July 14, 1995 SECY-95-179

FOR: The Commissioners

FROM: James M. Taylor /s/
Executive Director for Operations

SUBJECT: STATUS OF THE MAINTENANCE RULE

PURPOSE:

To inform the Commission about:

1. The results of the Maintenance Rule Pilot Program

2. The updated status of NRC staff Maintenance Rule activities

SUMMARY:

The Maintenance Rule Pilot Program demonstrated that the Maintenance Rule can be successfully implemented by the industry and inspected by the NRC staff. As a result of lessons learned from the pilot program, the NRC staff has added clarifications to the draft Maintenance Rule Inspection Procedure. The Nuclear Energy Institute (NEI) has proposed to issue clarifications to the industry implementation guidance document, which the NRC staff will review when submitted. Although clarification of the industry guide may be desirable, implementation of the Maintenance Rule as currently scheduled should proceed. Before July 10, 1996, when the rule will go into effect, the NRC staff will develop an inspector training program and provide training in all the regions on the final Maintenance Rule Inspection Procedure. Following the effective date of the Maintenance Rule, the NRC staff will conduct baseline inspections at all nuclear power plant sites.

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BACKGROUND:

The Maintenance Rule, 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants," was issued on July 10, 1991, to be effective on July 10, 1996. In contrast to the agency's traditionally prescriptive (or programmatic) regulatory approach, the Maintenance Rule is primarily a performance-based rule. This has necessitated a new approach for the development of implementation and inspection guidance.

The NRC staff last briefed the Commission on the status of the Maintenance Rule on January 29, 1993. The last Commission paper that provided the status of the Maintenance Rule was SECY 92-229, "Implementing Guidance for the Maintenance Rule, 10 CFR 50.65," dated June 25, 1992.

Requirements of the Maintenance Rule

The Maintenance Rule has both performance-based and prescriptive aspects. The performance-based aspects of the rule include that licensees: 1) establish the performance and condition goals, and the requisite equipment monitoring regimes; 2) modify established goals on the basis of plant or equipment performance; and 3) determine whether to rely on preventive maintenance in lieu of establishing goals and performance or condition monitoring. The programmatic aspects of the Maintenance Rule include the structures, systems, and components (SSCs) scoping criteria and the requirement to perform a periodic evaluation each refueling cycle.

Paragraph (b) of 10 CFR 50.65 establishes the scoping criteria for the Maintenance Rule. The scope of the Maintenance Rule includes all the SSCs that are safety related, and those nonsafety related SSCs that are: 1) relied upon to mitigate accidents or transients or are used in emergency operating procedures, 2) whose failure could prevent safety related SSCs from fulfilling their safety function, or 3) whose failure could cause a reactor scram or an actuation of a safety related system.

Paragraph (a)(1) of the Maintenance Rule requires that the performance or condition of SSCs within the scope of the rule be monitored against licensee-established goals to provide reasonable assurance that these SSCs are capable of fulfilling their intended functions. These goals should be commensurate with safety, and should take into account industry-wide operating experience where practical. Paragraph (a)(1) also requires that appropriate corrective actions be taken when the performance of an SSC does not meet established goals. The corrective action

can include modifying the goals if the licensee determines that the original goal was too restrictive.

Paragraph (a)(2) of 10 CFR 50.65 allows licensees to eliminate the (a)(1) goal setting and monitoring activities where it has been demonstrated that the performance of SSCs is effectively controlled through preventive maintenance.

Paragraph (a)(3) of the Maintenance Rule has two distinct parts; first it requires that licensees periodically evaluate their performance and condition monitoring activities and associated goals, as well as preventive maintenance activities, at least once each refueling cycle, not to exceed 24 months between evaluations. The evaluations are required to take into account, where practical, industry-wide operating experience. Licensees are to make adjustments in their programs 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 due to monitoring or preventive maintenance. The second part of Paragraph (a)(3) states that licensees should take into account the total plant equipment that is out of service in order to determine the overall effect on performance of safety functions when performing monitoring and preventive maintenance activities. This part of (a)(3) is for both on-line and shut down maintenance activities.

Implementation and Inspection Guidance Document Development

The NRC staff and the Nuclear Management and Resources Council (NUMARC, now the Nuclear Energy Institute (NEI)) began to develop concurrent implementation guidance soon after the rule was issued. After it became apparent that NUMARC's proposed implementation guidance would be an acceptable method for implementing the rule, the NRC staff commented on NUMARC's guidance document and if possible, planned to endorse it in a regulatory guide. Seventeen public meetings were held between August 1991 and July 1992 as part of this development effort. NUMARC released the industry guidance document, NUMARC 93-01, Rev. 2A, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," on July 10, 1992.

