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February 17, 1994

SECY-94-036

FOR: The Commissioners
FROM: James M. Taylor
Executive Director for Operations
SUBJECT: STAFF PLANS FOR REVISING 10 CFR PART 50, APPENDIX J,
"CONTAINMENT LEAKAGE TESTING," AND FOR HANDLING EXEMPTION
REQUESTS

PURPOSE:

To inform the Commission of an expedited rulemaking effort to revise Appendix J to 10 CFR Part 50, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," as part of the initiative to eliminate requirements that are marginal to safety, and to present the staff's plans for handling requests for exemption from the current rule, pending promulgation of the revised rule.

SUMMARY:

Within the framework of the "marginal to safety" program, Appendix J will be revised by August 1995. The new rule will be performance and risk based, and less prescriptive. For example, the frequency of leak rate testing will be reduced. Licensees will have the option to comply with the revised rule or comply with the current rule. Increases in the allowable containment leak rate will be addressed in a separate, parallel effort, also scheduled for completion by August 1995.

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In the interim, the staff will continue to grant exemptions to Appendix J per 10 CFR 50.12. Two types of exemptions, contingency exemptions (which may or may not be needed in the future) and performance-based exemptions (proposing significant relaxations which typically anticipate the rule revision), will be generally discouraged and reviewed on a low priority. Staff resources are better spent on the rule revision, which will eliminate the need for most exemptions.

BACKGROUND:

The NRC published in the Federal Register, for comment, a proposed comprehensive revision to Appendix J on October 29, 1986 (51 FR 39541). The proposed final rule was forwarded to the Commission for approval via SECY-91-348, dated October 25, 1991. Difficulties in complying with the backfit rule (10 CFR 50.109), and knowledge of a separate effort to revise Appendix J through the "marginal to safety" initiative, eventually caused the Executive Director for Operations (EDO) to withdraw the revision from further consideration on February 22, 1993; the Commission concurred on March 1, 1993.

The present rulemaking is part of the program for eliminating requirements that are marginal to safety. The NRC proposed (57 FR 4166) on February 4, 1992, that the existing containment testing rule was a potential candidate for modification to make the regulation less prescriptive and more performance oriented and risk based. On the basis of staff analyses of public comments on the proposal (SECY-92-263), the Commission approved and announced (57 FR 55156) its plans to initiate rulemaking for developing a performance-oriented and risk-based regulation for containment testing requirements. In January 1993, the staff published (58 FR 6196) a general framework for developing performance-oriented and risk-based regulations and, at a public workshop on April 27 and 28, 1993, invited discussion of specific proposals for modifying containment 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).

DISCUSSION:

In keeping with the goals of the Commission's program to eliminate requirements that are marginal to safety, the staff intends to make major changes to Appendix J to 10 CFR Part 50; these changes should significantly reduce the frequency of leak testing and, at the same time, should maintain the containment's safety function as the last of the barriers to release of radioactivity to the environment.

The new rule will be performance based (insofar as it will be less prescriptive), will be based on risk insights, will offer incentives to improve component performance, and will allow flexibility in the methods of compliance. The leak testing requirements, especially testing frequency, will be based on the past performance of the components being tested. Components that exhibit an acceptable leak rate history may be tested less frequently than is specified in the current Appendix J. However, certain components that are of special importance to safety may still be tested at frequencies very similar to frequencies now specified in Appendix J. The staff is also considering what steps to take when components consistently fail leak rate tests.

One of the most troublesome aspects of the present Appendix J is the number of exemptions that the staff must process because of the detailed requirements in the regulation. This consumes considerable staff and licensee resources. The new Appendix J will be less prescriptive, and will contain only general requirements. The staff intends to model the format of the new Appendix J on 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The rule itself will be succinct and the detailed guidance and directions for implementing the new Appendix J will be contained in a regulatory guide and an industry document endorsed by the regulatory guide. The staff will use probabilistic safety analysis, where appropriate, in order to help determine the component test frequencies and the most safety-significant components.

