

Flexibility Act (5 U.S.C. 601). This direct final rule will terminate the designation of the State of West Virginia under sections 1 through 4, 6 through 10 and 12-22 of the Poultry Products Inspection Act.

#### List of Subjects in 9 CFR Part 381

Poultry and poultry products.

Accordingly, Part 381 of the poultry products inspection regulations (9 CFR 381) is amended as follows:

#### **PART 381—[AMENDED]**

1. The authority citation for § 381 continues to read as follows:

Authority: 7 U.S.C. 138f; 7 U.S.C. 450; 21 U.S.C. 451-470; 7 CFR 2.17, 2.55.

#### **§ 381.221 [Amended]**

2. Section 381.221 is amended by deleting "West Virginia" from the "State" column and by deleting the date which was added on the line with "West Virginia".

#### **§ 381.224 [Amended]**

3. Section 381.224 is amended by deleting "West Virginia" from the "State" column in three places and by deleting the dates which were added on the lines with "West Virginia" in three places.

Done at Washington, DC, on: September 20, 1995.

Michael R. Taylor,

*Acting Under Secretary for Food Safety.*

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## **NUCLEAR REGULATORY COMMISSION**

### **10 CFR Part 50**

**RIN 3150-AF00**

#### **Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Final rule.

**SUMMARY:** The Nuclear Regulatory Commission is amending its regulations to provide a performance-based option for leakage-rate testing of containments of light-water-cooled nuclear power plants. This option is available for voluntary adoption by licensees in lieu of compliance with the prescriptive requirements contained in the current regulation. This action improves the focus of the regulations by eliminating prescriptive requirements that are marginal to safety. The final rule allows

test intervals to be based on system and component performance and provides licensees greater flexibility for cost-effective implementation methods of regulatory safety objectives.

**EFFECTIVE DATE:** October 26, 1995.

**FOR FURTHER INFORMATION CONTACT:** Dr. Moni Dey, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 415-6443, e-mail mkd@nrc.gov

#### **SUPPLEMENTARY INFORMATION:**

Background—Development of Proposed Rule

#### *NRC's Marginal-to-Safety Program*

In 1984, the NRC staff initiated a program to make regulatory requirements more efficient by eliminating those with marginal impact on safety. The NRC's initiative to eliminate requirements marginal to safety recognizes both the dynamic nature of the regulatory process and that the importance and safety contribution of some existing regulatory requirements may not have been accurately predicted when adopted or may have diminished with time. The availability of new technical information and methods justify a review and modification of existing requirements.

The NRC solicited comments from industry on specific regulatory requirements and associated regulatory positions that needed reevaluation. The Atomic Industrial Forum conducted a survey providing most of industry's input, published for the NRC as NUREG/CR-4330<sup>1</sup>, "Review of Light Water Reactor Regulatory Requirements," Vol. 1, April 1986. A list of 45 candidates for potential regulatory modification were identified. The NRC's review of the list selected Appendix J as one of seven areas requiring further analysis (NUREG/CR-4330, Vols. 2 and 3, dated June 1986 and May 1987). The NRC also conducted a survey of its staff on the same issue. The NRC staff survey identified 54 candidates for regulatory modification, a number of which were previously identified in the industry survey. The NRC's assessment of this

list also selected Appendix J as a potential candidate for modification.

The NRC published in the Federal Register, for comment, a proposed revision to Appendix J on October 29, 1986 (51 FR 39538) to update acceptance criteria and test methods based on experience in applying the existing requirements and advances in containment leak testing methods, to resolve interpretive questions, and to reduce the number of exemption requests. This proposed rule was withdrawn from further consideration and superseded with a more comprehensive revision of Appendix J.

The NRC published a notice in the Federal Register on February 4, 1992 (57 FR 4166), presenting its conclusion that Appendix J was a candidate whose requirements may be relaxed or eliminated based on cost-benefit considerations. On the basis of NRC staff analyses of public comments on the proposal, the Commission approved and announced on November 24, 1992 (57 FR 55156) its plans to initiate rulemaking for developing a performance-oriented and risk-based regulation for containment leakage-testing requirements. On January 27, 1993, (58 FR 6196) the NRC staff published a general framework for developing performance-oriented and risk-based regulations and, at a public workshop on April 27 and 28, 1993, invited discussions of specific proposals for modifying containment leakage-testing requirements. Industry and public comments on the proposals, and other recommendations and innovative ideas raised at the public workshop, were documented in the proceedings of the workshop (NUREG/CP-0129, September 1993). Specifically, the NRC concluded that the allowable containment leakage rate utilized in containment testing may be increased and other Appendix J requirements need not be as prescriptive as the current requirements. To increase flexibility, the detailed and prescriptive technical requirements contained in Appendix J regulations could be improved and replaced with performance-based requirements and supporting regulatory guides. The regulatory guides would allow alternative approaches, although compliance with existing regulatory requirements would continue to be acceptable. The performance-based requirements would reward superior operating practices.

The present rulemaking is part of this overall effort and initiative for eliminating requirements that are marginal to safety and is guided by the policies, framework and criteria for the

<sup>1</sup> Copies of NUREGs may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P. O. Box 37082, Washington, DC 20013-7082. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is available for inspection and/or copying in the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC.

program. A more comprehensive proposed rule than that proposed in 1986 that accounts for the latest technical information and regulatory framework, using performance-oriented and risk-based approaches, was published by the NRC in the Federal Register on February 21, 1995. The public comment period for the proposed rule closed May 8, 1995.

#### *NRC's Regulatory Improvement Program*

The NRC's marginal-to-safety initiative is part of a broader NRC initiative for regulatory improvement. Through its Program for Regulatory Improvement, the NRC has institutionalized an ongoing effort to eliminate requirements marginal to safety and to reduce the regulatory burden on its licensees. The NRC staff's plan, summarized in SECY-94-090, dated March 31, 1994, satisfies the requirement for a periodic review of existing regulations given in Executive Order 12866 of September 30, 1993. This plan was approved by the Commission on May 18, 1994. The Regulatory Improvement Program is aimed at the fundamental principle adopted by the Commission that all regulatory burdens must be justified and that its regulatory process must be efficient. In practice, this means the elimination or modification of requirements for which burdens are not commensurate with their safety significance. The activities of the Regulatory Improvement Program should result in enhanced regulatory focus in areas that are more safety significant. As a result, an overall net increase in safety is expected from the program.

The Regulatory Improvement Program will include, whenever feasible and appropriate, the consideration of performance-oriented and risk-based approaches. The program will review requirements or license conditions that are identified as a significant burden on licensees. If review and analysis find that the requirements are marginal to safety, they will be eliminated or relaxed. By performance-oriented, the NRC means establishing regulatory objectives without prescribing the methods or hardware necessary to accomplish the objective, and allowing licensees the flexibility to propose cost-effective methods for implementation. By risk-based, the NRC means regulatory approaches that use probabilistic risk analysis (PRA) as the systematic framework for developing or modifying requirements.

In institutionalizing the Regulatory Improvement Program and adopting a performance-based regulatory approach,

the NRC has formulated the following framework for revisions to its regulations:

(1) The new performance-based regulation will be less prescriptive and will allow licensees the flexibility to adopt cost-effective methods for implementing the safety objectives of the original rule.

(2) The regulatory safety objectives will be derived, to the extent feasible and practical, from risk considerations with appropriate consideration of uncertainties, and will be consistent with the NRC's Safety Goals.

