to perform its safety function, except as listed in Table 4.7-2 unless it can be determined that the results from the tests for a pressure applied in a different direction will provide equivalent or more conservative results. Each valve to be tested shall be closed by normal operation and without any preliminary exercising or adjustments.

(2.) Valves, unless pressurized with fluid from a seal system, shall be pressurized with air or nitrogen at a pressure of Pa, and the gas flow to maintain Pa shall be measured.

(3.) Valves, which are sealed with fluid from a seal system, such as the liquid in the suppression chamber shall not be tested.

4.7 (cont'd)

(4.) See table 4.7-2 for exceptions.

(5.) Acceptance criterion - The combined leakage rate for all penetrations and valves subject to type B and C tests shall be less than 0.60 La. Leakage from containment isolation valves that are sealed with fluid from a seal system may be excluded when determining the combined leakage rate provided that the installed isolation valve seal-water system fluid inventory is sufficient to assure the sealing function for at least 30 days.

d. Other leak rate tests

(1) The leakage rate for containment isolation valves 10-AOV-68A, B (penetration X-13A, B) for Low Pressure Coolant Injection system and 14-AOV-13A, B (penetration X-16A, B) for Core Spray System shall be less than 11 cubic feet per minute per valve (pneumatically tested at 45 psig with ambient temperature) or 10 gallons per minute per valve (hydrostatically) tested at 1000 psig with ambient temperature.

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Relocate to page 166 and renumber as 4.7.A.2.c

e. Periodic retest schedule.

(1.) Type A test.

After the preoperational leakage rate tests, a set of three Type A tests shall be performed, at approximately equal intervals during each 10-year service period.

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4.7 (cont'd)

The third test of each set shall be conducted when the plant is shutdown for the 10-year plant inservice inspections.

Permissible periods for testing. The performance of Type A tests shall be limited to periods when the plant facility is nonoperational and secured in the shutdown condition under the administrative control and in accordance with the plant safety procedures.

(2) Type B tests, (except tests for airlocks), shall be performed during each reactor shutdown for refueling, or other convenient intervals, but in no case at intervals greater than 2 years.

(3) Type B tests of airlocks shall be conducted at an internal pressure of not less than 45 psig (Pa). The overall leakage rate for the airlock shall be less than or equal to 268 SCFD (0.05 La). Airlock tests shall be conducted:

a) Every six months.

b) Prior to restoration of containment integrity, when maintenance has been performed on the airlock which could affect its sealing capability.

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4.7 (cont'd)

c) Within three days of opening the airlock, when containment integrity is required and maintenance has been performed on the airlock which could affect its sealing capability.

(4) Airlock seals shall be tested at a pressure not less than 45 psig. The seal leakage rate shall be less than or equal to 120 SCFD. Airlock seal tests shall be conducted:

a) Prior to restoration of containment integrity*. If maintenance which could affect sealing capability was performed the entire airlock shall be tested as required by 4.7.A.2.e (3).

b) Within three days after opening the airlock, when containment integrity is required.

c) Once every three days, during periods of frequent openings when containment integrity is required.

* Exemption to 10 CFR 50, Appendix J

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4.7 (cont'd)

(5) Type C test.

Type C tests shall be performed during each reactor shutdown for refueling but in no case at intervals greater than two years.**

(6) Other leak rate tests specified in Section 4.7.d shall be performed during each reactor shutdown for refueling but in no case at intervals greater than two years.

f. Containment modification*

Any major modification, replacement of a component which is part of the primary reactor containment boundary, or resealing a seal-welded door, performed after the preoperational leakage rate test shall be followed by either a Type A, Type B, or Type C test, as applicable, for the area affected by the modification. The measured leakage from this test shall be included in the test report. The acceptance criteria as appropriate, shall be met. Minor modifications, replacements, or resealing of seal-welded doors, performed directly prior to the conduct of a scheduled Type A test do not require a separate test.

* In accordance with an exemption from 10 CFR 50 Appendix J, a Type A, B, or C test is not required for the replacement of piping and welds which constitute the Core Spray System minimum flow lines (3"-W23-152-7A, B) during the 1993 maintenance outage.

