



U.S. NUCLEAR REGULATORY COMMISSION  
OFFICE OF NUCLEAR REGULATORY RESEARCH

August 1996  
Division 1  
Draft DG-1051

DRAFT REGULATORY GUIDE

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DRAFT REGULATORY GUIDE DG-1051  
(Proposed Revision 2 to Regulatory Guide 1.160)

MONITORING THE EFFECTIVENESS OF  
MAINTENANCE AT NUCLEAR POWER PLANTS

A. INTRODUCTION

The NRC published the maintenance rule on July 10, 1991, as Section 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," of 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The NRC's determination that a maintenance rule was needed arose from the conclusion that proper maintenance is essential to plant safety. As discussed in the regulatory analysis for this rule,<sup>1</sup> there is a clear link between effective maintenance and safety as it relates to such factors as the number of transients and challenges to safety systems and the associated need for operability, availability, and reliability of safety equipment. In addition, good maintenance is also important in providing assurance that failures of other than safety-related structures, systems, and components (SSCs) that could initiate or adversely affect a transient or accident are minimized. Minimizing challenges to safety systems is consistent with the NRC's defense-in-depth

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<sup>1</sup>NRC Memorandum to All Commissioners from J. Taylor on "Maintenance Rulemaking," June 27, 1991. 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; phone (202)634-3273; fax (202)634-3343.

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This regulatory guide is being issued in draft form to involve the public in the early stages of the development of a regulatory position in this area. It has not received complete staff review and does not represent an official NRC staff position.

Public comments are being solicited on the draft guide (including any implementation schedule) and its associated regulatory analysis or value/impact statement. Comments should be accompanied by appropriate supporting data. Written comments may be submitted to the Rules Review and Directives Branch, DFIPS, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Copies of comments received may be examined at the NRC Public Document Room, 2120 L Street NW., Washington, DC. Comments will be most helpful if received by **November 15, 1996.**

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philosophy. Maintenance is also important to ensure that design assumptions and margins in the original design basis are maintained and are not unacceptably degraded. Therefore, nuclear power plant maintenance is clearly important in protecting public health and safety.

Paragraph (a)(1) of 10 CFR 50.65 requires that power reactor licensees monitor the performance or condition of SSCs against licensee-established goals in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions. Such goals are to be established commensurate with safety and, where practical, take into account industry-wide operating experience. When the performance or condition of an SSC does not meet established goals, appropriate corrective action must be taken.

Paragraph (a)(2) of 10 CFR 50.65 states that monitoring as specified in paragraph (a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance, such that the SSC remains capable of performing its intended function.

Paragraph (a)(3) of 10 CFR 50.65 requires that performance and condition monitoring activities and associated goals and preventive maintenance activities be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months. The evaluations must be conducted taking into account, where practical, industry-wide operating experience. Adjustments must be made where necessary to ensure that the objective of preventing failures of SSCs through maintenance is appropriately balanced against the objective of minimizing unavailability of SSCs because of monitoring or preventive maintenance. In performing monitoring and preventive 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. Paragraph (b) of 10 CFR 50.65 states that the scope of the monitoring program specified in paragraph (a)(1) is to include safety-related and nonsafety-related SSCs, as follows:

(1) Safety-related structures, systems, or components that are relied upon to remain functional during and following design basis events to ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, and the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR Part 100 guidelines.

(2) Nonsafety-related structures, systems, or components:

- (i) That are relied upon to mitigate accidents or transients or are used in plant emergency operating procedures (EOPs); or
- (ii) Whose failure could prevent safety-related structures, systems, and components from fulfilling their safety-related function; or
- (iii) Whose failure could cause a reactor scram or actuation of a safety-related system.

Paragraph (c) of 10 CFR 50.65 states that the rule provisions are to be implemented by licensees no later than July 10, 1996.

This Regulatory Guide 1.160 is being revised to endorse Revision 2 of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"<sup>2</sup> (April 1996), which has been updated by the Nuclear Energy Institute. The regulatory guidance is intended to provide flexibility for a licensee to structure its maintenance program in accordance with the safety significance of those SSCs within the scope of the rule.

