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NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

RIN 3150 - AE55

Monitoring the Effectiveness of Maintenance at Nuclear Power Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations for monitoring the effectiveness of maintenance programs at commercial nuclear power plants. The current regulations require that nuclear power plant licensees evaluate performance and condition monitoring activities and associated goals and preventive maintenance activities at least annually. This amendment changes the time interval for conducting evaluations from a mandatory once every year to at least once every refueling cycle, but not to exceed 24 months.

EFFECTIVE DATE: July 10, 1996.

ADDRESSES: Copies of comments received on the proposed rule may be inspected and copied for a fee at the Public Document Room located at 2120 L Street, NW. (Lower Level), Washington, DC.

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at 58FR 33993

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Single copies of the environmental assessment are available from Joseph J. Mate, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 292-3795.

FOR FURTHER INFORMATION CONTACT: Joseph J. Mate, Office of Nuclear Regulatory Research, U. S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492-3795.

SUPPLEMENTARY INFORMATION:

Background

On July 10, 1991 (56 FR 31324) the NRC published the final rule "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" (§ 50.65). The final rule, which will become effective July 10, 1996, requires commercial nuclear power plant licensees to monitor the effectiveness of maintenance activities for safety-significant plant equipment in order to minimize the likelihood of failures and events caused by the lack of effective maintenance. Section 50.65 (a)(3) requires nuclear power plant licensees to evaluate the overall effectiveness of their maintenance activities on an annual basis. An industry consensus guidance document and a regulatory guide to provide an acceptable methodology for implementing the final rule are expected to be published by June 30, 1993.

Discussion

Since the Maintenance Rule was published in July 1991, two events have occurred that led the Commission to reconsider the annual evaluation requirements in § 50.65(a)(3).

First, in the Summer of 1991, the Nuclear Management Resources Council (NUMARC) Steering Group was formed to develop an industry guide for implementing the Maintenance Rule. While developing the guide, the Steering Group suggested to the NRC in a public meeting held on February 26, 1992, that instead of annual assessment requirements, the NRC should consider assessments based on a refueling cycle interval. The NUMARC Steering Group stated that:

(1) Significantly more data would be available during refueling cycles than is available on an annual basis;

(2) Key data from some surveillance tests can only be obtained during refueling outages and is not available on an annual basis; and

(3) Adjustments to maintenance activities that may be made after such an evaluation would be typically performed after a refueling outage.

The NUMARC Steering Group further added that the evaluation process is a time consuming activity and that with limited data available, the annual evaluation would not provide for meaningful results. With only limited data, changes to maintenance programs will likely not be made because there would not be sufficient information available for spotting trends or doing trend analysis.

Second, the NRC conducted a regulatory review to eliminate or revise unnecessarily burdensome regulations and published a final rule on

August 31, 1992 (57 FR 39353) that amended several regulations identified by its Committee to Review Generic Requirements (CRGR). One of those amended regulations was 10 CFR 50.71 (e) (Final Safety Analysis Report Updates) where the frequency of licensee reporting to the NRC was changed from annually to once per refueling cycle. The change was made because the use of a refueling cycle interval provided a more coordinated and cohesive update since a majority of design changes and major modifications were performed during refueling outages. In addition, it had no adverse impact on the public health and safety and reduced the regulatory burden on the licensees.

The Commission is now changing the required frequency of maintenance activity evaluations from annually to once per refueling outage. Evaluation of data collected over the period of a refueling cycle will provide a substantially better basis for detecting problems in degraded performance of structures, systems, and components (SSC's) and weakness in maintenance practices. Evaluations conducted on a refueling cycle basis would also consider and integrate data available only during refueling outages with the data available during operations; under the existing requirements this may not occur depending on whether the annual assessment coincides with the refueling outage. Furthermore, evaluations of data accumulated over the period of a refueling cycle, as opposed to the shorter annual period required by the rule, will provide a more meaningful basis for the recognition and interpretation of trends. The Commission understands that a normal frequency of refueling outage ranges from 15 to 18 months; however, the conditions may vary from plant to plant. In order to ensure that an indefinite period of time does not occur between maintenance evaluations, the Commission is establishing an upper limit of 24 months between the maintenance evaluations. This would address

those licensees that have extended their refueling cycle beyond 24 months for any reason including numerous short outages or extended shutdown periods. Although the Commission believes that it is generally the case that maintenance evaluations will be more effective if conducted in conjunction with refueling outages, licensees would still have the option of conducting them more frequently.

