

PRIMARY CONTAINMENT LEAKAGELIMITING CONDITION FOR OPERATION

3.6.1.2 Primary containment leakage rates shall be limited to:

- a. An overall integrated leakage rate of less than or equal to:
1.  $L_a$ , 0.65% by weight of the containment air per 24 hours at  $P_a$ , 9.0 psig.
  - b. A combined leakage rate of less than or equal to 0.60  $L_a$ , for all penetrations and all valves subject to Type B and C tests when pressurized to  $P_a$ , 9.0 psig.
  - c.\* Less than or equal to 28 scf per hour for any one main steam line through the isolation valves when tested at  $P_a$ , 9.0 psig.
  - d. A combined leakage rate of less than or equal to 0.08  $L_a$ , for all penetrations that are secondary containment bypass leakage paths when pressurized to  $P_a$ , 9.0 psig.
  - e. A combined leakage rate of less than or equal to 1 gpm times the total number of containment isolation valves in hydrostatically tested lines which penetrate the primary containment, when tested at 1.10  $P_a$ , 9.9 psig.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2\*\*, and 3.

ACTION:

With:

- a. The measured overall integrated primary containment leakage rate exceeding 0.75  $L_a$ , or
- b. The measured combined leakage rate for all penetrations and all valves subject to Type B and C tests exceeding 0.60  $L_a$ , or
- c. The measured leakage rate exceeding 28 scf per hour for any one main steam line through the isolation valves, or
- d. The combined leakage rate for all penetrations which are secondary containment bypass leakage paths exceeding 0.08  $L_a$ ; or
- e. The measured combined leakage rate for all containment isolation valves in hydrostatically tested lines which penetrate the primary containment exceeding 1 gpm times the total number of such valves,

restore:

\*Exemption to Appendix J of 10 CFR 50.

\*\*See Special Test Exception 3.10.1.

~~#The leakage rates of valves 1B21 F032A and B are not required to be included until startup from the third refueling outage in accordance with an approved exemption to Appendix J of 10 CFR 50.~~

~~##The leakage rates of valves 1B21 F032A and B are not required to be included until startup from the third refueling outage.~~

CLINTON - UNIT 1

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Amendment No. 57,

No Change. Provided for continuity only.

CONTAINMENT SYSTEMS

Attachment 3  
to U-602116  
LS-93-003  
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PRIMARY CONTAINMENT LEAKAGE

LIMITING CONDITION FOR OPERATION (Continued)

3.6.1.2 ACTION (Continued):

- a. The overall integrated leakage rate(s) to less than or equal to 0.75 La, and
- b. The combined leakage rate for all penetrations and all valves subject to Type B and C tests to less than or equal to 0.60 La, and
- c. The leakage rate to less than 28 scf per hour for any one main steam line through the isolation valves, and
- d. The combined leakage rate for all penetrations which are secondary containment bypass leakage paths to less than or equal to 0.08 La, and
- e. The combined leakage rate for all containment isolation valves in hydrostatically tested lines which penetrate the primary containment to less than or equal to 1 gpm times the total number of such valves

prior to increasing reactor coolant system temperature above 200°F.

SURVEILLANCE REQUIREMENTS

4.6.1.2 The containment leakage rates shall be demonstrated at the following test schedule and shall be determined in conformance with the criteria specified in Appendix J of 10 CFR 50 using the methods and provisions of ANSI N45.4-1972 and BN-TOP-1 and verifying the result by the Mass Point Methodology described in ANSI/ANS N56.8-1981.

- a. Three Type A Overall Integrated Containment Leakage Rate tests shall be conducted at  $40 \pm 10$  month intervals during shutdown at Pa, 9.0 psig during each 10-year service period. The third test of each set shall be conducted during the shutdown for the 10-year plant inservice inspection.
- b. If any periodic Type A test fails to meet 0.75 La the test schedule for subsequent Type A tests shall be reviewed and approved by the Commission. If two consecutive Type A tests fail to meet 0.75 La a Type A test shall be performed at least every 18 months until two consecutive Type A tests meet 0.75 La at which time the above test schedule may be resumed.
- c. The accuracy of each Type A test shall be verified by a supplemental test which:
  1. Confirms the accuracy of the test by verifying that the difference between the supplemental data and the Type A test data is within 0.25 La. The formula to be used is :  $[Lo + Lam - 0.25 La] \leq Lc \leq [Lo + Lam + 0.25 La]$  where Lc = supplemental test result, Lo = superimposed leakage and Lam = measured Type A leakage.