(3) Detailed technical methods for measuring or judging the acceptability of a licensee's performance relative to the regulatory safety objectives will be, to the extent practical, provided in industry standards and guidance documents which are endorsed in NRC regulatory guides.

(4) The new regulation will be optional for current licensees so that licensees can decide to remain in compliance with current regulations.

(5) The regulation will be supported by necessary modifications to, or development of, the full body of regulatory practice including, for example, standard review plans, inspection procedures, guides, and other regulatory documents.

(6) The new regulation will be formulated to provide incentives for innovations leading to improvements in safety through better design, construction, operating, or maintenance practices.

#### *Current Appendix J Requirements*

Appendix J to 10 CFR Part 50, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," became effective on March 16, 1973. The regulatory safety objective of reactor containment design is stated in 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," Criterion No. 16, "Containment Design." GDC Criterion 16 mandates "an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment \* \* \*" for postulated accidents. Appendix J to 10 CFR Part 50 implements, in part, General Design Criterion No. 16 and specifies containment leakage-testing requirements, including the types of tests required. For each type of test required, Appendix J specifies how the tests should be conducted, the frequency of testing, and reporting requirements. Appendix J requires the following types of containment leak tests:

(1) Measurement of the containment integrated leakage rate (Type A tests, often referred to as ILRTs).

(2) Measurement of the leakage rate across each pressure-containing or leakage-limiting boundary for various primary reactor containment penetrations (Type B tests).

(3) Measurement of the containment isolation valves leakage rates (Type C tests).

Type B and C tests are referred to as local leakage-rate tests (LLRTs).

#### *Leak-Tightness Requirements*

Compliance with 10 CFR Part 50, Appendix J, requirements is determined by comparing the measured containment leakage rate with the maximum allowable leakage rate. Maximum allowable leakage rates are calculated in accordance with 10 CFR Part 100, "Reactor Site Criteria," and are incorporated into the technical specifications. Typical allowable leakage rates are 0.1 percent of containment volume per day for pressurized water reactors (PWRs) and one volume percent per day for boiling water reactors (BWRs).

#### *Test Frequency Requirements*

Schedules for conducting containment leakage-rate tests are specified in Appendix J for both preoperational and periodic tests. Periodic leakage-rate test schedules are as follows:

##### *Type A Tests*

(1) After the preoperational leakage-rate test, a set of three Type A tests must be performed at approximately equal intervals during each 10-year service period. The third test of each set must be conducted when the plant is shut down for the 10-year plant in-service inspection.

(2) The performance of Type A tests must be limited to periods when the plant facility is nonoperational and secured in the shutdown condition under administrative control and in accordance with the safety procedures defined in the license.

(3) 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 applicable acceptance criteria, a Type A test must 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, after which time the regular retest schedule may be resumed.

#### Type B Tests

(1) Except for airlocks, Type B tests must be performed during reactor shutdown for refueling, or other convenient intervals, but in no case at intervals greater than 2 years. If opened following a Type A or B test, containment penetrations subject to Type B testing must be tested prior to returning the reactor to an operating mode requiring containment integrity. For primary reactor containment penetrations employing a continuous leakage monitoring system, Type B tests, except for tests of airlocks, may be performed at every other reactor shutdown for refueling but in no case at intervals greater than 3 years.

(2) Airlocks must be tested prior to initial fuel loading and at six-month intervals thereafter. Airlocks opened during periods when containment integrity is not required by the plant's technical specifications must be tested at the end of such periods. Airlocks opened during periods when containment integrity is required by the plant's technical specifications must be tested within 3 days after being opened. For airlock doors opened more frequently than once every 3 days, the airlock must be tested at least once every 3 days during the period of frequent openings. For airlock doors having testable seals, testing the seals fulfills the 3-day test requirement. Airlock door-seal testing must not be substituted for the 6-month test of the entire airlock at not less than  $P_a$ , the calculated peak containment pressure related to the design basis accident.

#### Type C Tests

Type C tests must be performed during each reactor shutdown for refueling, but in no case at intervals greater than 2 years.

There have been two amendments to this Appendix since 1973. The first amendment, published September 22, 1980 (45 FR 62789), modified the Type B penetration test requirements to conform to what had become accepted practice through the granting of exemptions. The second amendment, published November 15, 1988 (53 FR 45890), incorporated the Mass Point Statistical Analysis Technique as a permissible alternative to the Total Time and Point-to-Point techniques specified in Appendix J.

#### International Experience

A combination of Type A tests and an on-line monitoring (OLM) capability is being actively pursued in Canada and

Europe, notably in France and Belgium, and is currently being considered in Sweden. OLM is used to identify a "normal" containment pressurization pattern and to detect deviations from that pattern. With on-line, low-pressure testing, Hydro-Quebec's Gently-2 station is able to monitor the change in containment leaktightness between Type A tests. The Belgians conduct a leakage test using OLM during reactor operation after each cold shutdown longer than 15 days with the objective of detecting gross leaks. The objective of the Belgian approach to Type A testing is to reduce the frequency and duration of the tests. The Type A test is conducted at a containment pressure ( $P_i$ ) not less than half of the peak pressure ( $0.5 P_a$ ). It is performed once every 10 years. In France, containment leaktightness is continuously monitored during reactor operation in all of the French PWR plants using the SEXTEN system. It is also being evaluated by the Swedes for their PWR units. Leaks may be detected during the positive or negative pressure periods in the containment by evaluating the air mass balance in the containment. Type A tests are conducted at containment peak pressure (loss-of-coolant accident pressure) before initial plant startup, during the first refueling, and thereafter every 10 years unless a degradation in containment leaktightness is detected. In that case, tests are conducted more frequently.

Further details of international approaches to containment testing are provided in NUREG-1493.

#### Advance Notices for Rulemaking

Over time, it has become apparent that variations in plant design and operation frequently make it difficult to meet some of the requirements contained in Appendix J because of its prescriptive nature. Economic and occupational exposure costs are directly related to the frequency of containment testing. Containment integrated leakage-rate tests (Type A) preclude any other reactor maintenance activities and thus are on the critical path for return to service from reactor outages. In addition to the costs of the tests, integrated leak tests impose the added burden of the cost of replacement power. Containment-penetration leak tests (Type B and C) can be conducted during reactor shutdowns in parallel with other activities and thus tend to be less costly; however, the large number of penetrations impose a significant burden on the utilities. Additionally, risk assessments performed to date indicate that the allowable leakage rate from containments can be increased,

and that control of containment leakage at the current low rates is not as risk significant as previously assumed.<sup>2,3</sup>

In August of 1992, the NRC initiated a rulemaking to modify Appendix J to make it less prescriptive and more performance-oriented. The Commission also initiated a plan to relax the allowable containment leakage rate used to define performance standards for containment tests. In the Federal Register of January 27, 1993 (58 FR 6196), the NRC indicated the following potential modifications to Appendix J of 10 CFR Part 50 would be considered:

(1) Increase allowable containment leakage rates based on Safety Goals and PRA technology (i.e., define a new performance standard); and

(2) Modify Appendix J to be a performance-based regulation:

A. Limit the revised rule to a new regulatory objective. In order to ensure the availability of the containment during postulated accidents, licensees should either:

(i) Test overall containment leakage at intervals not longer than every 10 years, and test pressure-containing or leakage-limiting boundaries and containment isolation valves on an interval based on the performance history of the equipment; or

(ii) Provide on-line (i.e., continuous) monitoring of containment isolation status.