The industry conducted a verification and validation effort in late 1992. The effort involved application of NUMARC 93-01 by nine selected plants and observation by NRC staff. On the basis of lessons learned during this effort, NUMARC revised the guidance document.

In June 1993, the NRC staff issued Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," endorsing NUMARC 93-01. The NRC acknowledged that monitoring would vary according to risk, recommended that use of

existing programs be maximized, encouraged the use of reliability-based methods, recommended licensees consider whether parts of the switchyard should be within scope of the Maintenance Rule, and noted that the nonsafety related SSCs within the scope of the Maintenance Rule are not brought under the scope of 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." Regulatory Guide 1.160 was revised in January 1995, in accordance with COMSECY-94-01, which instructed the staff to delete all language pertaining to emergency diesel generator (EDG) "trigger values."

In December 1993, the NRC staff developed the first draft Maintenance Rule Inspection Procedure. That draft had two objectives: 1) to verify implementation of the Maintenance Rule and 2) to evaluate the effectiveness of EDG maintenance activities associated with commitments made in response to the station blackout rule, 10 CFR 50.63, "Loss of all alternating current power." Consistent with the NRC staff's approach for the Maintenance Rule, a public workshop on the draft Maintenance Rule Inspection Procedure was held on March 31, 1994. On the basis of comments received during and after the workshop the NRC staff revised the draft procedure.

The NRC staff determined that a pilot program would be useful for evaluating the usability and adequacy of the revised draft Maintenance Rule Inspection Procedure. The draft Maintenance Rule Inspection Procedure was verified and validated during the pilot program, which included nine voluntary sites. The sites involved were Byron, Crystal River, Grand Gulf, Hatch, Maine Yankee, Pilgrim, Shearon Harris, South Texas, and Vogtle. The first site visit was conducted in September 1994, the last in March 1995. The NRC staff held a public workshop on June 27, 1995, to discuss and solicit comments on the results and lessons learned from the pilot program and on the NRC staff's proposed clarifications to the Maintenance Rule Inspection Procedure.

DISCUSSION:

Results and Lessons Learned from the Pilot Program

The detailed results and lessons learned from the Maintenance Rule Pilot Program are in Attachment 1, which is NUREG-1526, "Lessons Learned From Early Implementation of the Maintenance Rule at Nine Nuclear Power Plants." The results are summarized here.

On the basis of the reviews performed during the pilot site visits, the NRC staff concluded that the Maintenance Rule can be implemented using Regulatory Guide 1.160. The NRC staff also concluded that the draft Maintenance Rule Inspection Procedure

can be used to adequately monitor the effectiveness of licensees' implementation of the Maintenance Rule.

Overall, implementation of the Maintenance Rule at the nine pilot sites was found to be acceptable. Licensees generally followed the guidance in Regulatory Guide 1.160. For the most part, the licensees' identification of structures, systems, or components within the scope of the Maintenance Rule at each site was thorough. The use of an expert panel appears to be an appropriate and practical method of determining which SSCs are risk significant. When setting goals, all licensees had adequately considered safety, but many licensees did not appropriately factor in industry-wide operating experience. The performance or the condition of some non-risk significant systems used in standby service was not being monitored at the train level as required. Additionally, most licensees had not established adequate monitoring of structures under the rule. Licensee plans for performing periodic evaluations, balancing unavailability and reliability, and assessing the impact of taking equipment out of service for maintenance all appeared to be reasonable. However, the effectiveness of these plans was not evaluated because they had not been fully implemented at the time of the site visits.

Revision to the Maintenance Rule Inspection Procedure

After considering the results of the pilot program, the staff added clarifications to the guidance in the Maintenance Rule Inspection Procedure. A copy of this revised procedure is Attachment 2.[1] In general, the changes to the inspection procedure noted the degree of variability in implementation identified during the pilot program, included expanded discussion of areas of weakness observed during the pilot program, or clarified the requirements of the Maintenance Rule and the guidance in the inspection procedure.