CONTAINMENT SYSTEMS

PRIMARY CONTAINMENT LEAKAGE

SURVEILLANCE REQUIREMENTS (Continued)

4.6.1.2 (Continued)

2. Has duration sufficient to establish accurately the change in leakage rate between the Type A test and the supplemental test.
3. Requires the quantity of gas injected into the primary containment or bled from the primary containment during the supplemental test to be between 0.75 La and 1.25 La.
- d. Type B and C tests shall be conducted\*\*\* with gas at Pa, 9.0 psig, at intervals no greater than 24 months except for tests involving:
  1. Air locks,
  2. Main steam line isolation valves,
  3. Penetrations using continuous leakage monitoring systems,
  4. All containment isolation valves in hydrostatically tested lines which penetrate the primary containment, and
  5. Purge supply and exhaust isolation valves with resilient material seals.
- e. Air locks shall be tested and demonstrated OPERABLE per Surveillance Requirement 4.6.1.3.
- f. Main steam line isolation valves shall be leak tested with gas at Pa, 9.0 psig, at least once per 18 months.
- g. Type B tests for penetrations employing a continuous leakage monitoring system shall be conducted at Pa, 9.0 psig, at every other reactor shutdown for refueling, but in no case at intervals greater than 3 years.
- h. All containment isolation valves in hydrostatically tested lines which penetrate the primary containment shall be leak tested at 1.10 Pa, 9.9 psig, at least once per 18 months.
- i. Purge supply and exhaust isolation valves with resilient material seals shall be tested and demonstrated OPERABLE per Surveillance Requirement 4.6.1.8.3.
- j. The provisions of Specification 4.0.2 are not applicable to Specifications 4.6.1.2.a, 4.6.1.2.b, 4.6.1.2.d, and 4.6.1.2.g.

\*\*\*Except as provided in NRC-approved exemption to Appendix J to 10 CFR 50 for containment penetration IMC-44.

CLINTON - UNIT 1

3/4 6-4

Amendment No. 1, 62, 66

\* The leakage rate for containment penetration IMC-4 is not required to be determined until startup from the fifth refueling outage in accordance with an approved exemption to Appendix J of 10CFR50.

CONTAINMENT SYSTEMS

PRIMARY CONTAINMENT LEAKAGE

LIMITING CONDITION FOR OPERATION

3.6.1.2 Primary containment leakage rates shall be limited to:

- a. An overall integrated leakage rate of less than or equal to  $\pm$  La, 0.65% by weight of the containment air per 24 hours at Pa, 9.0 psig.
- b. A combined leakage rate of less than or equal to 0.60 La, for all penetrations and all valves subject to Type B and C tests when pressurized to Pa, 9.0 psig.
- c.\* Less than or equal to 28 scf per hour for any one main steam line through the isolation valves when tested at Pa, 9.0 psig.
- d. A combined leakage rate of less than or equal to 0.08 La, for all penetrations that are secondary containment bypass leakage paths when pressurized to Pa, 9.0 psig.
- e. A combined leakage rate of less than or equal to 1 gpm times the total number of containment isolation valves in hydrostatically tested lines which penetrate the primary containment, when tested at 1.10 Pa, 9.9 psig.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2\*\*, and 3.

ACTION:

With:

- a. The measured overall integrated primary containment leakage rate exceeding 0.75 La, or
- b. The measured combined leakage rate for all penetrations and all valves subject to Type B and C tests exceeding 0.60 La, or
- c. The measured leakage rate exceeding 28 scf per hour for any one main steam line through the isolation valves, or
- d. The combined leakage rate for all penetrations which are secondary containment bypass leakage paths exceeding 0.08 La; or
- e. The measured combined leakage rate for all containment isolation valves in hydrostatically tested lines which penetrate the primary containment exceeding 1 gpm times the total number of such valves,

restore:

\*Exemption to Appendix J of 10 CFR 50.

\*\*See Special Test Exception 3.10.1.

~~##The leakage rates of valves 1B21 F032A and B are not required to be included until startup from the third refueling outage in accordance with an approved exemption to Appendix J of 10 CFR 50.~~  
~~##The leakage rates of valves 1B21 F032A and B are not required to be included until startup from the third refueling outage.~~

## CONTAINMENT SYSTEMS

### PRIMARY CONTAINMENT LEAKAGE

#### LIMITING CONDITION FOR OPERATION (Continued)

##### 3.6.1.2 ACTION (Continued):

- a. The overall integrated leakage rate(s) to less than or equal to 0.75 La, and
- b. The combined leakage rate for all penetrations and all valves subject to Type B and C tests to less than or equal to 0.60 La, and
- c. The leakage rate to less than 28 scf per hour for any one main steam line through the isolation valves, and
- d. The combined leakage rate for all penetrations which are secondary containment bypass leakage paths to less than or equal to 0.08 La, and
- e. The combined leakage rate for all containment isolation valves in hydrostatically tested lines which penetrate the primary containment to less than or equal to 1 gpm times the total number of such valves

prior to increasing reactor coolant system temperature above 200°F.