Regulatory guides are issued 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 guidance to applicants. Regulatory guides are not substitutes for regulations, and compliance with regulatory guides is not required. Regulatory guides are issued in draft form for public comment to involve the public in the early stages of developing the regulatory positions. Draft regulatory guides have not received complete staff review and do not represent official NRC staff positions.

The information collections contained in this draft regulatory guide are covered by the requirements of 10 CFR Part 50, which were approved by the Office of Management and Budget, approval number 3150-0011. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

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<sup>2</sup>This document is available for inspection or copying for a fee in the NRC Public Document Room, 2120 L Street NW., Washington, DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; phone (202)634-3273; fax (202)634-3343.

## **B. DISCUSSION**

### **OBJECTIVE**

The objective of 10 CFR 50.65 (referred to hereafter as the maintenance rule or the rule) is to require monitoring of the overall continuing effectiveness of licensee maintenance programs to ensure that: (1) safety-related and certain nonsafety-related SSCs are capable of performing their intended functions and (2) for nonsafety-related equipment, failures will not occur that prevent the fulfillment of safety-related functions, and failures resulting in scrams and unnecessary actuations of safety-related systems are minimized.

### **PLANT, SYSTEM, TRAIN, AND COMPONENT MONITORING LEVELS**

The extent of monitoring may vary from system to system depending on the system's importance to risk. Some monitoring at the component level may be necessary; however, it is envisioned that most of the monitoring could be done at the plant, system, or train level. SSCs with high safety significance and standby SSCs with low safety significance should be monitored at the system or train level. Normally operating SSCs with low safety significance may be monitored through plant-level performance criteria, including unplanned automatic scrams, safety system actuations, or unplanned capability loss factors. For SSCs monitored in accordance with 10 CFR 50.65(a)(1), additional parameter trending may be necessary to ensure that the problem that caused the SSC to be placed in the paragraph (a)(1) category is being corrected.

### **USE OF EXISTING LICENSEE PROGRAMS**

Activities currently being conducted by licensees, such as technical specification surveillance testing, are encouraged to be used to the maximum extent practical to satisfy monitoring requirements. Such activities could be integrated with, and provide the basis for, the requisite level of monitoring. Consistent with the underlying purposes of the rule, maximum flexibility should be offered to licensees in establishing and modifying their monitoring activities.

## USE OF RELIABILITY-BASED PROGRAMS

Licensees are encouraged to consider the use of reliability-based methods for developing the preventive maintenance programs covered under 10 CFR 50.65(a)(2); however, the use of such methods is not required.

## DEVELOPMENT OF INDUSTRY GUIDELINE, NUMARC 93-01

The nuclear industry developed a document that provided guidance to licensees regarding implementation of the maintenance rule, NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" (May 1993).<sup>2</sup> This document was prepared by NUMARC. A verification and validation (V&V) effort was conducted by NUMARC, with NRC staff observation, to test the guidance document on several representative systems. A number of changes were made to the NUMARC guidance document based on the results of the V&V effort. The NRC staff reviewed this document and found that it provided acceptable guidance to licensees. In June 1993, the NRC staff issued Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," which endorsed the May 1993 version of NUMARC 93-01. In January 1995, the NRC staff issued Revision 1 to Regulatory Guide 1.160 to reflect the amendment to 10 CFR 50.65(a)(3) that changed the requirement for performing the periodic evaluation from annually to once per refueling cycle, not to exceed 24 months between evaluations.