In light of the above discussion, the NRC is changing the requirement for evaluation of the overall effectiveness of maintenance activities to be performed once per refueling cycle provided the interval between evaluations does not exceed 24 months.

Summary and Analysis of Public Comments

On March 22, 1993 (58 FR 15303), the NRC published a notice of the proposed rulemaking for public comment. The comment period expired on May 6, 1993. The NRC received 17 comments on the proposed rule. All of the comments except for one favored the change identified in the proposed rule. The comments on the proposed rule came primarily from public utilities with comments also received from a public utilities representative and a private citizen. The NRC has identified and grouped all comments into six broad issues. For each broad issue, the NRC has included a summary of the comments received and their resolution as follows:

1. Comment. One commenter stated that the proposed change in the rule would unfairly require nuclear plants on an annual refueling cycle to perform twice as many evaluations as plants on a 24-month cycle. The commenter believes that the NRC should consider a fixed maximum period of 2 years and

give the utilities the latitude to manage the timing of the evaluation within that framework.

Response. The intent of the proposed modification of the maintenance rule is to allow sufficient flexibility in the scheduling of Maintenance Programs evaluations so that the additional information available from the refueling activities could be factored into the evaluation. The refueling cycle has also been adopted as the basis for FSAR updates. It is recognized that those licensees who refuel more frequently will have to conduct these activities more frequently than others. The Commission believes that this is neither an undue burden nor one that is outside the control of the licensee to impact by reducing the frequency of refueling.

2. Comment. Some commenters stated that, as a result of the verification and validation program to test the proposed industry guidelines, it was determined that several systems are neither risk-significant nor able to be monitored for performance by currently known plant level performance criteria. Some commenters believe that these systems have no public health or safety significance and that they should be excluded from the scope of the rule and the rule modified accordingly.

Response. The suggestion to change the scope of the rule to exclude those systems that have no public health or safety significance or that have no current plant level performance criteria is clearly beyond the scope of the rule, and cannot be considered at this time. However, if, as a result of any further verification and validation programs, changes to the rule or regulatory guidance are warranted, the NRC will consider such changes at that time.

3. Comment. One commenter stated, "one of the clear lessons learned from the recently completed verification and validation program is that the major expense of the rule's implementation will be the detailed documentation (for NRC audit purposes) of performance monitoring....".

Response. The documentation developed by a licensee in response to 10CFR50.65 is that level which the licensee determines necessary to support the program developed by the licensee to monitor performance of a structure, system or component. The purpose of this rule modification is not to address the level of documentation required for NRC audit purposes. It is merely to provide more flexibility in the timing of Maintenance Program evaluations.

4. Comment. One commenter stated that "The NRC is mesmerized by a suggestion by NUMARC (Nuclear Management and Resources Council), to extend the annual assessment of plant maintenance from an annual schedule to a refueling outage schedule." The commenter further stated that the extension does not provide an improvement in safety and may help hide maintenance that was improperly deferred.