** In accordance with an exemption from 10 CFR 50 Appendix J, the Type C test of the shutdown cooling isolation valves (10MOV-17 and 10MOV-18) may be deferred until refueling outage Reload 11/ Cycle 12.

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4.7 BASES (cont'd)

assumption of no holdup in the secondary containment, resulting in a direct release of fission products from the primary containment through the filters and stack to the environs. Therefore, the specified primary containment leak rate and filter efficiency are conservative and provide additional margin between expected offsite doses and 10CFR100 guidelines.

The maximum allowable test leak rate at the peak pressure of 45 psig (Pa) is 0.5 weight percent per day (Lam). The maximum allowable test leak rate at the reduced pressure of 23 psig (P_t) will be verified to be conservative by actual primary containment leak rate measurements at both 45 psig and 23 psig upon completion of the containment structure.

To allow a margin for possible leakage deterioration between intervals, the maximum allowable leak rate (Ltm), which will be met to remain on the normal test schedule, is 0.75 L_t. In addition, it is intended to operate the primary containment structure at a slight positive pressure to continuously monitor primary containment leakage.

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As most leakage and deterioration of integrity is expected to occur through penetrations, especially those with resilient seals, a periodic leak rate test program of such penetrations is conducted at the peak pressure of 45 psig to insure not only that the leakage remains acceptably low but also that the sealing materials can withstand the accident pressure. For airlock leak test, a seal test at the peak pressure could be substituted for the complete airlock test, if no maintenance work is done which could affect the sealing capability of the airlock.

The leak rate testing program was originally based on Commission guidelines for development of leak rate testing and surveillance schedules for reactor containment vessels (16), and discussed in Question 5.4 of the FSAR. With the exceptions listed in Table 4.7-2, the system conforms to the latest Commission guidelines (17). The exceptions stated in Table 4.7-2 are necessary since additional requirements were added after the system was designed.

B. Standby Gas Treatment System and
C. Secondary Containment

Initiating reactor building isolation and operation of the Standby Gas Treatment System to maintain at least a 1/4 in. of water vacuum within the secondary containment provides an adequate test of the operation of the reactor

Amendment No. 91, 134

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"The leakage rate testing program was originally based on NRC guidelines for development of leak rate testing and surveillance schedules for reactor containment vessels. Containment structural integrity is currently verified with visual inspections and containment leak tightness is verified by the leakage rate surveillance testing described in the JAFNPP Primary Containment Leakage Rate Testing Program.

The following are the exemptions to 10 CFR 50 Appendix J, Option A, that have been approved by the NRC, and remain applicable to Option B of 10 CFR 50, Appendix J:

1. The Type C exceptions listed on Table 4.7-2, "Exception to Type C Tests," as of the date of issuance of Amendment 194 (July 29,1993).

2. Valves which are sealed with fluid from a seal system, such as the liquid in the suppression chamber are not required to be Type C tested. This exemption was approved by the NRC in the original Technical Specifications (SR 4.7.A.2.c(3)).

3. The MSIVs are tested at a pressure less than P_a and $\geq$ 25 psig, with a leakage rate acceptance criteria of $\leq$ 11.5 scfh per valve. This exemption was approved by the NRC in the original Technical Specifications (Table 4.7-2)."

The Program as implemented meets the requirements of Option B of 10 CFR 50 Appendix J (16) and Regulatory Guide 1.163 (13), with the exception stated in Specification 6.20. This exception applies to valves currently installed in this configuration, and does not apply to new installations. This exception is consistent with TS Table 4.7-2, previously contained in the TS, which allows reverse direction testing of valves as an exception to the requirements of the draft Appendix J, on the basis that pressurization direction was not a requirement at the time of plant design."