B. Remove prescriptive requirements from Appendix J and preserve useful portions as guidance in an NRC regulatory guide.

C. Endorse industry standards on:

(i) Guidance for calculating plant-specific allowable leakage rates based on new NRC performance standards;

(ii) Guidance on the conduct of containment tests; and

(iii) Guidance for on-line monitoring of containment isolation status.

D. Continue to accept compliance with the current detailed requirements in Appendix J (i.e., licensees presently in compliance with Appendix J will not need to do anything if they do not wish to change their practice).

<sup>2</sup> "Severe Accident Risks: An assessment for five U. S. Nuclear Power Plants, Final Summary Report." NUREG-1150, December 1990. Copies of NUREGs may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P. O. Box 37082, Washington, DC 20013/7082. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is available for inspection and/or copying in the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC.

<sup>3</sup> "Performance-Based Containment Leak Test Program." NUREG-1493, July 1995.

A public workshop on the subject was held by the NRC on April 27 and 28, 1993.<sup>4</sup>

#### February 1995 Proposed Revision

Based on several advance notices for rulemaking and significant public comment and discussion, evaluation of risks and costs, and consideration of which modifications have become feasible and practical, in the February 21, 1995, Federal Register the NRC proposed two phases for modifications of requirements to containment leakage testing. The first phase allowed leakage-rate testing intervals to be based on the performance of the containment system structures and components. The second phase will further examine the needed requirements of the containment function (i.e. structural and leak-tight integrity of containment system structures and components, and prevention of inadvertent bypass), and include consideration of the potential for on-line monitoring of containment integrity to verify certain functions. Public comments were solicited to guide this future work.

The February 21, 1995, proposed rule applies to all NRC licensees who operate light-water-cooled power reactors. The proposed rule allows licensees the option of continuing to comply with the current Appendix J or to adopt the new performance-based standards.

The NRC's analyses are based upon the insight gained through the use of probabilistic risk assessment techniques and the significant data base of practical, hands-on operating experience gained since Appendix J was promulgated in 1973. This operating experience provides solid evidence of the activities necessary to conduct Appendix J testing, and the costs of those activities both in monetary terms and occupational radiation exposure.

The proposed rule is based on analytical efforts documented in NUREG-1493 which, like NUREG-1150, confirms previous observations of insensitivity of population risks from severe reactor accidents to containment leakage rates.

The current Appendix J requirements continue to achieve the regulatory criterion of assuring an essentially leak-tight boundary between the power reactor system and the external environment (General Design Criterion 16). Costs associated with complying with current Appendix J requirements are estimated to be \$165,000 for a

complete battery of Type B/C tests and \$1,890,000 for Type A tests. Over the average reactor's remaining lifetime of 20 years, the present value of all remaining containment leakage testing at a 5 percent discount rate is estimated to be about \$7 million per reactor. Estimates of the remaining industry-wide costs of implementing current Appendix J requirements ranged from \$720 to \$1,080 million, approximately 75 percent of which could be averted with a performance-based rule.

The Regulatory Analysis for the proposed rule finds that by allowing requirements to remain in effect with marginal impact on safety, but which impose a significant cost on licensees, is to have missed an opportunity to improve regulatory coherence and to focus NRC's regulations to areas where the return in terms of added public safety is higher.

Specific alternatives for modifying the current Appendix J were identified by the public in response to the NRC's Federal Register notice published on January 27, 1993 (58 FR 6196). Those whose characteristics matched the NRC's established criteria for the marginal to safety program were selected for further review.

#### *Modifications of Advance NRC Proposal*

##### Allowable Leakage Rate

The NRC had initially planned to establish, by rulemaking, a risk-based allowable leakage rate commensurate with its significance to total public risk. Specific findings from NUREG-1493 on the allowable leakage rate include:

1. Allowable leakage could be increased approximately two orders of magnitude (100-200 fold) with marginal impact on population dose estimates from reactor accidents.

2. Calculated risks to individuals are several orders of magnitude below the NRC's Safety Goals for all reactors considered.

3. Increases in the allowable leakage rate are estimated to have a negligible impact on occupational exposure.

Relaxing the allowable leakage rate is estimated to reduce future industry testing costs by \$50 to \$110 million, a 10 percent decrease in overall leakage-rate testing costs.

A risk-based allowable leakage rate would be based on an evaluation, using PRA, of the sensitivity and significance of containment leakage to risk, and the determination of an appropriate containment leakage limit commensurate with its significance to the risk to the public and plant control-room operators. However, this would have entailed a major change in policy

and restructuring of the current licensing basis and a more complete understanding of the uncertainties associated with the threat of severe accidents to the containment, and therefore, the NRC planned to develop a modification of the performance standard (allowable leakage level) in the second phase separate from modifications of testing requirements. This modification would be part of a broader effort to further examine the risk significance of various attributes of containment performance, i.e., structural and leak-tight integrity of containment-system structures and components, and inadvertent bypass.

##### On-Line Monitoring (OLM) Systems

Currently, there is no NRC requirement for systems which continuously monitor the containment to detect unintentional breaches of containment integrity.

Studies discussed in NUREG-1493, "Performance-Based Containment Leak Test Program," found that, based on operating experience, OLM would not significantly reduce the risk to the public from nuclear plant operation and, thus, could not be justified solely on the basis of risk-based considerations. Specific findings include:

1. Existing continuous monitoring methods appear technically capable of detecting leaks in reactor containments within 1 day to several weeks. OLM systems are in use or planned in several European countries and Canada.

2. OLM systems are capable of detecting leaks only in systems that are open to the containment atmosphere during normal operation (approximately 10 percent of the mechanical penetrations).

3. The technical and administrative objectives of OLM systems and Type A tests are different.

4. OLM could not be considered as a complete replacement for Type A tests because it cannot challenge the structural and leak-tight integrity of the containment system at elevated pressures.

5. Analysis of the history of operating experience indicated a limited need for, and benefit of, OLM in the U.S.

Although OLM can not be justified solely based on risk considerations, a plant already possessing such a system has a greater assurance of achieving certain attributes of containment integrity. Therefore, OLM systems could contribute towards an overall leakage-monitoring scheme. Some capability for on-line monitoring already exists as a byproduct of specific containment designs. For example, licensees with

<sup>4</sup> "Workshop on Program for Elimination of Requirements Marginal to Safety," NUREG/CP-0129, September 1994.

inerted BWR containments, or subatmospheric PWR containments, could possibly detect gross leakages that develop during normal operation.

Given that the application of on-line monitoring is specific to containment design, and generic application can not be justified solely on risk considerations, the NRC did not propose a requirement for OLMs. However, licensees with such a capability (e.g. inerted BWR containments, and subatmospheric PWR containments) were encouraged to propose plant-specific application of such a capability, and to take credit for any added assurance of containment integrity provided by such a system compared to other testing methods. The NRC proposed to reconsider the role of OLM in the second phase of modifications in this area along with the allowable leakage rate.

#### *Proposed Modification of Type A, B, and C Test Intervals*

In the February 1995 proposed rule, the NRC proposed a new risk-based regulation based on the performance history of components (containment, penetrations, valves) as the means to justify an increase in the interval for Type A, B, and C tests. The revised regulation requires tests to be conducted on an interval based on the performance of the containment structure, penetrations and valves without specifying the interval in the regulation. Currently, three Type A tests are conducted in every 10 year period. Type B (except airlocks, which are tested more frequently) and C tests are conducted on a frequency not to exceed 2 years.