#### SURVEILLANCE REQUIREMENTS

4.6.1.2 The containment leakage rates shall be demonstrated at the following test schedule and shall be determined in conformance with the criteria specified in Appendix J of 10 CFR 50 using the methods and provisions of ANSI N45.4-1972 and BN-TOP-1 and verifying the result by the Mass Point Methodology described in ANSI/ANS N56.8-1981.

- a. Three Type A Overall Integrated Containment Leakage Rate tests shall be conducted at  $40 \pm 10$  month intervals during shutdown at Pa, 9.0 psig during each 10-year service period. ~~The third test of each set shall be conducted during the shutdown for the 10-year plant inservice inspection.~~

- b. If any ~~periodic~~ Type A test fails to meet  $0.75 La$ , the test schedule for subsequent Type A tests shall be reviewed and approved by the Commission. If two consecutive Type A tests fail to meet  $0.75 La$ , a Type A test shall be performed at least every 18 months until two consecutive Type A tests meet  $0.75 La$ , at which time the above test schedule may be resumed.

as-found

- c. The accuracy of each Type A test shall be verified by a supplemental test which:
  1. Confirms the accuracy of the test by verifying that the difference between the supplemental data and the Type A test data is within 0.25 La. The formula to be used is:  $[Lo + Lam - 0.25 La] \leq Lc \leq [Lo + Lam + 0.25 La]$  where  $Lc$  = supplemental test result,  $Lo$  = superimposed leakage and  $Lam$  = measured Type A leakage.

CLINTON - UNIT 1

3/4 6-3

Amendment No. 68

The as-left overall integrated containment leakage rate shall be less than 0.75 La.



CONTAINMENT SYSTEMS

PRIMARY CONTAINMENT LEAKAGE

SURVEILLANCE REQUIREMENTS (Continued)

4.6.1.2 (Continued)

2. Has duration sufficient to establish accurately the change in leakage rate between the Type A test and the supplemental test.
3. Requires the quantity of gas injected into the primary containment or bled from the primary containment during the supplemental test to be between 0.75 La and 1.25 La. <sup>\*\*</sup>
- d. Type B and C tests shall be conducted\*\*\* with gas at Pa, 9.0 psig, at intervals no greater than 24 months except for tests involving:
  1. Air locks,
  2. Main steam line isolation valves,
  3. Penetrations using continuous leakage monitoring systems,
  4. All containment isolation valves in hydrostatically tested lines which penetrate the primary containment, and
  5. Purge supply and exhaust isolation valves with resilient material seals.
- e. Air locks shall be tested and demonstrated OPERABLE per Surveillance Requirement 4.6.1.3.
- f. Main steam line isolation valves shall be leak tested with gas at Pa, 9.0 psig, at least once per 18 months.
- g. Type B tests for penetrations employing a continuous leakage monitoring system shall be conducted at Pa, 9.0 psig, at every other reactor shutdown for refueling, but in no case at intervals greater than 3 years.
- h. All containment isolation valves in hydrostatically tested lines which penetrate the primary containment shall be leak tested at 1.10 Pa, 9.9 psig, at least once per 18 months.
- i. Purge supply and exhaust isolation valves with resilient material seals shall be tested and demonstrated OPERABLE per Surveillance Requirement 4.6.1.8.3.
- j. The provisions of Specification 4.0.2 are not applicable to Specifications 4.6.1.2.a, 4.6.1.2.b, 4.6.1.2.d, and 4.6.1.2.g.

\*\*\*Except as provided in NRC-approved exemption to Appendix J to 10 CFR 50 for containment penetration IMC-44.

CLINTON - UNIT 1

3/4 6-4

Amendment No. 1, 62, 68

\* The leakage rate for containment penetration IMC-4 is not required to be determined until startup from the fifth refueling outage in accordance with an approved exemption to Appendix J of 10 CFR 50.