An example of the type of change being considered is the change in frequency of the Type A test (integrated leak rate test). This is a test of the leak-tightness of the whole containment as opposed to testing of individual valves and penetrations. This is an expensive and time-consuming test that is frequently on the critical path for plant startup following a refueling outage. The current Appendix J requires that this test be conducted three times within a 10-year interval. The staff is considering a change in frequency to once in 10 years. This is based on information on the effectiveness of this test which the staff has collected and analyzed as part of this rulemaking effort. The staff is also evaluating the benefits of and need for a less-restrictive test which would be performed more frequently than the current Appendix J requirements for the Type A test in order to produce confidence that there are no gross leakage paths from the containment. The staff has conducted a comprehensive review of European practices (France, Belgium, Sweden) related to containment testing, particularly for on-line monitoring, as part of this evaluation. These systems are applicable to PWRs and use containment pressure increases as a result of in-leakage from compressed air systems to detect leakages. Although this gross leak check

would not be directly related to the Type A test, and would not be a substitute for it, it could provide additional assurance of basic containment closure between the Type A tests. These issues will be discussed in detail with the industry as the preparation of the rule proceeds.

The staff does not propose to change the basis for determining the value of L_a , the allowable containment leak rate, as part of the Appendix J revision, due to the complexity of that modification and its potential to delay the rule revision. However, the staff is proceeding with a parallel guidance development effort to revise the methodology used to establish the allowable containment leak rate, and this separate effort is scheduled to be completed at approximately the same time as the Appendix J rulemaking.

The staff will consider industry proposals for changes in test methodology.

The new rule will be structured so that licensees who prefer to comply with the requirements of the old rule may do that instead of converting to the new requirements. This will avoid backfitting.

The staff plans to complete this rulemaking by August 1995.

Exemptions pending rulemaking

The staff currently processes approximately 16 exemptions to Appendix J per year. With the current emphasis on cost-beneficial licensing actions, this number may increase.

In the interim, until the new rule is put into place, the staff will continue to grant requests for specific exemptions to Appendix J, in accordance with 10 CFR 50.12.

Appendix J exemptions fall into several categories: schedular, permanent plant-specific, contingency, and performance-based. The staff is concerned about the amount of resources required to process these exemptions while the new Appendix J is being developed. The staff has, therefore, developed a priority system for these exemptions while the new Appendix J is being developed. The exemptions are discussed below.

1. **Schedular exemptions:** As in the past, the staff will grant exemptions to the testing schedules in Appendix J, as needed, if the request is reasonable and well justified. For example, if a licensee needs an extension of the 2-year maximum interval for local leak rate tests in order to extend the allowed time interval to the next refueling outage,

the staff may grant a one-time exemption, given proper justification and appropriate compensatory actions. This type of exemption will continue to receive normal priority for action in accordance with staff procedures.

2. **Permanent plant-specific exemptions:** Occasionally, a licensee will request a permanent exemption for a specific component or group of components; usually the request is to permanently exempt a valve or valves from leak rate testing. Exemptions of this type are typically unrelated to the changes being contemplated for the current rulemaking. The staff will also treat these exemption requests in accordance with established procedures, and will grant those that are properly justified.
3. **Contingency exemptions:** These exemptions are not needed at the time application is made, and may never be needed in the future, but a licensee requests them in anticipation of a potential need. An example is an exemption to increase the allowable leak rate for the whole containment (the integrated leak rate or Type A test) before any repairs or modifications have been made to the components. There is good technical justification for this exemption, and the staff plans to put this change into the new rule, but we plan to discourage these requests unless there is an actual need at a particular plant. A half-dozen plants have already requested this exemption, and it is better to focus limited staff resources on the rulemaking effort than to process these exemptions.
4. **Performance-based exemptions:** The licensee for the Grand Gulf plant has requested a major, permanent exemption from the testing frequencies in Appendix J. The licensee proposes to conduct Type A tests (integrated leak rate tests) once every 10 years (the present requirement is three times in 10 years), and Types B and C tests (local leak rate tests) on a frequency based on the performance of individual components, typically once every 5 or 10 years. Type B tests are local leak rate tests of such non-valve containment penetrations as electrical penetrations, blind flanges, and air locks. Type C tests are local leak rate tests of containment isolation valves. The present Appendix J requirement is to conduct local leak rate tests every 2 years, the approximate interval of an operating cycle. These proposed changes, dated August 13, 1993, are very similar to those announced in the Federal Register (58 FR 6196) on January 27, 1993, and discussed at the staff's workshop on April 27-28, 1993, as being under consideration by the staff for the Appendix J revision. Nevertheless, the licensee has requested these