The NRC proposed to base the frequency of Type A tests (ILRTs) on the historical performance of the overall containment system. Specific findings documented in NUREG-1493 that justify the proposal include:

1. The fraction of leakages detected only by ILRTs is small, on the order of a few percent.
2. Reducing the frequency of ILRT testing from 3 every 10 years to 1 every 10 years leads to a marginal increase in risk.
3. ILRTs also test the strength of the containment structure. No alternative to ILRTs has been identified to provide assurance that the containment structure would meet allowable leakage rates during design-basis accidents.
4. At a frequency of 1 test every 10 years, industry-wide occupational exposure would be reduced by 0.087 person-sievert (8.7 person-rem) per year.

Based on specific, detailed analyses of data from the North Anna and Grand

Gulf nuclear power plants, and data from twenty-two nuclear plants (see NUREG-1493), performance-based alternatives to current LLRT methods are feasible with marginal impact on risk. Specific findings include:

1. Type B and C tests are capable of detecting over 97 percent of containment leakages.
2. Of the 97 percent, virtually all leakages are identified by LLRTs of containment isolation valves (Type C tests).
3. Based on the detailed evaluation of the experience of a single two-unit station, no correlation of failures with type of valve or plant service could be found.
4. For the 20 years of remaining operations, changing the Type B/C test frequency to once every 5 years for good-performing components is estimated to reduce industry-wide occupational radiation exposure by 0.72 person-sievert (72 person-rem) per year. If 20-year license extension is assumed, the estimate is 0.75 person-sievert (75 person-rem) per year.

Future industry testing costs are reduced by approximately \$330 to \$660 million if ILRT tests are conducted once every 10 years rather than the current 3 per 10 years. ILRT savings represent about 65 percent of the remaining costs of current Appendix J requirements. Performance-based LLRT alternatives are estimated to reduce future industry testing costs by \$40 million to \$55 million. LLRT savings represent about 5 percent of the total remaining costs of Appendix J testing.

Therefore, based on the risks and costs evaluated, and other considerations discussed above, a performance-based Appendix J was proposed which encompassed the following principles, which differ moderately from those first described in the Federal Register (January 27, 1993 58 FR 6197).

*General* (1) Make Appendix J less prescriptive and more performance-oriented; (2) Move details of Appendix J tests to a regulatory guide as guidance; (3) Endorse in a regulatory guide the industry guideline (NEI 94-01) on the conduct of containment tests (The methods for testing are contained in an industry standard (ANSI/ANS 56.8-1994) which is referenced in the NEI guideline); and (4) Allow voluntary adoption of the new regulation, i.e., current detailed requirements in Appendix J will continue to be acceptable for compliance with the modified rule.

*Leakage Limits* Acknowledge the less risk-significant nature of allowable

containment leakage but pursue its modification as a separate action.

*Type A Test Interval* (1) Based on the limited value of integrated leakage-rate tests (ILRTs) in detecting significant leakages from penetrations and isolation valves, establish the test interval based on the performance of the containment system structure; (2) The performance criterion of the test will continue to be the allowable leakage rate (La); (3) The industry guideline allows extension of the Type A test interval to once every 10 years based on satisfactory performance of two previous tests, inclusive of the pre-operational ILRT; (4) In the regulatory guide, the NRC takes exception to industry guidance for the extension of the interval of the general visual inspection of the containment system, and limits the interval to 3 times every 10 years, in accordance with current practice.

*Type B & C Test Interval* (1) Allow local leakage-rate test (LLRTs) intervals to be established based on the performance history of each component; (2) The performance criterion for the tests will continue to be the allowable leakage rate (La); (3) Specific performance factors for establishing extended test intervals (up to 10 years for Type B components, and 5 years for Type C components) are contained in the regulatory guide and industry guideline. In the regulatory guide, the NRC has taken exception to the NEI guideline allowing the extension of Type C test intervals up to 10 years, and limits such extensions to 5 years.

#### *Summary of Public Comments*

Twenty-six letters were received that addressed the policy, technical, and cost aspects of the proposed rulemaking, including the nine questions posed by the NRC in the February 21, 1995 proposed rule. All comments, including the ones received by the NRC after the deadline were considered. The commenters included 4 private citizens, 1 public interest group, 18 utilities, 1 nuclear utility industry group, 1 State regulatory agency, and 1 foreign regulator.

Although the proposed rule did not generate a significant number of public comments, the commenters did align themselves into two distinct groups: those who supported publishing the rule and those against. Those who supported publishing the rule comprise the vast majority of the commenters (22) and included the Nuclear Energy Institute (NEI), which represents the nuclear utility licensees, eighteen individual nuclear power plant licensee respondents, a Spanish regulatory authority and two private citizens (Mr.

Hill and Mr. Barkley). This group is very supportive of the Commission's risk-based regulatory program, and supports proceeding with the rule in an expeditious manner, despite having reservations about three specific provisions. The issues of most concern to this group are: (1) Licensee commitments to certain requirements of the regulatory guide implementing Appendix J testing via use of the technical specifications (industry would prefer using a plant's final safety analysis report); (2) requirements to conduct visual internal and external inspections of the containment on a frequency of 3 times per 10 years (industry would prefer once per 10 years to coincide with Type A tests); (3) making Option B of the proposed rule mandatory (industry would prefer to retain the optional feature); and (4) Type C test frequency (industry would prefer a 10-year test interval for certain Type C valves). Industry supports a future rulemaking to increase the allowable leakage rate.

Two private citizens (Mr. Arndt and Dr. Reytblatt) are opposed to the proposed rule. The issues of most concern to these citizens are: (1) Type A test frequency (Mr. Arndt would prefer that frequencies be held at current levels); (2) Type A test methodology (Dr. Reytblatt wants to halt Type A testing until the test accuracy is improved); (3) Type C test frequencies (Mr. Arndt believes the existing database does not support 10-year test intervals, and suggests 5-years as an upper limit at the present time); and (4) Leakage rate (a future rulemaking to increase the allowable leakage rate should not be undertaken).

Two organizations are opposed to the proposed rule. The Bureau of Nuclear Engineering of the state of New Jersey and the Ohio Citizens for Responsible Energy (OCRE, represented by Ms. Hiatt), a public interest group, expressed skepticism in the risk-based approach to regulation as embodied in the philosophy of the Marginal-to-Safety Program. The issues of most concern to this group are that: (1) Increases in public risk are not acceptable, no matter how marginal; and (2) A future rulemaking to increase the allowable leakage rate should not be undertaken.

*NRC Position.* With respect to the areas of disagreement between the NRC and those who generally support the proposed rule, no new information has been provided in the public comments that was not already addressed in ongoing dialogue. Accordingly, the NRC has not made any substantive changes to its proposed regulation. Specifically, the NRC has retained: (1) Its position of

requiring the use of technical specifications; (2) The intervals established for visual examinations of containment; and (3) The 5-year Type C test interval.

With respect to the optional feature of the rule, the NRC agrees with the industry and has retained this feature. With respect to Mr. Arndt and Dr. Reytblatt, the NRC agrees in part with Mr. Arndt and has decided not to alter the LLRT test interval as noted in item (3). The other issues raised by Mr. Arndt and Dr. Reytblatt contain no information that has not been considered previously in a public forum. Therefore, the NRC has decided to make no substantive changes to its proposed rule as a result of the issues raised. With respect to the two organizations opposed to the proposed rule (OCRE and the NJ Bureau of Nuclear Engineering), neither has provided new information or a compelling reason to abandon the risk-based approach to regulation.