## RISK-RANKING METHODOLOGY

The NRC staff endorses the use of risk-ranking methodology described in Revision 2 (April 1996) of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," as one acceptable method for meeting the requirements of the maintenance rule. However, because of some unique aspects of the maintenance rule, including the fact that SSCs of high safety significance are treated the same as standby SSCs, this endorsement for purposes of the maintenance rule should not be construed as an endorsement for other applications. These issues were discussed in SECY 95-265, "Response to August 9, 1995, Staff Requirements Memorandum Request to Analyze the Generic Applicability of the Risk Determination Process Used in Implementing the Maintenance Rule."<sup>2</sup>

## RISK CATEGORIES

The maintenance rule requires that goals be established commensurate with safety. In order to implement this requirement, NUMARC 93-01 established two safety categories: "risk-significant" and "non-risk-significant." Criteria for placing SSCs in either of these two categories are described in section 9.0 of NUMARC 93-01. The statements of consideration for the rule use the terms "more risk-significant" and "less risk-significant." NRC inspection procedure (IP) 62706<sup>2</sup> uses the terms "high safety significance" and "low safety significance." After discussions with industry representatives, the NRC staff has determined that the preferred terminology is "high safety significance" and "low safety significance." Some licensees may elect to define other safety significance categories or may elect to define more than two categories, which would be acceptable if these alternative categories are defined in the licensee's procedures and implemented in a consistent manner.

## APPLICABILITY OF APPENDIX B TO 10 CFR PART 50

With regard to the scope of the maintenance rule, as stated in paragraph (b) of the rule, it is understood that balance of plant (BOP) SSCs may have been designed and built with normal industrial quality and may not meet the standards in Appendix B to 10 CFR Part 50. It is not the intent of the NRC staff to require licensees to generate paperwork to document the basis for the design, fabrication, and construction of BOP equipment (i.e., backfitting requirements in Appendix B to 10 CFR Part 50 to BOP equipment is not required).

Each licensee's maintenance efforts should minimize failures in both safety-related and BOP SSCs that affect safe operation of the plant. The effectiveness of maintenance programs should be maintained for the operational life of the facility.

## SWITCHYARD MAINTENANCE ACTIVITIES

As noted in the Regulatory Position of this guide, there may be a need to address maintenance activities that occur in the switchyards that could directly affect plant operations. Plant management should be aware of and have the ability to control these activities.

## PILOT SITE VISITS

From September 1994 to March 1995, the NRC staff performed a series of nine pilot site visits to verify the usability and adequacy of the draft NRC Maintenance Rule Inspection Procedure and to determine the strengths and weaknesses of the implementation of the rule at each site that used the guidance provided in NUMARC 93-01. The findings are described in NUREG-1526, "Lessons Learned from Early Implementation of The Maintenance Rule at Nine Nuclear Power Plants"<sup>3</sup> (June 1995). The NRC staff concluded that the requirements of the rule could be met more consistently across the industry if some additional clarifying guidance were added to NUMARC 93-01 to address the findings noted in NUREG-1526. The NRC staff met with industry representatives in a series of public meetings to discuss proposed revisions to NUMARC 93-01 that would address the findings noted during the site visits.

## CLARIFICATIONS

Some of the clarifications to Revision 2 to NUMARC 93-01 are discussed below. The NRC staff has found the revisions to the following sections to be acceptable.

**Section 9.3.1, "Establishing Risk Significant Criteria,"** was revised to clarify that the expert panel should review input from all three specific risk-importance calculational methods (risk reduction worth, core damage frequency contribution, and risk achievement worth) in making its judgment regarding risk-significant systems and that additional methods (e.g., Birnbaum, Fussell-Veseley) may be used if they have been performed and are readily available.

**Section 9.3.2, "Performance Criteria for Evaluating SSCs,"** was revised to clarify that use of all three plant-level performance criteria (unplanned automatic scrams per 7000 hours critical, unplanned safety system actuations, or

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<sup>3</sup>Copies are available at current rates from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20402-9328 (telephone (202)512-2249); or from the National Technical Information Service by writing NTIS at 5285 Port Royal Road, Springfield, VA 22161. 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.

unplanned capability loss factor) is not required for each SSC being monitored using plant-level performance criteria.