Revision to the Industry Implementation Guidance Document

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[1]Attachment 2 is a copy of the draft Maintenance Rule Inspection Procedure that was distributed at the June 27, 1995, public workshop. The Commission directed the NRC staff to issue the final inspection procedure by January 1996. The NRC staff is accepting comments on the draft inspection procedure until July 31, 1995. As of July 13, 1995, no comments had been received. Assuming that no substantive comments are received, the NRC staff expects to issue Attachment 2 as the final Maintenance Rule Inspection Procedure by August 31, 1995, and to commence inspector training on the final inspection procedure in September 1995. If this schedule changes, the NRC staff will inform the Commission.

As a result of the pilot program, NEI suggested clarification to NUMARC 93-01, and requested NRC staff comment on the proposed changes. The NRC staff position is that NUMARC 93-01 as currently endorsed by Regulatory Guide 1.160 is acceptable and that implementation of the Maintenance Rule as currently scheduled should proceed. However, clarification of certain parts of NUMARC 93-01 may result in a more consistent implementation of the guidance by licensees. The NRC staff and NEI have had three working level public meetings since completion of the pilot program to discuss the clarifications proposed by NEI. The NRC staff is continuing discussions with NEI to understand their proposed changes. Three of the more significant changes are summarized below.

1. Component Failures: This concern involves whether failures at the component level must be evaluated and tracked, and whether repetitive component failures should be considered in re-categorizing the component from paragraph (a)(2) to Paragraph (a)(1) of the Maintenance Rule. The NRC staff believes that the intent of the rule and NUMARC 93-01 are clear: when the cause of the failure is ineffective maintenance, the component failure should be evaluated and tracked, and repetitive component failures should be considered for treatment under paragraph (a)(1). The industry position is that only those repetitive failures that cause loss of function at the system or train level need to be considered for categorization under paragraph (a)(1).

2. Masking of SSC Performance: This concern involves systems with redundant trains where a highly-reliable train could mask the performance of less-reliable train(s). NEI and the NRC staff agree that all risk significant and standby non-risk significant systems with redundant trains should be monitored at the train level. However, there is a difference of interpretation regarding what constitutes a "train." The NRC staff believes that any redundant loop within a train that performs the same function as a train (e.g., multiple pumps within a train of a cooling water system) should be considered a train for monitoring purposes. NEI desires to clarify NUMARC 93-01 to use an interpretation of train similar to what has traditionally been used in safety related systems.

3. "Could Cause" as a Scoping Criteria: The Maintenance Rule includes within scope those nonsafety related SSCs whose failure "could cause" a reactor scram or safety system actuation. NUMARC 93-01, as currently endorsed by Regulatory Guide 1.160, is consistent with the rule. However, industry believes that this wording is too

broad, and that it should be restricted to those nonsafety related SSCs whose failure "did cause" a reactor scram or safety system actuation. Some utility representatives indicated that they desired to petition the NRC to revise Paragraph (b)(2) of the Maintenance Rule to state "did cause." The NRC staff does not believe such a change is necessary or warranted, considering that this was not observed to be a significant problem during the pilot program.

June 27, 1995, Public Workshop

The NRC staff held a public workshop on June 27, 1995. The workshop was a forum for discussion between the NRC staff, the industry, and the public on the results and lessons learned from the pilot program and the revised Maintenance Rule Inspection Procedure. Utility representatives expressed concerns similar to the clarifications which the staff is addressing with NEI as discussed above.

Revision to Regulatory Guide 1.160

When NEI submits a revised NUMARC 93-01, the staff will review the proposed changes and will follow the agency process for a revision of Regulatory Guide 1.160.[2] If the changes are only clarifications and do not change regulatory positions or guidance, the staff would expedite the regulatory guide revision process.

Training for NRC Inspectors and Initial Inspections

The NRC staff is developing a Maintenance Rule training program for inspectors. The training will explain how to review and evaluate implementation of a performance-based regulation like the Maintenance Rule, and how to use the final Maintenance Rule Inspection Procedure. Development of the training program is expected to be completed by September 1995. At least one training session will be held in each region, with training beginning in Fall 1995 and completed in Spring 1996.

Beginning in July 1996, after the Maintenance Rule takes effect, the NRC staff will conduct baseline Maintenance Rule inspections at all sites. The baseline inspections will be performed by the regions, with headquarters support. The NRC staff's goal is to have the baseline inspections completed within two years of the

[2]When NEI submits a revision of NUMARC 93-01, the NRC staff will advise the Commission of the results of its review and the schedule for revision of Regulatory Guide 1.160.

effective date of the Maintenance Rule with the schedule taking into account plant-specific performance.

As a performance-based rule, the Maintenance Rule will pose a challenge for inspection and enforcement. In order to ensure uniformity, NRC headquarters staff and management will be involved in the inspection and enforcement process.