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TABLE 4.7-2

EXCEPTION TO TYPE C TESTS

The following penetrations are excepted from Type C testing requirements:

CONTAINMENT PENETRATION	PENETRATION FUNCTION	VALVE NUMBER	LOCAL LEAK RATE TEST PERFORMED
7A 7B 7C 7D	Main Steam	29AOV-80A 29AOV-80B 29AOV-80C 29AOV-80D 29AOV-86A 29AOV-86B 29AOV-86C 29AOV-86D	The inboard valves will be tested in the reverse direction. Pressure will be applied between the isolation valves and leakage measured. A water seal of 25 psig will be used on the inboard valve to determine the outboard valve's leak rate. (limit 11.5 SCFH at 25 psig.)
25	Drywell Purge Inlet (Air and/or Nitrogen)	27AOV-112 27AOV-131A 27AOV-131B	These valves will be tested in the reverse direction.
26A & 26B	Drywell Purge Inlet (Air and/or Nitrogen)	27AOV-113 27MOV-122	These valves will be tested in the reverse direction.
30A	Instrumentation	Various	Will not be tested as lines are sealed by process fluid.
35B	Traversing In-Core Probe "A"	07EV-104A	This valve is an explosive shear valve which cannot be Type C tested.

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TABLE 4.7-2

EXCEPTION TO TYPE C TESTS

CONTAINMENT PENETRATION	PENETRATION FUNCTION	VALVE NUMBER	LOCAL LEAK RATE TEST PERFORMED
35C	Traversing In-Core Probe "C"	07EV-104C	This valve is an explosive shear valve which cannot be Typo C tested.
35D	Traversing In-Core Probe "B"	07EV-104B	This valve is an explosive shear valve which cannot be Type C tested.
37A 37B 37C 37D	Control Rod Drive (below piston)	03SOV-120 03SOV-123 03AOV-126 03CRD-138	Will not be tested as lines (there are 137 lines, with 31 to 38 lines per penetration, and each has the four indicated valves) are sealed by process fluid.
38A 38B 38C 38D	Control Rod Drive (above piston)	03SOV-121 03SOV-122 03AOV-127	Will not be tested as lines (there are 137 lines, with 31 to 38 lines per penetration, and each has the three indicated valves) are sealed by process fluid.
39A	RHR Cont. Spray	10MOV-31A	This valve will be tested in the reverse direction.
39B	RHR Cont. Spray	10MOV-31B	This valve will be tested in the reverse direction.
45	Drywell Pressure Sensing	16-1AOV-101A	This valve will be tested in the reverse direction.
50C	Instrumentation - Sensing DW Pressure	Various	These instrument root valves are tested during a Type A test.

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TABLE 4.7-2

EXCEPTION TO TYPE C TESTS

CONTAINMENT PENETRATION	PENETRATION FUNCTION	VALVE NUMBER	LOCAL LEAK RATE TEST PERFORMED
202B	Vacuum Breaker - Reactor Building to Suppression Chamber	27AOV-101A 27AOV-101B	These valves will be tested in the reverse direction.
205	Pressure Suppression Chamber Purge Exhaust (Air or Nitrogen)	27AOV-117 27MOV-117	These valves will be tested in the reverse direction.
210A	RHR to Suppression Pool, RCIC, Core Spray Test to Suppression Pool	10MOV-16A 10MOV-21A 10MOV-34A 10MOV-167A 13MOV-27 14MOV-8A 14MOV-28A 10RHR-95A 14CSP-62A	Will not be tested as lines are water sealed by suppression chamber water.
210B	RHR to Suppression Pool, HPCI, Core Spray Test to Suppression Pool	10MOV-16B 10MOV-21B 10MOV-34B 10MOV-167B 14MOV-8B 14MOV-28B 23MOV-25 10RHR-95B 14CSP-62B	Will not be tested as lines are water sealed by suppression chamber water.
211A	RHR to Suppression Spray Header	10MOV-38A	This valve will be tested in the reverse direction.