Response. As stated earlier, the NRC decided to make the proposed change in the assessment requirement for the following reasons:
(1) Evaluation of data collected over the period of a refueling cycle will provide a substantially better basis for detecting problems in degraded performance of SSC's and weakness in maintenance practices; (2) Evaluations conducted on a refueling cycle basis would also consider and integrate data available only during refueling outages with the data available during operations; under the existing requirements this may not occur depending on whether the annual assessment coincides with the refueling outage; and

(3) Evaluation of data accumulated over the period of a refueling cycle, as opposed to the shorter annual period required by the rule, will provide a more meaningful basis for the recognition and interpretation of trends. In addition, adjustments to maintenance activities that may be made after such a review and evaluation would be typically performed after a refueling outage. Periodic evaluation of maintenance activities is a time consuming process and with limited data available, the annual evaluations not conducted in conjunction with a refueling would not provide for as meaningful a result. These conclusions have been reached based on the NRC's independent assessment. Therefore, the commenter incorrectly implies that the NRC simply accepts NUMARC's suggestions without independent review and consideration.

Another reason for changing the annual assessment of plant maintenance concerned a change made by the NRC in August of 1992. As part of the regulatory review to eliminate or revise unnecessary burdensome regulations, the NRC revised the frequency of licensee reporting of the Final Safety Analysis Reports from annually to once per refueling cycle. This change was made because the NRC believes that the use of a refueling cycle interval provided a more coordinated and cohesive update since the majority of the design changes and modifications were made during refueling outages. This was not a rationale relied upon by NUMARC and further contradicts the commenter's view that the NRC accepts the suggestions of NUMARC without independent consideration.

In summary the Commission disagrees with the commenter's view that the extension does not improve safety. The change in requirements will improve the quality of assessments by ensuring that each assessment will include a

review of all maintenance activities conducted during the refueling cycle including the refueling outage.

5. Comment. One commenter stated that effective maintenance is an ongoing duty and need and that allowing licensees to put off monitoring the effectiveness of maintenance from annually to 18 to 24 months sends the wrong message that the NRC does not care about safety.

Response. The NRC agrees that effective maintenance is an ongoing duty and need. The NRC does not agree, however, that the rule change allows licensees to put off monitoring the effectiveness of maintenance. Section 50.65 (a)(1) which is not being changed, requires licensees to monitor the performance or conditions of SSC's against licensee-established goals, in a manner sufficient to provide reasonable assurance that these SSC's are capable of fulfilling their intended functions. It also requires appropriate corrective action to be taken when the performance of the SSC does not meet established goals. The only thing that is being changed is the frequency of the periodic evaluation of the maintenance program. The NRC does care about safety and it does not agree with the commenter that changing the evaluation cycle sends the wrong message to the industry. The NRC believes that this additional flexibility will not result in any increase in risk to public health and safety, and in fact, should result in a more effective maintenance and improved plant safety.

6. Comment. One of the commenters stated that the amendments' maximum time period of 24 months would be restrictive for those plants planning to increase their refueling cycle to 24 months. The commenter explained that the Standard Technical Specification, Revision 0, retains the option for performance of surveillance requirements within 1.25 times the interval

specified and thus, could extend the refueling outage interval of plants with a 24-month refueling cycle by upwards of 6 months. Accordingly, the refueling cycle for these plants would not meet the maximum time period of 24 months allowed by the amendment. Another commenter stated that this rule could be further improved by the elimination of the requirement for a specific time interval.

Response. The NRC believes that it is necessary to assure that maintenance effectiveness is periodically assessed and that this period is not unacceptably long nor indefinite. Thus, a balance was necessary between obtaining the improved reviews associated with assessments conducted during refueling outages and the extended or indefinite periods associated with plants with extended plant cycles or experiencing extended plant shutdown or outages. In weighing this balance, the Commission established an upper limit of 24 months between maintenance evaluations in order to obtain improved evaluations for the majority of the plants having a frequency of refueling cycle from 15 to 18 months, and yet not allow maintenance effectiveness to continue without being assessed for periods in excess of 2 years. The NRC does not agree that the rule could be improved further by elimination of the requirement of a specific time interval.

Finding of No Significant Environmental Impact: Availability

The Commission has determined that, 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, is not a major Federal action that

significantly affects the quality of the human environment and therefore an environmental impact statement is not required.