CONCLUSION:

The Maintenance Rule Pilot Program has demonstrated that the Maintenance Rule can be effectively implemented using Regulatory Guide 1.160, and inspected using the draft Maintenance Rule Inspection Procedure. Although clarification of NUMARC 93-01 may be desirable, implementation of the Maintenance Rule as currently scheduled should proceed. The NRC staff has identified the remaining activities that it needs to accomplish to ensure the effective inspection of the Maintenance Rule, and has established a schedule to ensure their completion in a manner that supports the effective date of the Maintenance Rule.

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Attachments: 1. NUREG-1526
2. Maintenance Rule Inspection Procedure (Draft)

December 13, 1999
(file 50_65_IP.021, highlighted copy)

DRAFT TQMB

MAINTENANCE RULE INSPECTION PROCEDURE 627XX

PROGRAM APPLICABILITY: 2515

XXXXX-01 INSPECTION OBJECTIVES:

To verify the implementation of 10 CFR 50.65 "the maintenance rule" (ref. 1) after the effective date, July 10, 1996.

XXXXX-02 INSPECTION REQUIREMENTS[3]:

Verify Implementation of the Maintenance Rule. Perform the following reviews to verify the licensee's implementation of the maintenance rule (i.e., the rule), certain requirements of the station blackout rule (ref. 2) and Generic Letter 94-01 (ref. 3), following the guidance in Regulatory Guide 1.160 (ref. 4) and NUMARC 93-01 (ref. 5).

02.01 Goal Setting and Monitoring, 50.65(a)(1). Verify that the licensee has implemented goal setting and monitoring as required

[3]All inspection items listed in this section do not have to be performed during each inspection. If NRC management decides that a complete review of the implementation of the maintenance rule is required, then all inspection items in the inspection requirements section should be performed. However NRC management may also decide that only selected inspection items need be performed. The items selected for review will depend on the intended scope of the inspection and the resources allotted for the inspection. In addition, inspectors should also note that despite the fact that they are listed under the inspection requirements section of the rule, some of the items may not be regulatory requirements, i.e., they may not be explicitly stated in the maintenance rule. Rather these items may be derived from Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" or NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" which are optional and therefore would not apply to those licensees who implement the rule using other methods.

by paragraph (a)(1) of the rule. The licensee is required by the rule to perform the following:

a. Monitor the performance or condition of structures, systems or components (SSCs), against licensee established goals, in a manner sufficient to provide reasonable assurance that such SSCs, defined in 10 CFR 50.65(b), are capable of fulfilling their intended functions.

b. Establish goals commensurate with safety and, where practical, take into account industry-wide operating experience.

c. Take appropriate corrective action when the performance or condition of an SSC does not meet established goals.

02.02 Preventive Maintenance, 50.65(a)(2). For those SSCs that are within the scope of the rule but are not monitored under paragraph (a)(1) of the rule, verify that the licensee has demonstrated the following:

a. 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; or,

b. The SSC is inherently reliable, non-risk significant and, therefore, preventive maintenance may not be required (i.e., perform corrective maintenance only).

02.03 Periodic Evaluation, 50.65(a)(3). Verify that the licensee is performing the evaluations and assessments required by paragraph (a)(3) of the maintenance rule. The licensee:

a. Shall evaluate performance and condition monitoring activities and associated goals and preventive maintenance activities 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.

b. Shall make adjustments 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 due to monitoring or preventive maintenance activities.

c. Should assess the total plant equipment that is out of service and determine the overall effect on the performance of safety functions of performing monitoring and preventive maintenance activities.

02.04 Scope of the Rule, 50.65(b). Verify that the licensee has identified those SSCs that are required to be within the scope of

the maintenance rule as defined in paragraph 50.65(b) of the rule.

02.05 Effectiveness of Emergency Diesel Generator Maintenance Activities. Verify that the maintenance program for emergency diesel generators satisfies the commitments made by licensees in response to:

a. 10 CFR 50.63, "Loss of All Alternating Current Power," (ref. 2) and, if applicable,

b. Generic Letter 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators (ref. 3).

XXXXX-03 INSPECTION GUIDANCE

General Guidance

Applicability: This inspection procedure is applicable to SSCs that are within the scope of the rule as defined in 10 CFR 50.65(b); those SSCs that are outside this scope are excluded.