Amendment No. ~~60~~, ~~120~~, ~~134~~, ~~143~~, ~~158~~, 194

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EXCEPTION TO TYPE C TESTS

CONTAINMENT PENETRATION	PENETRATION FUNCTION	VALVE NUMBER	LOCAL LEAK RATE TEST PERFORMED
211B	RHR to Suppression Spray Header	10MOV-38B	This valve will be tested in the reverse direction.
218	Torus Pressure Sensing	16-1AOV-102B	This valve will be tested in the reverse direction.
220	Torus Purge Inlet (Air and/or Nitrogen)	27AOV-116 27AOV-132A 27AOV-132B	These valves will be tested in the reverse direction.
221	RCIC - Vacuum Pump to Torus	13RCIC-07	Will not be tested as line is sealed by suppression chamber water.
222	HPCI - Turbine Drain Trap to Torus	23HPI-13	Will not be tested as line is water sealed by suppression chamber water.
224	RCIC - Pump Suction (Torus)	13MOV-39 13MOV-41	Will not be tested as lines are water sealed by suppression chamber water.
225A	RHR - Pump Suction, RHR to Radwaste	10MOV-13A 10MOV-13C 10RHR-729A	Will not be tested as lines are water sealed by suppression chamber water.
225B	RHR - Pump Suction	10MOV-13B 10MOV-13D 10RHR-729B	Will not be tested as lines are water sealed by suppression chamber water.

TABLE 4.7-2

EXCEPTION TO TYPE C TESTS

CONTAINMENT PENETRATION	PENETRATION FUNCTION	VALVE NUMBER	LOCAL LEAK RATE TEST PERFORMED
226	HPCI - Pump Suction (Torus)	23MOV-57 23MOV-58	Will not be tested as lines are water sealed by suppression chamber water.
227A	Core Spray - Pump Suction (Torus)	14MOV-7A	Will not be tested as line is water sealed by suppression chamber water.
227B	Core Spray - Pump Suction (Torus)	14MOV-7B	Will not be tested as line is water sealed by suppression chamber water.
228	Condensate to Torus	33CND-102	Will not be tested as line is water sealed by suppression chamber water.

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6.19 POSTACCIDENT SAMPLING PROGRAM

A program shall be established, implemented, and maintained which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines and particulates in plant gaseous effluents, and containment atmosphere samples under accident conditions. The program shall include the following:

A) Training of personnel,
B) Procedures for sampling and analysis,
C) Provisions for maintenance of sampling and analysis

6.20 INSERT D

Amendment No. 130

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"6.20 Primary Containment Leakage Rate Testing Program

A program shall be established to implement the leakage rate testing of the Primary Containment as required by 10 CFR 50.54(o) and 10 CFR 50, Appendix J, Option B, as modified by approved exemptions. This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, as modified by the exception that Type C testing of valves not isolable from the containment free air space may be accomplished by pressurization in the reverse direction provided that testing in this manner provides equivalent or more conservative results than testing in the accident direction. If potential atmospheric leakage paths (e.g., valve stem packing) are not subjected to test pressure, the portions of the valve not exposed to test pressure shall be subjected to leakage rate measurement during regularly scheduled Type A testing. A list of these valves, the leakage rate measurement method, and the acceptance criteria, shall be contained in the Program.

A. The peak Primary Containment internal pressure for the design basis loss of coolant accident (P_a), is 45 psig.

B. The maximum allowable Primary Containment leakage rate (L_a), at P_a, shall be 1.5% of primary containment air weight per day.

C. The leakage rate acceptance criteria are:

1. Primary containment leakage rate acceptance criteria is $\leq$ 1.0 L_a. During unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $\leq$ 0.60 L_a for the Type B and Type C tests and $\leq$ 0.75 L_a for the Type A tests;

2. Airlock testing acceptance criteria are:

a. Overall airlock leakage rate is $\leq$ 0.05 L_a when tested at $\geq$ P_a,

b. For each door seal, leakage rate is $\leq$ 120 scfd when pressurized to $\geq$ P_a.

3. MSIV leakage rate acceptance criteria is $\leq$ 11.5 scfh for each MSIV when tested at $\geq$ 25 psig

D. The provisions of Specification 4.0.B do not apply to the test frequencies specified in the Primary Containment Leakage Rate Testing Program.

E. The provisions of Specification 4.0.C are applicable to the Primary Containment Leakage Rate Testing Program."

7.0 REFERENCES

(1) E. Janssen, "Multi-Rod Burnout at Low Pressure," ASME Paper 62-HT-26, August 1962.

(2) K.M. Backer, "Burnout Conditions for Flow of Boiling Water in Vertical Rod Clusters," AE-74 (Stockholm, Sweden), May 1962.