**Section 9.3.3, "Evaluating SSCs Against Risk Significant and Performance Criteria,"** was revised to clarify that data on SSC performance for new plants with no operating history can be obtained from the pre-operational testing and industry data for similar plant designs.

**Section 9.4.1.2, "Train Level,"** was revised to clarify that risk-significant and standby systems with multiple trains should have goals established for the individual trains.

**Section 9.4.2, "Monitoring,"** was revised to clarify that if a plant-specific safety analysis report (FSAR, UFSAR, etc.) or PRA takes credit for any components in the train or system, those components supporting that function should be monitored under the maintenance rule. If credit is not taken, they could be considered installed spare components that do not require monitoring under the rule.

**Section 9.4.5, "Maintenance Preventable Functional Failures (MPFFs),"** was revised to clarify that, where a licensee decides a proposed modification to improve the performance of an SSC would not be cost effective, additional preventive maintenance or inspection activities may be necessary to compensate for the design deficiency.

**Section 10.2.3, "Monitoring the Condition of Structures,"** was revised to provide additional guidance for the monitoring of structures and to emphasize that the monitoring of structures should be given the same priority as monitoring mechanical or electrical systems and components.

**Section 11.2, "Guidance,"** was revised to clarify that the guidance provided in this section is intended to cover all modes of plant operation and that additional guidance is available in NUMARC 91-06, "Guideline for Industry Actions To Assess Shutdown Management."<sup>2</sup>

**Section 11.2.3, "Assess and Control the Effect of the Removal of SSCs from Service on Key Plant Safety Functions,"** was revised to provide additional



guidance for evaluating the risk associated with the performance of on-line maintenance.

**Section 12.0**, "Periodic Maintenance Effectiveness Assessments," was revised to clarify that these assessments can be performed more often than once per refueling cycle and that these assessments should, at a minimum, include a review of all activities under 10 CFR 50.65(a)(1) and (a)(2).

**Appendix B**, "Maintenance Guideline Definitions," was revised. Definitions were added for "Performance," "System," and "Train."

### **EMERGENCY DIESEL GENERATORS**

Industry- and NRC-sponsored probabilistic risk analyses (PRAs) have shown the risk significance of emergency ac power sources. The station blackout rule (10 CFR 50.63) required plant-specific coping analyses to ensure that a plant could withstand a total loss of ac power for a specified duration and to determine appropriate actions to mitigate the effects of a total loss of ac power. During the station blackout reviews, most licensees (1) made a commitment to implement an emergency diesel generator (EDG) reliability program in accordance with NRC regulatory guidance but reserved the option to later adopt the outcome of Generic Issue B-56 resolution and (2) stated that they had or will implement an equivalent program. Subsequently, utilities docketed commitments to maintain their selected target reliability values (i.e., maintain the emergency diesel generator target reliability of 0.95 or 0.975). Those values could be used as a goal or as a performance criterion for emergency diesel generator reliability under the maintenance rule.

Emergency diesel generator unavailability values were also assumed in plant-specific individual plant examination (IPE) analyses. These values should be compared to the plant-specific emergency diesel generator unavailability data regularly monitored and reported as industry-wide plant performance information. These values could also be used as the basis for a goal or performance criterion under the maintenance rule. All SSCs within the scope of the maintenance rule, including the emergency diesel generators, are required to be handled under either 10 CFR 50.65(a)(1), where they are subject to monitoring against licensee-established goals, or under 10 CFR 50.65(a)(2), where they are subject to

monitoring against licensee-established performance criteria as described in NUMARC 93-01.