Implementation Guidance: Except when the licensee proposes an alternate method for complying with specified portions of the maintenance rule, the methods described in Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," (Ref. 4), will be used to evaluate the effectiveness of maintenance activities of licensees who are required to comply with the maintenance rule. The Regulatory Guide 1.160 will also be used to evaluate the effectiveness of emergency diesel generator maintenance activities associated with compliance with 10 CFR 50.63 (more information on emergency diesel generator testing is contained in Generic Letter 94-01). This regulatory guide endorses NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," (Ref. 5), and provides methods acceptable to the NRC for complying with the maintenance rule. The inspector should become familiar with Regulatory Guide 1.160 and NUMARC 93-01 before initiating this inspection. The inspector should also be aware that licensees may use methods other than those described in Regulatory Guide 1.160 and NUMARC 93-01 to satisfy the requirements of the maintenance rule. Where methods other than those described in Regulatory Guide 1.160 and NUMARC 93-01 are used, the licensee must demonstrate that those methods satisfy the requirements of the rule. Where a licensee implements the rule partly in accordance with Regulatory Guide 1.160 and NUMARC 93-01, and partly in accordance with other methods, the licensee must demonstrate that those other methods meet the applicable parts of the rule.

During the pilot maintenance inspections the inspectors noted that the guidance contained in NUMARC 93-01 was used by the licensees at all nine sites. Eight licensees took some minor

exceptions which the NRC review team reviewed and found acceptable. One licensee took major exceptions to NUMARC 93-01 which the team reviewed and also found acceptable. The lessons learned from these pilot maintenance inspections are provided in NUREG 1526 (ref. 6).

Differences Between Plants: Differences in plant design (i.e., system boundaries), even among plants that have the same nuclear steam supply system (NSSS), can result in significant differences in the number and types of SSCs included under the scope of the rule. For example, the results of the site visits to review the early implementation of the maintenance rule at nine plants indicated that the number of SSCs at each plant varied from 102 to 341 and that the number of SSCs within the scope of the rule varied from 67 to 127. The number of SSCs within the scope of the rule that the licensee determined to be risk significant varied from 17 to 44. Further details are provided in NUREG 1526 (ref. 6). The types of goals and monitoring established at different plants may also differ significantly between similar plants. Therefore the inspector should not put too much emphasis on comparing one plant to another when evaluating maintenance activities under the rule.

Requirements vs. Acceptable Methods: The specific guidance that follows was derived from information contained in the maintenance rule (ref. 1), the statements of consideration (SOC) for the rule (ref. 7 and 8), Regulatory Guide 1.160 (ref. 4), and the industry guideline, NUMARC 93-01, (Ref. 5). Reference was made to the source document, where possible, in order to help the inspector differentiate between the regulatory requirements and recommendations. In general, anything that is stated in the rule itself is a requirement. The SOC does not in itself contain requirements but does contain information that could be used to clarify the intent of the requirements in the rule. Information derived from the regulatory guide and the referenced industry guideline provide acceptable methods for complying with the rule but they are not regulatory requirements. If the licensee chooses not to implement the maintenance rule in accordance with the regulatory guide and the industry guideline, then the licensee must demonstrate that the alternate methods satisfy the requirements of the rule.

Risk Determination: The rule requires that goals be established commensurate with safety. Implementation of the rule in accordance with NUMARC 93-01 requires that a risk (or safety) determination be performed for all SSCs within the scope of the rule. This risk determination would then be taken into account when setting goals and monitoring under (a)(1) of the rule and when establishing performance criteria under (a)(2). The risk determination method recommended in NUMARC 93-01 involves the use of an expert panel utilizing the Delphi method of NUREG/CR-5424, supplemented by Probabilistic Risk (or Safety) Assessment (PRA) or Individual Plant Evaluation (IPE) insights, to identify risk-significant SSCs. These PRA/IPE insights can include risk

reduction worth (RRW), risk achievement worth (RAW), core damage frequency contribution (CDF), Fussell-Vesely (F/V) and others.

During the pilot maintenance inspections (ref. 6) the NRC review team found that all licensees used an expert panel (or a working group) to make the risk significance determinations. These expert panels took PRA or IPE insights into consideration using the methods described in NUMARC 93-01 although there were some variations. Not all licensees took RRW, RAW and CDF into consideration. One licensee considered only CDF and not RRW or RAW. Another licensee considered CDF and RAW but not RRW. Several licensees considered the Fussell-Vesely (F/V) importance measure in addition to CDF, RAW, and RRW.