(3) FSAR Section 11.2.2.

(4) FSAR Section 4.4.3.

(5) I.M. Jacobs, "Reliability of Engineered Safety Features as a Function of Testing Frequency," Nuclear Safety, Vol. 9, No. 4, July-August 1968, pp 310-312.

(6) Deleted

(7) I.M. Jacobs and P.W. Mariott, APED Guidelines for Determining Safe Test Intervals and Repair Times for Engineered Safeguards - April 1969.

(8) Bodega Bay Preliminary Hazards Report, Appendix 1, Docket 50-205, December 28, 1962.

(9) C.H. Robbins, "Tests of a Full Scale 1/48 Segment of the Humbolt Bay Pressure Suppression Containment," GEAP-3596, November 17, 1960.

(10) "Nuclear Safety Program Annual Progress Report for Period Ending December 31, 1966, Progress Report for Period Ending December 31, 1966, ORNL-4071."

(11) Section 5.2 of the FSAR.

(12) TID 20583, "Leakage Characteristics of Steel Containment Vessel and the Analysis of Leakage Rate Determinations."

(13) Technical Safety Guide, "Reactor Containment Leakage Testing and Surveillance Requirements," USAEC, Division of Safety Standards, Revised Draft, December 15, 1966.

(14) Section 14.6 of the FSAR.

(15) ASME Boiler and Pressure Vessel Code, Nuclear Vessels, Section III. Maximum allowable internal pressure is 62 psig.

(16) 10 CFR 50.54, Appendix J, "Reactor Containment Testing Requirements."

(17) 10 CFR 50, Appendix J, February 13, 1973. Deleted

Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995

10 CFR Part 50 Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors, Option B - Performance Based Requirements," Effective date October 26, 1995.

Attachment IV to JPN-96-016

APPENDIX J OPTION B IMPLEMENTATION PLAN

(JPTS-96-003)

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT
Docket No. 50-333
DPR-59

INTRODUCTION

Option B of 10 CFR 50, Appendix J (Option B) provides a performance based approach for leakage rate testing of primary containment. This action improves the focus of the regulation by eliminating prescriptive requirements that have been determined to be marginal in safety. Option B allows for test intervals to be established based on system and component performance and provides for greater flexibility for cost effective implementation methods of regulatory safety objectives.

This plan outlines how the Authority will incorporate Option B into the Primary Containment Leakage Rate Testing Program (the Program) for Type A, B and C testing at the FitzPatrick plant. The Authority will comply with the requirements contained within References 1 through 4.

COMPONENT LEAKAGE LIMITS

Fitzpatrick will set administrative limits for each Appendix J component and develop the procedures for changing them. The existing plant administrative limits will be reviewed and compared against consistent limits set by the FitzPatrick Maintenance Rule Expert Panel.

A component's measured leakage is compared against its administrative limit to determine whether the As-Found LLRT passed or failed on a performance basis. The expert panel will review and approve administrative leakage rate limits since the proper setting of these limits is extremely important under the performance-based rule. Comparison of a components As-Found leakage against the administrative limits will determine if a test passed or failed , thus, the values chosen will affect each component's Type B or C testing frequency.

Two limits, a warning limit and an alarm limit, will be specified for each component. A component should be repaired if the As-Found leakage rate is above the warning limit, but below the alarm limit. If repaired, an As-Left test will be conducted. The As-Found test is not counted as a performance failure. If a component's leakage rate is above the alarm limit, then the component shall be repaired. The component will be retested after the repair. The As-found test is counted as a performance failure. This scheme allows for a low leakage setpoint to trigger component repairs so as to maintain containment in good condition. It also allows for the alarm limits to be set high enough that a Type B or C As-Found test need not be counted as a failure unless the component is found in a seriously degraded condition.