In addition, periodic evaluations under 10 CFR 50.56(a)(3) that include balancing SSC reliability and unavailability must be performed. The impact on overall plant safety of removing SSCs from service for maintenance must be assessed on an ongoing basis. Performance criteria for emergency diesel generators (and the support systems vital to their functioning) would be met by the absence of a repetitive MPFF, by not exceeding the established reliability or unavailability criterion, or by the occurrence of a single maintenance-preventable failure followed by appropriate cause determination and corrective action. SSCs being handled under 10 CFR 50.65(a)(2) would be dispositioned to 10 CFR 50.65(a)(1) if the performance criteria are not met or if a repetitive MPFF occurs. Once under 10 CFR 50.65(a)(1), the SSCs would be subject to goal setting and monitoring. All SSCs within the scope of the rule (i.e., those under 10 CFR 50.65(a)(1) and (a)(2)) are subject to the requirements of 10 CFR 50.65(a)(3), including (1) periodic evaluation, (2) balancing reliability and unavailability, and (3) assessing the impact on plant safety of taking equipment out of service for maintenance.

### **C. REGULATORY POSITION**

#### **1. NUMARC 93-01**

Revision 2 of NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," provides methods that are acceptable to the NRC staff for complying with the provisions of 10 CFR 50.65 with the following provisions and clarifications.

##### **1.1 "Could Cause" Criterion**

During the nine pilot site visits, the NRC staff recognized that some licensees interpreted the words in section 8.2.1.5 to mean that only those SSCs that had actually caused a plant scram or safety system actuation needed to be included in the scope of the rule. The NRC staff's position is that the SSCs to be included under the criterion "could cause a reactor scram or actuation of a safety system" should not be limited to those SSCs that "did cause" or "could likely cause." This position was discussed in NUREG-1526, "Lessons Learned from

Early Implementation of the Maintenance Rule at Nine Nuclear Power Plants" (June 1995).<sup>3</sup> Licensees should include the following SSCs within the scope of the rule.

1. SSCs whose failure has caused a reactor scram or actuation of a safety-related system at their site.
2. SSCs whose failure has caused a reactor scram or actuation of a safety-related system at a site with a similar configuration.
3. SSCs identified in the licensee's analysis (e.g., FSAR, IPE) that failure of the SSC would cause a reactor scram or actuation of a safety-related system.

The only exception to the above would be when a licensee has demonstrated by an analysis (e.g., FSAR, IPE) and by operational experience that the design or configuration of an SSC is fault-tolerant through redundancy or installed standby spares such that a reactor scram or actuation of a safety-related system is implausible. In these cases, the licensee may exclude the SSC from the scope of the rule.

## 1.2 Systems with Multiple Design Functions

For systems that have multiple design functions, the NRC staff's position is that some design functions may be within the scope of the maintenance rule while others may be outside the scope of the rule. Failures of components that affect a design function that is within the scope of the maintenance rule would require corrective action and monitoring under the rule. For example, the components (piping, pumps, and valves) in the high-pressure coolant injection system (HPCI) that are needed to perform the design function (injection of high-pressure water into the reactor) would be included within the scope of the rule because this is a safety-related function of the system. However, the components that are only used for test purposes (e.g., test loop, sample valves, bypass valves) might be excluded from the scope of the rule because these components are not required for the coolant injection function of HPCI.

### 1.3 Cause Determinations

For all SSCs that are being monitored using plant-level performance criteria, the NRC staff's position is that a cause determination is required whenever any of these performance criteria are exceeded (failed) in order to determine which SSC caused the criterion to be exceeded or whether the failure was a repetitive maintenance-preventable functional failure. As part of the cause determination, it would also be necessary to determine whether the SSC was within the scope of the maintenance rule. If the SSC is within the scope of the rule, corrective action and monitoring (tracking, trending, goal setting) under 10 CFR 50.65(a)(1) would be required.

### 1.4 SSCs Considered Under 10 CFR 50.65(a)(1)

Paragraph (a)(1) of the maintenance rule requires that goal setting and monitoring be established for all SSCs within the scope of the rule except for those SSCs whose performance or condition is adequately controlled through the performance of appropriate preventive maintenance as described in paragraph (a)(2) of the rule. In the industry guideline for implementing the rule, all SSCs are initially placed under paragraph (a)(2) and are only moved under paragraph (a)(1) if experience indicates that the performance or condition is not adequately controlled through preventive maintenance as evidenced by the failure to meet a performance criterion or by experiencing a repetitive maintenance-preventable functional failure. Therefore, category (a)(1) could be used as a tool to focus attention on those SSCs that need to be monitored more closely. It is possible that no (or very few) SSCs would be handled under the requirements of paragraph (a)(1). However, the rule does not require this approach. Licensees could also take the approach that all (or most) SSCs would be handled under paragraph (a)(1) of the rule and none (or very few) would be handled under paragraph (a)(2) of the rule. Licensees have the option of taking either approach.