The team also found that licensees' PRA experts were very knowledgeable and were aware of the limitations of the use of PRA insights. One of these limitations is that all risk-important systems are not necessarily modeled in a PRA. Improvements can also be made in data bases, success criteria (which affect accident sequence emphasis), and human reliability analyses. The team found that the use of an expert panel was necessary to compensate for the limitations and assumptions inherent in a PRA and provided a needed experience-based perspective during the risk determination process. The team also found that although CDF, RRW, RAW and F/V all provided useful insights, none was indispensable as long as the results were reviewed and evaluated by a qualified expert panel.

During routine inspections to verify the implementation of the maintenance rule, the inspectors should be familiar with the methods used the pilot plants since those methods appear to meet the intent of the rule and the guidance provided in NUMARC 93-01. In addition, the inspectors should be aware that the results obtained from any PRA can be highly dependent on the plant configuration and the system reliability and availability data used to perform the calculations. Therefore the licensees may need to reconsider risk significance determinations whenever the plant design is modified, the PRA is updated, new insights become available from configuration management reviews, or new reliability and availability data become available.

Assignment of SSCs to (a)(1) or (a)(2): 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 is paragraph (a)(2) of the rule. The industry guideline for implementing the rule, NUMARC 93-01, has taken the approach that 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. Therefore, category (a)(1) could be used as a tool to focus attention on those SSCs that needed to be monitored more closely. It is

possible that none (or very few) SSCs would be handled under the requirements of (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 maintenance inspections the licensees questioned whether the existence of SSCs in the (a)(1) category would be used by the NRC as an indicator of a poor maintenance performance. The team assured the licensees' representatives that the NRC staff would not consider the existence of SSCs in the (a)(1) category as an indicator of a poor maintenance program nor would it be used in determining the SALP grade in the maintenance area. The team also cautioned licensee managers that they should not view the number of SSCs in the (a)(1) category as an indicator of performance since it might inhibit their staff members from placing an SSC under paragraph (a)(1) when a performance criteria was exceeded or a repetitive maintenance preventible functional failure had occurred. In instances where a licensee believes that there is some doubt whether or not a particular SSC should be categorized in (a)(1) or (a)(2), the team believes that the conservative approach would be to place the SSC in the (a)(1) category. Failure to place the SSC under (a)(1) when preventive maintenance has shown to be ineffective would be a violation of the rule.

Appendix B Not Applicable to Non-Safety-Related SSCs: The scope of the maintenance rule (10 CFR 50.65(b)), includes both safety-related SSCs and non-safety-related or balance-of-plant (BOP) SSCs. As stated in Regulatory Guide 1.160 (Ref. 4), BOP SSCs may have been designed and built with normal industrial practices that may not have met the criteria in Appendix B to 10 CFR Part 50. The inspector should understand that it is not the intent of the maintenance rule to require licensees to retroactively apply all Appendix B requirements to BOP equipment. However, all requirements of Appendix B remain in effect for safety-related SSCs that are within the scope of the rule. Documentation developed for the implementation of this guideline is not subject to the utility quality assurance program unless the documentation used has been previously defined as within the scope of the quality assurance program.

Non-risk significant and less-risk significant: The 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. However, both the SOC (Ref. 7) and Regulatory Guide 1.160 (Ref. 4) use the term low-risk significant. The term non-risk significant used in NUMARC 93-01 means the same as low-risk significant used in the SOC and the Regulatory Guide, i.e., they both refer to those SSCs that are less risk significant than those SSCs in the risk significant

category. In order to avoid confusion, the term non-risk significant is used in lieu of less-risk significant in this inspection procedure. Some licensees may elect to define other risk significant categories or may elect to define more than two categories. The inspector should verify that whatever categories are selected by the licensee are defined in their procedures and implemented in a consistent manner.

Definitions of Structures, Systems, Components and Trains: The maintenance rule refers to structures, systems, components... . The regulatory guide refers to structures, systems and components and also to structures, systems or components. For purposes of the maintenance rule and this inspection procedure SSC can mean structures and/or systems and/or components. The term SSC is intended to be inclusive rather than restrictive and is intended to include anything that could be called structure, system or component including; walls, floors, roofs, tanks, sub-systems, trains, sub-components, parts, pumps, valves, motors, pipes, hangers, snubbers, nuts, bolts, washers, gaskets, and anything else that meets the definition in 10 CFR 50.65 (b). For purposes of the maintenance rule, a pump could be called a component or a system. Likewise a single train of an ECCS system is called a system, sub-system, or a train.