Although administrative limits are used to maintain the containment in good condition, it should be noted that the sum of the As-Left Maximum Pathway Leakage Rates for all Appendix J barriers must be less than 0.6 La per plant Technical Specifications (TS) prior to entering a mode requiring primary containment integrity. In past instances where leakage from one or more components have exceeded administrative limits, and correcting this condition would have either been very difficult or costly, a total containment leakage evaluation was performed and documented. If the evaluation concluded that the additional leakage posed no significant safety impact, and the TS limit of 0.6La was not exceeded, the component(s) was(were) allowed to continue to leak in excess of the individual valve leakage

administrative limit until repairs could be made. The test is still considered to be a failure because the administrative alarm limit was exceeded. The Authority reserves the option to continue use of this criteria when the alarm limit is exceeded, only on a critical as needed basis.

BUILDING PERFORMANCE BASELINES/ESTABLISHING TEST FREQUENCIES

Type A Test

Type A testing procedures will be revised per the new Option B requirements, and shall be performed during a period of reactor shutdown at a frequency of at least once per 10 years based on acceptable performance history. Acceptable performance history is defined as completion of two consecutive periodic Type A tests where calculated performance leakage rate was less than 1.0 La. Elapsed time between the first and last tests in a series of consecutive satisfactory tests used to determine performance shall be at least 24 months.

Option B allows for reviewing performance history with several options to determine if past Type A tests were satisfactory.

a. As-Found Type A test results can be compared to 1.0 La rather than the previous 0.75 La criteria.

b. Leakage savings (repairs/adjustments) from type B and C testable pathways which were added as penalties to the As-Found Type A test can be subtracted when reviewing previous Type A test results.

c. The Type A test UCL from previous Type A tests may be recalculated using the Mass Point Methodology described in ANSI/ANS 56.8-1994.

The Authority has reviewed Type A test results for the FitzPatrick plant as compared to the new requirements/criteria to establish a test frequency for the Primary Containment Integrated Leak Rate Test (ILRT). It has been determined that the two most recent As-Found Type A tests (1990 and 1995) are below the 1.0 La criteria. Leakage savings (repairs/adjustments) from Type B and C testable pathways which were added as additions to the As-Found Type A test were not subtracted. Based on this, Fitzpatrick will implement the 10 year Type A test frequency based on the criteria set forth in the new rule. The Type A test interval may be extended by up to 15 months, however, this option will only be used in cases where refueling schedules have been changed to accommodate other factors.

Appropriate administrative controls have been developed such that prior to initiating a Type A test, a visual examination shall be conducted of accessible interior and exterior surfaces of the containment system for structural problems which may affect either the containment structure integrity or the performance of the Type A test. These containment inspections will also be conducted during two other refueling outages before the next Type A test. Therefore, FitzPatrick will perform these examinations at least three times every ten years, regardless of the Type A test schedule.

Type B and C Test

The Authority will develop a procedure for building and documenting Type B and C testing performance baselines for the FitzPatrick plant. This procedure will be used to ensure that a consistent criteria is applied to establish component baseline performance and their subsequent testing frequencies. The Authority will develop bases for test frequencies based upon performance of leakage tests that meet the requirements of Option B and approved exemptions. In addition historical performance, considerations such as service life, environment, design, system application, special service conditions, and safety impact/risk from failure will be reviewed/evaluated in determining test frequency. The component's performance history will determine its test interval.

The Authority will compile the required leak rate historical data and continue to update this data with the most current As-Found leak rate data. The performance history of each component will be evaluated against the alarm limit to rate component performance over the last two refuel outages.

Type B components which are determined to have a performance rating of unknown, poor, or improving, will require a 30 month test frequency. A rating of good or excellent allows for up to a 120 month test interval. The component will be evaluated to determine if it is a member of a group of components subject to the same common mode failure mechanisms. If so, then the test intervals of all members of that group will be staggered, such that some percentage of those components are tested periodically. The date of the next test may be earlier than required by the baseline interval for this reason. The Authority intends to place good or excellent performing Type B components on a 120 month test interval. The test frequencies of similar/grouped components will be staggered to ensure that a percentage of components are tested periodically.

Type C components which are determined to have a performance rating of unknown, poor, or improving, will require a 30 month test frequency. A rating of good or excellent allows for up to a 60 month interval.