During the pilot site visits, the licensees questioned whether a large number of SSCs in the (a)(1) category would be used by the NRC as an indicator of poor maintenance performance. The NRC staff assured the licensees that NRC management would not use the number of SSCs in the (a)(1) category as an indicator of maintenance performance nor would it be used in determining the systematic assessment of licensee performance (SALP) grade in the maintenance

area. The number of SSCs in the (a)(1) category can vary greatly because of factors that have nothing to do with the quality of the licensee's maintenance activities. For example, two identical plants with equally effective maintenance programs could have different numbers of SSCs in the (a)(1) category because of differences in the way system boundaries were defined (a system with three trains may be defined as one system at one plant while the same system may be defined as three separate systems at an identical plant) or because of differences in the way performance criteria were defined at the two plants (a licensee that takes a very conservative approach to monitoring against the performance criteria would have more SSCs in the (a)(1) category). The NRC staff also cautioned licensee managers that they should not view the number of SSCs in the (a)(1) category as an indicator of performance since that attitude might inhibit their staff from placing an SSC under paragraph (a)(1) when a performance criterion was exceeded or a repetitive maintenance- preventable functional failure had occurred. When a licensee believes there is some doubt about whether a particular SSC should be categorized in (a)(1) or (a)(2), the conservative approach would be to place the SSC in the (a)(1) category.

### **1.5 Use of Other Methods**

Licensees may use methods other than those provided in Revision 2 of NUMARC 93-01 to meet the intent of the maintenance rule, but the NRC will determine the acceptability of other methods on a case-by-case basis.

## **2. OTHER DOCUMENTS REFERENCED IN NUMARC 93-01**

NUMARC 93-01 references other documents, but NRC's endorsement of NUMARC 93-01 should not be considered an endorsement of the referenced documents.

## **3. INCLUSION OF ELECTRICAL DISTRIBUTION EQUIPMENT**

The monitoring efforts under the maintenance rule, as defined in 10 CFR 50.65(b), encompass those SSCs that directly and significantly affect plant operations, regardless of what organization actually performs the maintenance activities. Maintenance activities that occur in the switchyard can directly affect plant operations; as a result, electrical distribution equipment out to

the first inter-tie with the offsite distribution system (i.e., equipment in the switchyard) should be included as defined in 10 CFR 50.65(b).

#### **D. IMPLEMENTATION**

The purpose of this section is to provide information to applicants and licensees regarding the NRC staff's plans for using this regulatory guide.

This draft guide has been released to encourage public participation in its development. Except in those cases in which an applicant or licensee proposes an acceptable alternative method for complying with specified portions of the NRC's regulations, the methods to be described in the active guide reflecting public comments will be used in the evaluation of the effectiveness of maintenance activities of licensees who are required to comply with 10 CFR 50.65. The guide will also be used to evaluate the effectiveness of emergency diesel generator maintenance activities associated with compliance with 10 CFR 50.63.

## REGULATORY AND BACKFIT ANALYSES

Separate regulatory and backfit analyses were not prepared for this proposed Revision 2 of Regulatory Guide 1.160. The regulatory analysis and the backfit analysis that were prepared when this guide was first issued as a draft, DG-1010, in November 1992, are still applicable. They are available, in the file for Regulatory Guide 1.160, for inspection or copying for a fee in the Commission's Public Document Room, 2120 L Street NW., Washington, DC; the PDR's mailing address is Mail Stop LL-6, Washington, DC 20555; phone (202)634-3273; fax (202)634-3343.

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