Enforcement: General guidance on enforcement issues is provided in Appendix A to this procedure. This guidance can be used by the inspector to make a preliminary determination as to whether or not an activity or plant condition observed by the inspector should be considered a violation of the maintenance rule. However, the inspector should be aware that the guidance contained in Appendix A does not constitute regulatory policy. All final decisions regarding violations are made by NRC management.

Specific Guidance[4] (deleted guidance for evaluating maintenance effectiveness)

03.01 Goal Setting and Monitoring 10 CFR 50.65(a)(1). The licensee is required to set goals and monitor the performance or condition for those SSCs under paragraph (a)(1) of the rule.

a. Monitoring: The rule requires that licensees monitor performance or condition of SSCs in a manner sufficient to provide reasonable assurance that SSCs are capable of

[4]The specific guidance adds information intended to clarify the inspection requirements listed in the Inspection Requirements section (XXXXX-02). To correlate the guidance with its associated requirement, the numbered designations used in the Specific Guidance section correspond to the numbers used in the Inspection Requirements section. For example, specific guidance for Inspection Requirement 02.02.a is provided in section 03.02.a of the inspection procedure.

fulfilling their intended functions. It is intended that licensees be allowed considerable flexibility in the methods used to monitor SSC performance or condition.

1. Risk Consideration in Monitoring: The statements of consideration (Ref. 7) and regulatory guide 1.160 (Ref. 4) state that the extent of monitoring may vary from system to system depending on the system's importance to risk (or safety). This determination may be quantitative or qualitative. Section 9.0 of NUMARC 93-01 (Ref. 5) provides guidance on various methods for establishing which SSCs are risk significant. These methods include the use of individual plant examination (IPE) results, plant-specific probabilistic risk assessment (PRA), maintenance program results, and others. Guidance is also provided on the use of risk importance measures such as risk reduction worth, core damage frequency contribution, and risk achievement worth. The licensee may use other methods to determine the risk significance of SSCs. Additional guidance is provided under "risk determination" in the general guidance section of this inspection procedure.

The inspector should verify that the licensee has considered risk when determining the extent of monitoring required. To accomplish this, the inspector should select a sample of SSCs, evaluate the methodology used, review the resultant risk significant SSCs, and verify that the licensee's methodology was properly implemented. The inspector should verify that the monitoring for risk significant and non-risk significant SSCs is commensurate with their risk.

2. Monitoring at the Plant, System, Train or Component Level: It is expected that most monitoring should be done at the plant, system, or train level rather than at the component level since it might be impractical to establish goals and monitor the performance of the many thousands of components in each plant. However, in some cases, especially where a specific component has been identified as the cause of many system failures, licensees may determine that it is desirable to monitor at the component level.

For risk significant systems and non-risk significant systems used in standby service, monitoring would generally be performed at the system or train level. This monitoring could include parameter (i.e., temperature, pressure, flow, voltage, current, vibration) trending as well as monitoring indicators of system reliability and availability. For systems with multiple trains, monitoring (and goal setting) should be performed at the train level since monitoring at the system level could "mask" or "shadow" single train failures. Because of plant-specific redundancy and diversity, an SSC failure does not necessarily cause a loss

of safety function but could result in unacceptable system or train performance. Train level monitoring provides a method of addressing degraded performance of a single train even though the system function is still available. For purposes of monitoring under the maintenance rule, any redundant or parallel loop of plant equipment (i.e., pump, motor, fan, compressor, piping and valves) that provides an alternate path for system function should be considered a train. This would include redundant safety system trains, installed standby spare pumps, compressors or fans. It would not include redundant circuits in electrical systems or test or sampling loops in mechanical systems.

For non-risk significant normally operating systems (i.e., those not used in standby service) monitoring indicators of system reliability and availability alone may be sufficient. Non-risk significant normally operating systems could also be monitored using plant level performance criteria. For example the licensee may choose to monitor unplanned scrams or plant capacity factor as an indirect means of monitoring performance of non-risk significant normally operating SSCs.
Additional guidance on acceptable methods of performing monitoring is described in Section 9.4.2. of NUMARC 93-01 (Ref. 5).

The inspector should verify that the licensee has established and implemented adequate performance or condition monitoring for SSCs within the scope of the rule.

3. Trending of Systems and Components: The statements of consideration for the rule states that where failures are likely to cause loss of an intended function, monitoring under (a)(1) should be predictive in nature providing early warning of degradation. NUMARC 93-01 provides guidance for utilizing predictive maintenance, inspection, testing and performance trending for monitoring performance or condition under (a)(2) of the rule.