In its preliminary criteria for developing performance-based regulations, the NRC identified several issues to be addressed by the rulemaking process as a measure of the viability of the revised rule. These issues were addressed in the proposed rule and the NRC sought further public input on them. Comments were received on these topics in addition to other areas of interest to the public. The following is a summary of comments received on these issues and areas, and NRC's response. A complete discussion of all comments is included in the Public Comment Resolution Document.<sup>5</sup>

1. Can the new rule and its implementation yield an equivalent level of, or would it only have a marginal impact on safety?

Twenty-four commenters addressed this issue, offering a wide variety of opinions. Twenty commenters believe that implementation of the proposed rule will provide an equivalent level of safety to that provided by the current rule. A majority of commenters, representing for the most part nuclear utilities, believe that the proposed regulation will reduce the testing burden currently imposed on the nuclear industry, and will result in more efficient use of utility resources, while ensuring the health and safety of the public. They believe that the practical experience gained from more than 1,500 reactor-years of commercial nuclear power-plant operation provides

an appropriate basis to adjust the Appendix J testing intervals which were established over 20 years ago on the basis of engineering judgment. Further, these commenters believe that a significant reduction in occupational exposures can be achieved with reduced testing frequency.

Mr. E. Gunter Arndt, a private citizen, believes that the NRC has neither sufficient objective data nor perspective to justify increasing containment leakage rates, decreasing test frequencies, relaxing testing criteria, and reducing containment-system maintenance standards. Dr. Reytblatt, a private citizen, believes that Type A testing must be immediately suspended because the current testing methodology is flawed. Mr. Kent W. Tosch, Manager of New Jersey's Bureau of Nuclear Engineering, points out that the containment is an extremely important barrier to a release of radioactivity, but the philosophy reflected in this rulemaking is that this barrier can be allowed to become less reliable, even when some nuclear plants are showing signs of aging. Ms. Susan L. Hiatt, Director of Ohio Citizens for Responsible Energy, notes that relaxing the frequency of Appendix J tests leads to an increase in overall reactor risk of approximately 2 percent and, while the NRC may deem this to be marginal, it nonetheless is an increase in risk.

The NRC believes it has collected sufficient subjective and independent data to conduct its risk analysis. Detailed data from two independent power plants, representing four units, data supplied by the NEI representing approximately 30 additional units, and approximately 180 ILRT and licensee event reports were analyzed. These data produced consistent results. Dr. Reytblatt's views, while technically correct, have been opposed by several technically competent organizations including the American National Standards Institute, and Oak Ridge National Laboratory because the improvements he suggests will have an insignificant effect on measured containment leakage rates in practice and thus have no safety significance. The NRC believes there has been ample opportunity for public discussion of the basis for the Appendix J revisions.

Based on the foregoing, the NRC reaffirms its prior conclusion (stated in the February 21, 1995, Federal Register notice) that its safety objective for containment integrity can be maintained while at the same time reducing the burden on licensees. Additionally, the final rule provides a greater level of worker safety than that provided by the previous rule.

<sup>5</sup> Copies are available for inspection or copying for a fee from the NRC Public Document Room at 2120 L Street NW., Washington, DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; telephone (202) 634-3273; fax (202) 634-3343.

2. Can the regulatory/safety objective (qualitative or quantitative) be established in an objective manner to allow a common understanding between licensees and the NRC on how the performance or results will be measured or judged?

To avoid repetition, the NRC incorporated responses to this question with those of Question 3.

3. Can the regulation and implementation documents be developed in such a manner that they can be objectively and consistently inspected and enforced against?

Approximately 20 commenters expressed opinions on Questions #2 and #3. The majority of the commenters believe that regulatory/safety objectives can be established objectively, and can be consistently enforced, although opinions differ on the optimum enforcement mechanism. Mr. Fernando Robledo of the Spanish nuclear regulatory agency states that the use of probabilistic risk assessment in the regulatory process provides a more realistic and objective assessment of nuclear safety, and thus supports its increased use in the regulatory process. The NEI believes the use of technical specifications for inspection and enforcement is neither necessary nor warranted and that, rather than a licensee commitment in the plant technical specification, future licensee commitments to implement Option B should be provided by documentation in the updated Final Safety Analysis Report.

To assist in the common understanding of new methods of establishing Type A, B, and C test frequencies between the NRC and power reactor licensees, the NRC has had ongoing discussions with licensees. These discussions included participation in workshops designed to elicit a common understanding. Also, the NRC wishes to retain the current practice which requires its review and approval of changes to Appendix J performance limits and surveillance requirements. Therefore, the NRC has required that the regulatory guide should be specified in the technical specifications, an approach not inconsistent with the Commission's policy on technical specifications.

Based on the foregoing, the NRC reaffirms its prior conclusion (stated in the February 21, 1995, proposed rule) that it expects that its activities to date, the review and endorsement of a industry guideline in a regulatory guide, and the general reference of the regulatory guide in plant technical specifications, will provide a common

understanding on the measures of compliance.

4. Should the proposed revision be made even less prescriptive?

Except for Mr. Hill and Mr. Barkley, commenters did not explicitly address this question, which was directed at the possibility of reducing, even further, the testing frequency of ILRTs based on the fact that there does seem to be a strong statistical link between passing or failing successive ILRTs. Mr. Hill believes that there is no need to make the rule less prescriptive, and it may be inferred that is no desire on the part of industry to further increase the testing interval between ILRTs or to eliminate them completely. Richard Barkley, although strongly supporting an adjustment to the frequency of Type A testing to once every 10 years, also discourages the NRC from adopting a Type A surveillance interval any longer than 10 years because of aging considerations.

The NRC has decided, in general, to maintain the present level of prescriptiveness in the proposed rule and, in particular, to not decrease further the test frequency for ILRTs. The NRC's position is guided by the desire to maintain some conservatism to address uncertainties and adopt an evolutionary approach wherein incentives remain for good performance.

5. Should the proposed revisions be made mandatory?

To avoid repetition, the NRC incorporated responses to this question with those of Question 7.

6. Was the definition of "backfit" in § 50.109(a)(1) intended to encompass rulemakings of the type represented by this proposed rule?

To avoid repetition, the NRC incorporated responses to this question with those of Question 7.

7. Is it appropriate for the Commission to waive the applicability of the Backfit Rule?

The majority of the 20 commenters believe that compliance with the performance-based Appendix J program should not be made mandatory. The NEI believes that rulemakings that provide relief from a current regulation but would also contain one or more new requirements (as is the case here) would be subject to the backfit rule. These commenters believe that application of the backfit rule would be necessary before the NRC could promulgate the performance-based Appendix J program as a requirement, believing some licensees might select, for reasons of cost, to continue to comply with the existing Appendix J.

The majority of commenters believe that the backfit rule would apply and

should not be waived. Several utilities have no objection to waiving a backfit analysis when clear relief is available, but are concerned with the generic implications of waiving the applicability of the backfit rule. The NEI believes that while the proposed Appendix J revisions would provide much needed performance-based improvements to the existing Appendix J, it would also impose new requirements; thus, the proposed rule constitutes a backfit. Further, this commenter believes that, as a matter of administrative law, an agency lacks authority to depart from its own rules, thus, it cannot waive its own regulations.

The NRC believes that if the rule were made mandatory, all licensees would incur costs setting up the procedures for implementing the rule's requirements following the guidance provided in the regulatory guide and the NEI guidance document. For those utilities whose circumstances (e.g., remaining plant life) would lead them to follow the current Appendix J, costs would be incurred with no additional benefit. Thus, the NRC agrees with the opinions expressed by the NEI and has decided to retain the proposed rule in its present form, which provides a non-mandatory alternative to the current Appendix J requirements. Because the NRC has decided to retain the optional feature of the proposed rule, the question of backfit is not addressed.