Per NRC Regulatory Guide 1.163, the NRC does not endorse extended test intervals of greater than 60 months for Type C tests. Further, the Regulatory Guide states that Type C tests for Main Steam and Feedwater isolation valves and containment purge and vent valves, should be limited to 30 months with consideration given to operating experience and safety significance. The Authority intends to fully comply with this guidance by performing Type C tests on Main Steam, Feedwater, and Containment Vent and Purge isolation valves at a 30

month interval with consideration given to operating experience and safety significance. Type B and C testing intervals may be extended by 25 percent of the interval, not to exceed 15 months, however, this option will only be used in cases where refueling schedules have been changed to accommodate other factors.

The Authority will place the primary containment airlock on a test frequency of at least once per 30 months. Airlock door seals will be tested within seven days after each containment access when primary containment integrity is required. For periods of multiple containment entries where the airlock doors are routinely used for access more frequently than once every seven days, door seals may be tested once per 30 days during this time period.

FAILURES, REPAIRS/ADJUSTMENTS, CORRECTIVE ACTIONS

Failures, repairs/adjustments, and corrective actions for Type A, B, and C testing results will be evaluated through the Deviation Event Report process.

If Type A performance leak rate test results are not acceptable, then a determination will be performed to identify the cause of unacceptable performance and determine appropriate corrective actions. Once the cause has been determined, and corrective actions have been completed, acceptable performance should be reestablished by performing a Type A test within 48 months following the unsuccessful Type A test. Following a successful Type A test, the surveillance frequency may be returned to once per 10 years.

Type B or C component failures discovered during performance of the Type A test will be considered as failure of a Type B or C test for purposes of cause determination and corrective action. This includes failures of type B and/or C components that were not previously identified by a Type B or C test.

Type B and C component failures will require that testing frequency be set at the baseline test interval of 30 months. A cause determination will be performed and corrective actions identified that focus on those activities that can eliminate the identified cause of failure and prevent recurrence. Once the cause determination and corrective actions have been completed, acceptable performance should be reestablished and the testing frequency returned to the extended interval in accordance with the NEI 94-01 guidance.

In addition to the periodic As-Found Type B and C test, an As-Found test shall be performed prior to maintenance, repair, modification, or adjustment activity if the activity could adversely affect the penetration leak tightness. An As-Left Type B or C test shall be performed following those activities, unless engineering analysis shows reasonable assurance that such work does not affect the leak tightness of the penetration and that it can still perform its intended function. Specifically for Type C tests, an alternative method or analysis can be used to provide reasonable assurance that such work does not affect a valve's leak tightness and a valve will still perform its intended function. If As-Found and As-Left Type B and/or C results are both less than the allowable administrative limit, a change in testing frequency is not required. If the results are unacceptable, testing shall continue at initial test intervals until adequate performance history is reestablished.

TECHNICAL CRITERIA AND TESTING METHODOLOGY INTERPRETATION

Changes to the leak rate testing program will be required regarding testing methodology and procedural requirements under Option B. The technical details/criteria and testing methodology as described in ANSI/ANS 56.8-1994 will be used in updating the FitzPatrick Type A, B, and C leak rate testing program.

REFERENCES

1. Regulatory Guide 1.163, Performance-Based Containment Leak-Test Program, dated September 1995

2. Option B of 10 CFR 50 Appendix J, Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors (60 FR 49495)

3. NEI 94-01, Industry Guideline for Implementing Performance-Based Option of 10 CFR 50 Appendix J, Rev. 0, dated July 26, 1995

4. ANSI/ANS-56.8-1994, Containment System Leakage Testing Requirements

Attachment V to JPN-96-016

LIST OF COMMITMENTS

Commitment No.	Description	Due Date
JPN-96-016-01	Perform the appropriate actions to qualify the Standby Gas Treatment fan motors and the GE Motor Control Centers for a 1.5 percent per day primary containment leakage rate.	July 1, 1996 or prior to implementation of a 1.5 percent per day allowable leakage rate.
JPN-96-016-02	Revise plant procedures to incorporate a soap bubble test during ILRT for the 17 containment isolation valves listed in Table 1, utilizing the acceptance criteria of zero bubbles.	July 1, 1996 or prior to implementation of a 1.5 percent per day allowable leakage rate.