



containment leakage calculations for Containment Integrated Leakage Rate Tests (CILRTs) be performed using either the point-to-point method or total time method.

A more recent standard, ANSI/ANS 56.8-1981, "Containment System Leakage Testing Requirements," which was intended to replace ANSI N45.4-1972, specifies the use of the mass point method to the exclusion of the two older methods. The NRC staff anticipates publishing, for comment, a proposed revision to Appendix J that would permit the use of the mass point method. Pending such revision to Appendix J, licensees who wish to use the mass point technique must submit an application for partial exemption from the requirement that Appendix J test calculations for CILRTs will conform with ANSI N45.4-1972.

### III.

By letter dated December 23, 1987, the licensee requested a partial exemption from 10 CFR Part 50, Appendix J, Paragraph III.A.3, which requires that all CILRTs be performed in accordance with ANSI N45.4-1972, "Leakage Rate Testing of Containment Structures for Nuclear Reactors." ANSI N45.4-1972 requires that leakage calculations be performed using either the total time method or the point-to-point method. The licensee has stated in support of the application for exemption from Appendix J that the mass point method is a more accurate method of calculating containment leakage rate.

It has been recognized by the professional community that the mass point method is superior to the two other methods, point-to-point and total time, which are referenced in ANSI N45.4-1972 and endorsed by the present regulations. The mass point method calculates the air mass at each point in time, and plots it against time. A linear regression line is plotted through the mass-time points using a least square fit. The slope of this line is proportional to the leakage rate.

In addition to the method of calculation, consideration of the length of the test should also be included in the overall program. In accordance with Section 7.6 of ANSI N45.4-1972, a test duration less than 24 hours is only allowed if approved by the NRC, and the only currently approved methodology for such a test is contained in Bechtel Topical Report BN-TOP-1, Revision 1, "Testing Criteria for Integrated Leakage Rate Testing of Primary Containment Structures for Nuclear Power Plants," dated November 1, 1972. This approach only allows use of the total time method. Therefore, the staff will condition the exemption to require a minimum test duration of 24 hours when the mass point method is used.

The licensee's letter also submitted information to identify the special circumstances for granting this exemption for Millstone Unit No. 2 pursuant to 10 CFR 50.12. The purpose of Appendix J to 10 CFR Part 50 is to assure that containment leak-tight integrity can be verified periodically throughout the service lifetime so as to maintain containment leakage rate within the limit specified in the plant technical specifications. The underlying purpose of

the rule specifying particular methods for calculating leakage rates is to assure that accurate and conservative methods are used to assess the results of containment leakage rate tests. As set forth above, the mass point method has been a widely used method providing accurate results and the staff has determined that this method of calculating leakage rate satisfies the purpose of the rule.

Based on the above discussion, the licensee's proposed partial exemption from paragraph III.A.3 of Appendix J, to allow use of the mass point method as requested in the submittal dated December 23, 1987, is acceptable with the condition of 24 hours minimum test duration. The exemption applies only to the method of calculating leakage rate (by use of the mass point method) and not to any other aspects of the tests.

#### IV.

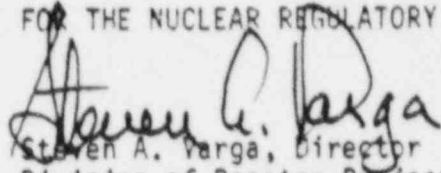
Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, this exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. The Commission has further determined that special circumstances, as set forth in 10 CFR 50.12(a)(2)(ii), are present justifying the exemption, namely that the application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule. Accordingly, the Commission hereby grants an exemption as described in Section III above from Paragraph III.A.3 of Appendix J to the extent that the mass point method may be used for containment leakage rate calculations, provided it is used with a minimum test

duration of 24 hours. The exemption applies only to the method of calculating leakage rate (by use of the mass point method) and not any other aspects of the tests.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will have no significant impact on the environment (53 FR 3801).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Steven A. Yarga, Director  
Division of Reactor Projects-I/II  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland  
this 11th day of February 1988