8. Should NRC pursue a fundamental modification of its regulations in this area by establishing an allowable leakage rate based on risk analysis (as presented in draft NUREG-1493, Chapter 5), as compared to the current practice of using deterministic design basis accidents and dose guidelines contained in 10 CFR Part 100; or should the NRC modify the allowable leakage rate within the current licensing basis by revising source terms and updating regulatory guides (R.G.s 1.3 and 1.4) <sup>6</sup> for calculating doses to the public?

What are the advantages and disadvantages of the two approaches? What are some other considerations than risk to public, e.g., plant control room habitability, that might limit the allowable leakage rate?

The 20 commenters who responded to this question consist predominantly of the utilities endorsing the NEI position. These respondents encourage the NRC

<sup>6</sup> Copies may be purchased at current rates from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20402-9328 (telephone 202-512-2249 or 202-512-2171); or from the National Technical Information Service by writing NTIS at Port Royal Road, Springfield, VA 22161.

to pursue a rulemaking to alter allowable leakage rates using risk-based analysis, believing that a firm technical basis exists for relaxing leakage rates up to two orders of magnitude with only a marginal impact on population risk estimates. It was also suggested that a review of the present source terms, dose projection models, and associated assumptions against the revised source terms and dose methodologies should also be performed to determine if relief can be achieved while assuring public health and safety. Three commenters discouraged the NRC from relaxing containment leakage rates ranging from the opinion that little benefit would result (Mr. E. Gunter Arndt) to an unequivocal belief that such a move would violate a plant's licensing basis by eliminating the protection provided for the nearest public individual by the 10 CFR Part 100 siting criteria (Ms. S. Hiatt). Ms. Susan Hiatt, representing the Ohio Citizens for Responsible Energy, believes that containment leak rates should be periodically reexamined, not for the purpose of relaxing them, but to determine whether they should be made more stringent given increasing population density around operating nuclear power plants.

The NRC has decided to continue to pursue further reductions in regulatory burden with marginal impacts on safety and will address the complexities noted in the public comments in its future efforts to relax the allowable leakage rate.

9. If the allowable leakage rate is increased, could on-line monitoring of containment integrity replace other current containment tests? Could the results of the on-line monitoring be used to establish a new performance basis for containment integrity involving less stringent reporting requirements if there is high assurance there are no large leakage paths in containment (> 1 in. diameter).

The 18 commenters who responded to this question consist of the NEI and the utilities endorsing the NEI position, and Mr. Richard Barkley. The commenters do not believe that on-line monitoring (OLM) of containment integrity can replace many of the current containment tests, and state that OLM systems have very limited abilities to identify breaches in containment integrity. In the experience of Mr. Barkley, such systems add unnecessary plant complexity and cost.

The NRC acknowledges the public comments rendered and will be guided by them in decisions yet to be made regarding the Phase 2 effort.

10. Are there any other regulatory approaches and technical methods by

which the NRC can adopt a complete performance and risk basis to its regulations for containment leak-tight integrity? What are some of the attributes for performance, and what risk-based methods can be used to analyze these attributes?

The NEI, speaking for all other utilities, addressed this question by stating that it had not conducted any analyses to determine whether any other regulatory approaches and technical methods by which the NRC can adopt a complete performance and risk basis to its regulations for containment leak-tight integrity.

#### 11. Rulemaking Documents.

Seventeen commenters expressed opinions about NRC's regulatory policy decisions and/or specific language in the rule or its supporting documents. Mr. Hill believes that the NRC's and the NEI's guidance documents are not developed to the point of establishing a common understanding of how to meet NRC's regulatory and safety objectives (e.g., while NEI 94-01 contains a lot of information and solid guidance, it also contains inconsistencies, contradictions and unclear passages). The NEI, whose comments were endorsed by most responding licensees, proposed modifications to several of the rulemaking documents, including the Federal Register notice and its own guidance document.

The NRC has amended its rule and accepts most of the revisions to the implementing documents to clarify language and achieve consistency between the rulemaking documents.

#### 12. Technical Issues.

##### *Testing Frequency*

Twenty-four commenters expressed opinions on test frequency, the majority were supportive of 10-year intervals for both Types A, B and C tests. Regarding ILRTs, the Nuclear Energy Institute, several individual utilities, and Mr. Howard Hill expressed views that the proposed rule provides an acceptable testing frequency for ILRTs. Mr. Fernando Robledo, of the Spanish nuclear regulatory agency, believes that 10 years is too long a time interval between Type A containment tests. Mr. E. Gunter Arndt's view is that a preoperational test should not count as one of the two successful ILRT tests required to go to a 10-year test interval because preoperational conditions are not at all representative of operating conditions. The citizens' group, Ohio Citizens for Responsible Energy, believes the frequency of containment leak-rate testing should remain unchanged from the current practice.

Several commenters also expressed opinions on the NRC's position on LLRT testing frequency. Mr. Fernando Robledo, while agreeing in general with the test frequency for type B and C tests proposed in the draft regulatory guide, believes that certain mechanical penetrations particularly important for plant safety should be leak tested every 24 months. Mr. E. Gunter Arndt's view is that the testing history of penetrations, and especially of valves, does not support leaving them untested for 10 years and suggested that an upper limit should be once every 5 years. One utility in particular, and the Nuclear Energy Institute in general believe that the NRC does not go far enough in citing that several sets of data justify 10-year LLRT intervals. In contrast, Mr. Richard Barkley, who also endorses Type B & C testing frequency based on performance, strongly supports the NRC's proposal to prohibit the adoption of Type C surveillance intervals longer than 60 months.

In establishing the 5-year test interval for LLRTs, the NRC has designed a cautious, evolutionary approach as data are compiled to minimize the uncertainty now believed to exist with respect to LLRT data. The NRC's judgment, based on risk assessment and deterministic analysis, continues to be that the limited database on unquantified leakages and common mode and repetitive failures introduces significant uncertainties into the probabilistic risk analysis. The NRC will be open to submittals from licensees as more performance-based data are developed. The extension of LLRT test interval to 5 years is a prudent first step. By allowing a 25 percent margin in testing frequency requirements, the NRC has provided the flexibility to accommodate longer fuel cycles. With respect to the 10-year interval for ILRTs, the NRC believes its technical support document (NUREG-1493) is persuasive by demonstrating that testing intervals could be increased up to once every 20 years with an imperceptible increase in risk, using actual ILRT data which accounted for random and plant-specific failures and plant aging effects.

Based on the foregoing discussion, the NRC has decided to retain the 60-month Type C test interval and the 120-month interval for Type A and B tests. In response to public comments, the NRC has revised the regulatory guide to limit the extension of test intervals for main steam and feedwater isolation valves in BWRs, and containment purge and vent valves in PWRs and BWRs beyond 30 months given their operating experience and/or safety significance.

### Test Pressures

Two commenters expressed opinions on the magnitude of the pressures used in conducting Type A leakage tests. Northern States Power Company believes that Type A testing at full pressure is unnecessary and believes that visual inspection coupled with a reduced pressure test will adequately assure that the containment structural members are leak-tight, especially since reduced pressure Type A tests are legally acceptable tests as prescribed in the current 10 CFR Part 50, Appendix J. Mr. E. Gunter Arndt states that while Type A tests performed at reduced pressure rather than peak accident pressure are economically advantageous to the industry, the results of these tests are not necessarily indicative of leakage rates during accidents.

