4.4 REACTOR BUILDING

4.4.1 Containment Leakage Tests

Applicability

Applies to Containment leakage.

Objective

To verify that leakage from the Reactor Building is maintained within allowable limits.

Specification

4.4.1.1 Integrated Leak Rate Tests

4.4.1.1.1 Test Pressure

The periodic integrated leak rate test may be performed at a test pressure of not less than 29.5 psig. The containment leakage rate shall be determined in conformance with the criteria specified in Appendix J of 10CFR50 using the methods and provisions of ANSI N45.4-1972 or the mass-plot method.

4.4.1.1.2 Frequency of Test

After the preoperational leakage rate tests, a set of three Type A tests shall be performed with the unit in a shutdown condition at approximately equal intervals during each 10 year service period. The third test of each set shall be conducted when the plant is shutdown for the 10 year inservice inspections.

4.4.1.1.3 Acceptance Criteria

The overall acceptance containment leakage rate is determined by the pre-operational leakage rate test and shall not exceed 0.25 weight percent of containment air per 24 hours at 59 psig. Any leakage in excess of 50% of the total allowed containment leakage shall be demonstrated to be to the penetration room. If the reduced pressure leakage rate 95% Upper Confidence Level (UCL) exceeds 0.75 L_t, a test at peak pressure shall be conducted. If the peak pressure leakage rate 95% UCL exceeds 0.75 la, the test schedule applicable to subsequent Type A tests shall be reviewed and approved by the Commission. If leakage rate 95% UCL during any two consecutive Type A tests exceeds either 0.75 La or 0.75 L_t, a Type A test shall be performed at each shut-down for refueling or approximately every 18 months, whichever occurs first, until two consecutive Type A tests demonstrate leakage rate 95% UCL is less than 0.75 La or 0.75 L_t, at which time the normal testing schedule may be resumed.

4.4.1.1.4 Accuracy

The accuracy of each Type A test shall be verified by a supplemental test which:

a. Confirms the accuracy of the Type A test by verifying that the absolute difference between supplemental and Type A test data is within 0.25 La or 0.25 L_t, as appropriate.

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Attachment III

No Significant Hazards Consideration Evaluation

Duke Power has determined that the present amendment request poses no significant hazards as defined by NRC regulations in 10 CFR 50.92. This ensures that operation of the facility in accordance with the proposed amendment would not:

(1) involve a significant increase in the probability or consequences of an accident previously evaluated; or

(2) create the possibility of a new or different kind of accident from any accident previously evaluated; or

(3) involve a significant reduction in a margin of safety.

The proposed technical specification amendment will allow the use of the mass-plot method as means of calculating the leakage rate. The mass-plot is a newer and more accurate means of calculating containment leakage. In the mass-plot method, the mass of air in containment is calculated and plotted as a function of time. The slope of the Linear Least Squares fit to the data is the leakage.

Furthermore, in 1976 the NRC Staff recognized that the mass-plot technique was superior to those methods in use at the time and acted to take advantage of it. An article was written (reference: "Containment Leak Rate testing: Why the Mass-Plot Analysis Method is Preferred", Power Engineering, February 1976) which compared the results of test analyses that were performed using all three techniques (i.e. mass-plot; point-to-point; and total time). Subsequently, the mass-plot method received NRC Staff endorsement and became the Staff-recommended method to use. A revision to the standard (ANSI/ANS 56.8-1981, "Containment System Leakage testing") specifies the use of mass-plot, to the exclusion of the two older methods. Further, a draft revision to Appendix J incorporates this new standard.

The subsequent paragraphs address each of the three standards that are promulgated in 10 CFR 50 Part 50.92(c).

First Standard

Involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed amendment allows the use of the mass-plot technique to calculate the leakage rate; which is a newer, more accurate and NRC Staff endorsed method. The technique used to calculate Containment Leakage rate during testing is not considered to be an initiator of any accidents previously evaluated.

The mass-plot technique is judged to be a superior method in calculating containment leakage rates, resulting in a more reliable method of verifying that leakage from the containment is maintained within allowable limits. With a more reliable calculating technique employed, the assessment of containment integrity, through integrated leak rate testing, is enhanced. As such the consequences of previously evaluated accidents are not significantly impacted, if at all.

Second Standard

Create the possibility of a new or different kind of accident from any accident previously evaluated.

Since the proposed amendment only involves the use of a different technique to calculate the leakage rate during a containment integrated leak rate test (CILRT), no new or different kind of accident from any accident previously evaluated is created. The technique used to calculate leak rates in itself is not considered to be an initiator of any accidents, transient, incidents or events.

Third Standard

Involve a significant reduction in a margin of safety.

The proposed amendment allows the use of the mass-plot technique to calculate the leakage rate from the containment when performing a CILRT. The mass-plot technique is a newer, more accurate method of calculating the leakage rate, which has been endorsed by the NRC Staff. With the adoption of this technique, a more reliable determination of containment leakage during a CILRT is possible. As such, one's degree of understanding and confidence level of containment integrity would be enhanced. Therefore this proposed revision does not impact a margin of safety.

In summary, Duke contends that the proposed amendment does not constitute a significant hazard, in that this revision adopts an enhanced method of calculating containment leakage during a CILRT. Thus, the revision does not impact the probabilities or consequences of a previously analyzed accident nor does it create a new or different accident, and this change does not significantly reduce a margin of safety. Therefore, Duke concludes that a No Significant Hazards Consideration is warranted.