changes in advance of, and independent from, the revision to Appendix J.

The staff proposes to review the Grand Gulf exemption request in parallel with rulemaking, despite its similarity to the rule revisions under consideration, because review of the Grand Gulf proposal would be helpful to the staff's effort to develop a new Appendix J. A decision has not been made as to whether to grant the exemption, based on its merits, to Grand Gulf. If the staff approves the Grand Gulf request, it is likely that other licensees will make similar requests, because of the very significant relief it would bring. Some may not be able to develop sufficient plant-specific justification for Types B and C relief, but the Type A relief justification is quite generic. If the staff grants the exemption request to Grand Gulf, implementation of the proposed Types B and C testing scheme would provide information toward validation of technical methods that may be adopted in the revised rule.

The impact on staff resources from processing these exemptions could be significant. The first two types of exemptions, schedular and permanent plant-specific, are part of the normal workload. The latter two types, contingency and performance based, are a new resource burden. Because of resource constraints and the realities of scheduling, the staff does not anticipate processing many of these latter requests. Requests for relaxation of requirements, unless they are needed for continued plant operation, are prioritized and reviewed on an extended schedule. Given the anticipated completion of the new rulemaking in less than 2 years, and in view of the fact that such reviews would compete for the resources needed to complete the rulemaking, the staff does not propose to encourage such exemption requests. The staff believes that the best use of available resources is to concentrate on revising the rule, thereby eliminating the need for most exemptions.

Leak rate testing inspections

At the present time, the staff inspects very few leak rate testing programs. This is because this area is fairly well defined and of relatively low safety significance compared to other issues requiring inspection resources. Nevertheless, the staff will prepare new inspection guidance as part of the Appendix J revision. The new guidance will reflect the changed emphasis to a performance-based rule. Before the staff issues any new guidance, it will prepare and implement a temporary instruction or will conduct several special inspections in order to refine the inspection guidance.

Staff coordination

The revision to Appendix J will require coordination between many organizations within the Nuclear Regulatory Commission. We also anticipate significant input from and discussions with NUMARC as we proceed with the preparation of the rule.

The industry will be involved in the process from the early stages through the offices of NUMARC, which has formed a working group to address this issue. The staff met with NUMARC on November 8 and December 14, 1993, to coordinate efforts, and will continue to meet periodically to coordinate the effort. Currently NUMARC is collecting historical leak rate testing data at the staff's request and plans to develop a detailed guidance document to implement the revised rule.

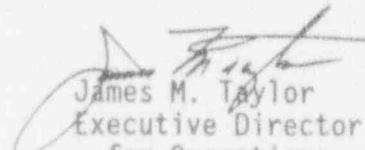
This action involves no resource adjustments to the NRC Five Year Plan.

Conclusion

The staff intends to revise Appendix J to 10 CFR Part 50 to meet the goals of the staff program to eliminate requirements marginal to safety. This rule revision has been identified by the industry as an effort that should be given high priority because of its potential for producing significant savings while maintaining an adequate level of safety. The staff intends to give this effort high priority as evidenced by the projected completion date of August 1995.

SCHEDULING:

The projected date for completing the Appendix J revision is August 1995.


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