The NRC believes that extrapolating low pressure leakage-test results to full pressure leakage-test results has turned out to be unsuccessful. The NRC believes that the peak calculated accident pressure: (1) Is consistent with the typical practice for NRC staff evaluations of accident pressure for the first 24 hours in accordance with Regulatory Guides 1.3 and 1.4; (2) Provides at least a nominal check for gross leak paths which might exist at high test pressures, but not at low test pressures; and (3) Directly represents technical specification leakage-rate limits, and provides greater confidence in containment system leak-tight integrity.

Based on the foregoing, the NRC has decided to retain the calculated design basis loss-of-coolant accident peak pressure as the ILRT test pressure.

### Containment Inservice Visual Inspection

Eighteen commenters expressed opinions on this issue. The NEI and most utilities oppose the NRC's proposal to require visual examination of containment be performed 3 times every 10 years. These commenters suggest that this issue be taken up in a parallel rulemaking.

The NRC finds the industry's arguments for relaxing the frequency of containment visual inspections to be unpersuasive. Because the visual examination is not integral to the ILRT (i.e., may be performed independently) and because the NRC sees benefits to the early detection of unknown aging mechanisms which may be active, the NRC considers it prudent to conduct visual inspections on a frequency greater than the ILRT. Further, the NRC believes it is inappropriate to defer a requirement pertaining to containment

structural integrity to an ongoing rulemaking to incorporate ASME Section XI, IWE and IWL until its form and substance is finalized.

Based on the foregoing, the NRC has decided to retain its frequency for the inservice visual inspection.

### Reporting Requirements

Only one comment was received on this issue. Dr. Z. Reytblatt noted that the proposed rule's reporting requirements consist only of a cover letter to the NRC and suggested this is intended to conceal information from the public. Dr. Reytblatt suggests that utilities should be required to submit all computer files related to testing to the NRC immediately after the tests have been completed to prevent their alteration or destruction.

It is not the intent of the NRC's reporting requirements to conceal information from the public; if tests fail, the information is required to be reported to the NRC, and the NRC will make such data available to the public. The NRC has decided to retain its reporting requirements as stated in the proposed rule.

### Modifications to the Proposed Rule in Response to Public Comments

The NRC has decided to amend its proposed rule and its implementing documents to clarify language. The NRC has concluded that its regulatory analysis and its technical support document, NUREG-1493, do not require corrections to its technical or cost analyses or its findings. Modifications to all documents will be restricted to clarifications and enhancements to assist in communications with the reader, specifically in areas discussed in the public comments.

The proposed rule has been modified by changing "Acceptance criteria" to "Performance criteria" in Section II, Definitions, and various conforming text changes to reflect consistent use of that term. Other similar redundant terms in the proposed rule, e.g. goals, have been deleted to establish clear and concise language in the rule.

Specific changes to the draft regulatory guide, Section C, Regulatory Position, include (1) in paragraph number 2, the inclusion of the rationale for denying the "3 refueling cycle" change requested in the public comments; (2) the inclusion of a new paragraph number 4, taking exception to the NEI Industry Guideline, Section 10.2.3.3, which provides guidance that an as-found Type C test or an *alternative test or analysis* (emphasis added) shall be performed prior to any maintenance, repair, modification, or adjustment

activity if it could affect a valve's leak-tightness. "Alternate test or analysis" are not endorsed as appropriate substitutes for an as-found test, since the latter provides clear and objective evidence of performance of isolation components; and (3) limitation of the extension of test intervals for main steam and feedwater isolation valves in BWRs, and containment purge and vent valves in PWRs and BWRs beyond 30 months given their operating experience and/or safety significance.

### Regulatory Guide; Issuance, Availability

The Nuclear Regulatory Commission has issued a new guide in its Regulatory Guide Series. This series has been developed to describe and make available to the public such information as methods acceptable to the NRC staff for implementing specific parts of the Commission's regulations, techniques used by the staff in evaluating specific problems or postulated accidents, and data needed by the staff in its review of applications for permits and licenses.

Regulatory Guide 1.163, "Performance-Based Containment Leakage-Test Program," endorses an industry standard which contains guidance on an acceptable performance-based leakage-test program, leakage rate test methods, procedures, and analyses that may be used to implement the final regulation published in this notice.

Comments and suggestions in connection with items for inclusion in guides currently being developed or improvements in all published guides are encouraged at any time. Written comments may be submitted to the Rules Review and Directives Branch, Division of Freedom of Information and Publications Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555. The NRC staff's response to public comments received on the draft version of this guide (DG-1037, issued in February 1995) are available for inspection or copying for a fee in the NRC Public Document Room, 2120 L Street NW., Washington, DC.

Regulatory guides are available for inspection at the Commission's Public Document Room, 2120 L Street NW., Washington, DC. Single copies of regulatory guides may be obtained free of charge by writing the Office of Administration, Attention: Distribution and Services Section, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; or by fax at (301) 415-2260. Issued guides may also be purchased from the National Technical Information Service on a standing order basis. Details on this service may be

obtained by writing NTIS, 5285 Port Royal Road, Springfield, VA 22161. Regulatory guides are not copyrighted, and Commission approval is not required to reproduce them.

#### Implementation

The proposed Option B to Appendix J will become effective 30 days after publication. At any time thereafter, a licensee or applicant may notify the NRC of its desire to perform containment leakage-rate testing according to Option B. Accompanying this notification, a licensee must submit proposed technical specifications changes which would eliminate those technical specifications which implement the current rule and propose a new technical specification referencing the NRC regulatory guide or, if the licensee desires, an alternative implementation guidance. Implementation must await NRC review and approval of the licensee's proposal. The NRC anticipates that a generic communication will be issued shortly which will provide the implementation procedure to all power reactor licensees.

#### Finding of No Significant Environmental Impact: Availability

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment, and therefore an environmental impact statement is not required. There will be a marginal radiological environmental impact offsite, and the occupational exposure onsite is expected to decrease by about 0.8 person-rem per year of plant operation for plant personnel if licensees adopt the performance-based testing scheme provided in the revised regulation. Alternatives to issuing this revision of the regulation were considered. One alternative would also entail complex revisions to other NRC regulations and therefore the NRC has decided to pursue it separately in the future. A third alternative would add regulatory burden without a commensurate safety benefit and therefore was found not to be acceptable. The environmental assessment is available for inspection or copying for a fee in the NRC Public Document Room, 2120 L Street NW, (Lower Level), Washington, DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; phone (202) 634-3273; fax (202) 634-3343.

#### Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget, approval number 3150-0011.

Because the rule will relax existing information collection requirements by providing an option to the existing requirements, the public burden for this collection of information is expected to be reduced by approximately 400 hours per licensee per year. This reduction includes the time required for reviewing instructions, searching existing data sources, gathering and maintaining the data needed and completing and reviewing the collection of information. Send comments regarding the estimated burden reduction or any aspect of this collection of information, including suggestions for reducing this burden, to the Information and Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0011), Office of Management and Budget, Washington, DC 20503.

#### Regulatory Analysis

The Commission has prepared a final regulatory analysis on this regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The analysis is available for inspection or copying for a fee in the NRC Public Document Room, 2120 L Street NW, (Lower Level), Washington, DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; phone (202) 634-3273; fax (202) 634-3343.

#### Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, (5 U.S.C. 605(b)), the Commission certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Size standard adopted by the NRC (10 CFR 2.810).