The final amendment does not require any change to nuclear power plant design or require any modifications to a plant. Nor does the rule change the scope of the maintenance rule or affect the nature of the activities to be performed, e.g., monitoring, corrective action, and assessments of compliance. The final rule change only extends the time period for performing evaluations of the effectiveness of licensees' maintenance program from at least once a year to at least once every refueling cycle, not to exceed 24 months. The extension should not result in any significant or discernible reduction in the effectiveness of a licensee's maintenance program; rather the change will increase the meaningfulness and quality of the maintenance evaluations. For these reasons, the Commission finds that the final amendment will not result in any significant increase in either the probability of occurrence of an accident or the consequences of an accident and therefore concludes that there will be no significant effect on the environment as a result of the amendment.

The environmental assessment is available for inspection at the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC.

Single copies of the environmental assessment are available from Joseph J. Mate, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone: (301) 492-3795.

Paperwork Reduction Act Statement

This final rule amends the 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 relaxes existing requirements related to the assessment of maintenance activities, the public burden for this collection of information is expected to be reduced by 150 hours per licensee. 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 other aspect of this collection of information, including suggestions for reducing this burden, to the Information and Records Management Branch (MNBB-7714), U. S. Nuclear Regulatory Commission, Washington, DC, 20555; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-3019, (3150-0011), Office of Management and Budget, Washington, DC, 20503.

Regulatory Analysis

The Nuclear Regulatory Commission has considered the costs and benefits of the final rule. With respect to benefits, the amendment will allow those licensees who choose to exercise the option to perform evaluations of their maintenance program in conjunction with refueling outages but no less frequently than every 24 months. The Commission believes that this additional flexibility will not result in any increase in risk to the public health and safety, and may result in a more effective maintenance and improved plant safety.

Under the rule, the frequency of periodic assessments would change from annually to at least once per refueling cycle but not to exceed 24 months. Because most refueling outages normally occur in the 15- to 18-month range, the time between periodic assessments assuming a 16-month average would be increased by about 33 percent. Therefore, the licensee staff hours to accomplish a periodic assessment under the proposed rule would be reduced from approximately 460 staff hours to about 310 staff hours per plant. This would save the licensee approximately 150 staff hours per plant. There are no additional changes in costs to be incurred by the NRC. The foregoing constitutes the regulatory analysis for this final rule.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, (5 U.S.C. 605(b)), the Nuclear Regulatory Commission certifies that, this rule will not have a significant economic impact on a substantial number of small entities. This rule affects only the operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" as set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in the regulations issued by the Small Business Administration at 13 CFR Part 121.

Backfit Analysis

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to this rule and, therefore, that a backfit analysis is not required for

this final rule because this amendment does involve any provisions which would impose backfits as determined in 10 CFR 50.109.

List of Subjects

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 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, 553, the NRC is adopting the following amendment to 10 CFR Part 50.

PART 50--DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for part 50 continues 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 (42 U.S.C. 5851). Section 50.10 also issued under secs. 101, 185, 68 Stat. 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. In § 50.65, paragraph (a)(3) is revised to read as follows:

§ 50.65 Requirements for monitoring the effectiveness of maintenance at nuclear power plants.

(a) * * *

(3) Performance and condition monitoring activities and associated goals and preventive maintenance activities shall be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months. The evaluations shall be conducted taking into account, where practical, industry-wide operating experience. Adjustments shall be made where necessary to ensure that the objective of preventative failures of structures, systems, and components through maintenance is appropriately balanced against the objective of minimizing unavailability of structures, systems, and components due to monitoring or preventative maintenance. In

performing monitoring and preventative maintenance activities, an assessment of the total plant equipment that is out of service should be taken into account to determine the overall effect on performance of safety functions.

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Dated at Rockville, Maryland, this 9th day of June 1993.

For the Nuclear Regulatory Commission.

James M. Taylor,
Executive Director for Operations.