### 3.4.6 CONTAINMENT SYSTEMS

#### BASES

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#### 3/4.6.1 PRIMARY CONTAINMENT

##### 3/4.6.1.1 PRIMARY CONTAINMENT INTEGRITY

PRIMARY CONTAINMENT INTEGRITY ensures that the release of radioactive materials from the containment atmosphere will be restricted to those leakage paths and associated leak rates assumed in the accident analyses. This restriction, in conjunction with the leakage rate limitation, will limit the site boundary radiation doses to within the limits of 10 CFR Part 100 during accident conditions.

##### 3/4.6.1.2 PRIMARY CONTAINMENT LEAKAGE

The limitations on containment leakage rates ensure that the total containment leakage volume will not exceed the value assumed in the accident analyses at the peak accident pressure of 9.0 psig, Pa. As an added conservatism, the measured overall integrated leakage rate is further limited to less than or equal to 0.75 La during performance of the periodic tests to account for possible degradation of the containment leakage barriers between leakage tests.

Operating experience with the main steam line isolation valves has indicated that degradation has occasionally occurred in the leak tightness of the valves; therefore the special requirement for testing these valves.

The surveillance testing for measuring leakage rates is consistent with the requirements of Appendix J to 10 CFR 50 (with the exception of exemption(s) granted for main steam isolation valve leak testing by the NRC). Insert.

##### 3/4.6.1.3 PRIMARY CONTAINMENT AIR LOCKS

The limitations on closure and leak rate for the containment air locks are required to meet the restrictions on PRIMARY CONTAINMENT INTEGRITY and the containment leakage rate given in Specifications 3.6.1.1 and 3.6.1.2. The specification makes allowances for the fact that there may be long periods of time when the air locks will be in a closed and secured position during reactor operation. Only one closed door in each air lock is required to maintain the integrity of the containment.

The surveillance testing for measuring leak rate for the containment air locks is consistent with the requirements of Appendix J to 10 CFR 50 with the exception of exemption(s) granted for the containment air lock leak testing.

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In addition to exemptions related to testing of individual components, the following exemptions have been granted from the requirements of Appendix J of 10CFR Part 50:

1. Section III.A.1.(a) - an exemption from the requirement to stop a Type A test if excessive leakage is detected. This exemption allows the satisfactory completion of the Type A test if the leakage can be isolated and appropriately factored into the results. (Reference NRC letter dated \_\_\_\_\_.)
2. Section III.A.5.(b) - an exemption from the acceptance criteria for Type A tests. This exemption allows, in lieu of the present single criterion that the total measured containment leakage rate be less than or equal to 0.75 of the maximum allowable leakage rate, La, the "as-found" allowable leakage rate must be less than La and the "as-left" allowable leakage rate must be less than 0.75 La. (Reference NRC letter dated \_\_\_\_\_.)
3. Section III.D.1.(a) - an exemption that removes the requirement that the third Type A test for each 10-year service period be conducted when the plant is shut down for the 10-year plant inservice inspection. (Reference NRC letter dated \_\_\_\_\_.)

Exemption 1 allows the continuance of a Type A test when excessive leakage is detected provided that significant leaks are identified and isolated. After completion of the modified Type A test (i.e., a Type A test with the significant leakage paths isolated), local leakage rates of those paths isolated during the modified Type A test will be measured before and after repairs to those paths. The adjusted "as-found" leakage rate for the Type A test can be determined by adding the local (minimum pathway) leakage rates measured before any repairs, to the containment integrated leakage measured during the modified Type A test, plus any leakage improvements (defined below) made prior to the test. This adjusted "as-found" leakage rate is to be used in determining the success or failure of the test and thus the scheduling of subsequent Type A tests in accordance with Section III.A.6 of Appendix J.

The acceptability of the modified Type A test can be determined by calculating the adjusted "as-left" containment overall integrated leakage rate and comparing it to the acceptance criteria of 0.75 La. The adjusted "as-left" Type A leakage rate is determined by adding the local leakage rates measured after any repairs and/or adjustments are made to the paths isolated during the test, to the leakage rate measured during the modified Type A test. It should be noted that additional adjustments for non-standard lineups and changes in containment volume may be added to the measured leakage rate for both "as-found" and "as-left" determinations.



Leakage improvements are defined as the difference between a pre-repair local leak rate test (LLRT) and post-repair LLRT done on containment penetrations prior to the start of the Type A test.

The only difference between this approach and Appendix J requirements are that: (1) potentially excessive leakage paths will be repaired and/or adjusted after the Type A test is completed; and (2) the Type A test leakage rate is partially determined by calculation rather than by direct measurement.