#### Backfit Analysis

This final rule amends a current regulation by establishing alternative requirements which may be voluntarily adopted by licensees. Therefore, the final rule does not constitute a backfit

as defined in 10 CFR 50.109(a)(1). Therefore, a backfit analysis is not necessary.

#### List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Criminal penalties, Fire protection, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the NRC is adopting the following amendments to 10 CFR Part 50.

### PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 is revised to read as follows:

Authority: Secs. 102, 103, 104, 105, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 938, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2132, 2133, 2134, 2135, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244 1246 (42 U.S.C. 5841, 5842, 5846).

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951, as amended by Pub. L. 102-486, sec. 2902, 106 Stat. 3123, (42 U.S.C. 5851). Sections 50.10 also issued under secs. 101, 185, 68 Stat. 936, 955, as amended (42 U.S.C. 2131, 2235); sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.13, 50.54(dd), and 50.103 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138). Sections 50.23, 50.35, 50.55, and 50.56 also issued under sec. 185, 68 Stat. 955 (42 U.S.C. 2235). Sections 50.33a, 50.55a and Appendix Q also issued under sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.34 and 50.54 also issued under sec. 204, 88 Stat. 1245 (42 U.S.C. 5844). Sections 50.58, 50.91, and 50.92 also issued under Pub. L. 97-415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80 50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Appendix F also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

2. Appendix J to 10 CFR Part 50 is amended by adding the following language between the title and the Table of Contents and adding the language for Option B after Section V.B3.

#### Appendix J—Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors

This appendix includes two options, A and B, either of which can be chosen for meeting the requirements of this appendix.

## Option A—Prescriptive Requirements

\* \* \* \* \*

## Option B—Performance-Based Requirements

## Table of Contents

- I. Introduction.
- II. Definitions.
- III. Performance-based leakage-test requirements.
  - A. Type A test.
  - B. Type B and C tests.
- IV. Recordkeeping.
- V. Application.

## I. Introduction

One of the conditions required of all operating licenses for light-water-cooled power reactors as specified in § 50.54(o) is that primary reactor containments meet the leakage-rate test requirements in either Option A or B of this appendix. These test requirements ensure that (a) leakage through these containments or systems and components penetrating these containments does not exceed allowable leakage rates specified in the Technical Specifications and (b) integrity of the containment structure is maintained during its service life. Option B of this appendix identifies the performance-based requirements and criteria for preoperational and subsequent periodic leakage-rate testing.<sup>3</sup>

## II. Definitions

*Performance criteria* means the performance standards against which test results are to be compared for establishing the acceptability of the containment system as a leakage-limiting boundary.

*Containment system* means the principal barrier, after the reactor coolant pressure boundary, to prevent the release of quantities of radioactive material that would have a significant radiological effect on the health of the public.

*Overall integrated leakage rate* means the total leakage rate through all tested leakage paths, including containment welds, valves, fittings, and components that penetrate the containment system.

*La (percent/24 hours)* means the maximum allowable leakage rate at pressure Pa as specified in the Technical Specifications.

*Pa (p.s.i.g)* means the calculated peak containment internal pressure related to the design basis loss-of-coolant accident as specified in the Technical Specifications.

## III. Performance-Based Leakage-Test Requirements

## A. Type A Test

Type A tests to measure the containment system overall integrated leakage rate must be conducted under conditions representing design basis loss-of-coolant accident containment peak pressure. A Type A test must be conducted (1) after the containment system has been completed and is ready for

<sup>3</sup> Specific guidance concerning a performance-based leakage-test program, acceptable leakage-rate test methods, procedures, and analyses that may be used to implement these requirements and criteria are provided in Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program."

operation and (2) at a periodic interval based on the historical performance of the overall containment system as a barrier to fission product releases to reduce the risk from reactor accidents. A general visual inspection of the accessible interior and exterior surfaces of the containment system for structural deterioration which may affect the containment leak-tight integrity must be conducted prior to each test, and at a periodic interval between tests based on the performance of the containment system. The leakage rate must not exceed the allowable leakage rate (La) with margin, as specified in the Technical Specifications. The test results must be compared with previous results to examine the performance history of the overall containment system to limit leakage.

## B. Type B and C Tests

Type B pneumatic tests to detect and measure local leakage rates across pressure retaining, leakage-limiting boundaries, and Type C pneumatic tests to measure containment isolation valve leakage rates, must be conducted (1) prior to initial criticality, and (2) periodically thereafter at intervals based on the safety significance and historical performance of each boundary and isolation valve to ensure the integrity of the overall containment system as a barrier to fission product release to reduce the risk from reactor accidents. The performance-based testing program must contain a performance criterion for Type B and C tests, consideration of leakage-rate limits and factors that are indicative of or affect performance, when establishing test intervals, evaluations of performance of containment system components, and comparison to previous test results to examine the performance history of the overall containment system to limit leakage. The tests must demonstrate that the sum of the leakage rates at accident pressure of Type B tests, and pathway leakage rates from Type C tests, is less than the performance criterion (La) with margin, as specified in the Technical Specification.

## IV. Recordkeeping

The results of the preoperational and periodic Type A, B, and C tests must be documented to show that performance criteria for leakage have been met. The comparison to previous results of the performance of the overall containment system and of individual components within it must be documented to show that the test intervals established for the containment system and components within it are adequate. These records must be available for inspection at plant sites.

If the test results exceed the performance criteria (La) as defined in the plant Technical Specifications, those exceedances must be assessed for Emergency Notification System reporting under §§ 50.72 (b)(1)(ii) and § 50.72 (b)(2)(i), and for a Licensee Event Report under § 50.73 (a)(2)(ii).

## V. Application

## A. Applicability

The requirements in either or both Option B, III.A for Type A tests, and Option B, III.B for Type B and C tests, may be adopted on

a voluntary basis by an operating nuclear power reactor licensee as specified in § 50.54 in substitution of the requirements for those tests contained in Option A of this appendix. If the requirements for tests in Option B, III.A or Option B, III.B are implemented, the recordkeeping requirements in Option B, IV for these tests must be substituted for the reporting requirements of these tests contained in Option A of this appendix.

## B. Implementation

1. Specific exemptions to Option A of this appendix that have been formally approved by the AEC or NRC, according to 10 CFR 50.12, are still applicable to Option B of this appendix if necessary, unless specifically revoked by the NRC.

2. A licensee or applicant for an operating license may adopt Option B, or parts thereof, as specified in Section V.A of this Appendix, by submitting its implementation plan and request for revision to technical specifications (see paragraph B.3 below) to the Director of the Office of Nuclear Reactor Regulation.

3. The regulatory guide or other implementation document used by a licensee, or applicant for an operating license, to develop a performance-based leakage-testing program must be included, by general reference, in the plant technical specifications. The submittal for technical specification revisions must contain justification, including supporting analyses, if the licensee chooses to deviate from methods approved by the Commission and endorsed in a regulatory guide.

4. The detailed licensee programs for conducting testing under Option B must be available at the plant site for NRC inspection.

Dated at Rockville, Maryland this 20th day of September, 1995.

For the Nuclear Regulatory Commission.

John C. Hoyle,

Secretary of the Commission.

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## DEPARTMENT OF LABOR

## Employment and Training Administration

## 20 CFR Part 655

## Wage and Hour Division

## 29 CFR Part 507

**Labor Condition Applications and Requirements for Employers Using Nonimmigrants on H-1B Visas in Specialty Occupations and as Fashion Models**

**AGENCY:** Employment and Training Administration, Labor; and Wage and Hour Division, Employment Standards Administration, Labor.

**ACTION:** Notice of enforcement position.