During the pilot maintenance inspections the team reviewed the monitoring and trending that was being performed for systems and components at each site and found that there was a great degree of variability among the licensees in the quality and quantity of trending that was being performed. Some licensees had established trending programs which were well integrated into their rule programs, others were doing very little trending of SSCs performance or condition. In some cases, licensees had existing trending programs which generated equipment performance data that would be very useful when establishing goals and performance criteria under the rule, however, this data was not always taken into consideration when selecting goals and performance criteria and

establishing a monitoring program under the rule. Goals should make use of existing trending activities where appropriate and consideration should be given to establishing new monitoring and trending activities which directly address the problem whenever new goals are established. Goal setting and trending activities should be coordinated and integrated as much as possible so that the improvements in performance can be monitored against the goals that had been established. Although trending should always be considered, it is not required by the rule and should only be used where it is practical and appropriate.

The inspector should review equipment trending to ensure that it is coordinated and integrated with the goals and performance criteria wherever possible.

4. Monitoring Structures: The rule requires that the performance or condition of structures be monitored in a manner sufficient to provide reasonable assurance that those structures are capable of fulfilling their intended function. The statements of consideration for the rule states monitoring should be predictive in nature, providing early warning of degradation. NUMARC 93-01, paragraph 9.4.2.4 provides examples of structural monitoring activities including: non-destructive examination, visual inspection, vibration, deflection, thickness and corrosion.

During the pilot maintenance inspections the NRC review team found that many licensees had not established goals or performance criteria for monitoring most structures at their sites. Many licensees assumed that most structures to be inherently reliable and therefore did not require monitoring under the maintenance rule despite the fact that there were existing monitoring and preventive maintenance activities for structures going on at the site. Many of these structures are monitored during the normal course of operator rounds, management walkarounds, and inspection by other plant departments in their course of normal work activities. The team concluded that the existence of these longstanding monitoring activities contradicts the licensee’s position that no monitoring is needed.

Licensees should establish performance criteria and goals under the rule which take credit for, and build upon, the existing monitoring activities. Certain structures such as the primary containment can be monitored through the performance of established testing requirements such as those contained in 10 CFR 50, Appendix J. However, other structures such as reactor buildings, auxiliary buildings, and cooling towers, may be more amenable to condition monitoring. Some licensees are in the process of developing a program for monitoring structures that will include the performance of plant walkdowns and engineering

evaluations to establish condition monitoring criteria. This program should include the establishment of specific criteria for monitoring.

The inspector should review the licensee's program for monitoring structures to ensure appropriate performance or condition monitoring activities are established. Where practical, these monitoring activities should be predictive in nature and provide early warning of failure.

5. Use of Existing Programs for Monitoring: Regulatory guide 1.160 (Ref. 4) states that it is intended that most activities currently being conducted by licensees, such as technical specifications surveillance testing, can be used to satisfy many of the monitoring requirements. Consistent with the rule, the inspector should allow licensees maximum flexibility in establishing and modifying their monitoring activities. However, where existing programs are inadequate, new programs may need to be established by the licensee. Additional guidance on the use of existing programs for monitoring is described in Section 9.4.2 of NUMARC 93-01 (Ref. 5).

b. Goal Setting: Paragraph (a)(1) of the rule requires licensees to establish goals commensurate with safety and, where practical, to take into account industrywide operating experience. Licensees have a great deal of flexibility in choosing goals and may elect to choose component, train, system, or plant level goals. These goals may be performance oriented (reliability, availability) or condition oriented (such parameters as pump flow, pressure, vibration, valve stroke time, current, electrical resistance). Licensees should document the bases for the goals and any subsequent changes made to those goals. Guidance on documentation is provided in section 13.0 of NUMARC 93-01 (Ref. 5). The rule specifically states that the goals are to be "licensee established." Therefore, the inspector should allow licensees maximum flexibility in establishing and modifying their goals. However, the goals must represent reasonable attempts to establish targets for monitoring SSC's performance or condition within the scope of the rule. Licensees should consider the following when setting goals:

1. Risk Consideration for Goal Setting: The rule requires licensees to establish goals commensurate with safety (or risk). Information on an SSC's contribution to plant safety can be obtained from various sources including the Individual Plant examination (IPE) or probabilistic risk assessment (PRA) results (if available). Section 9.0 of NUMARC 93-01 (Ref. 5) provides guidance on acceptable methods for establishing risk significant criteria. This risk determination would then be taken into account when setting goals and monitoring under (a)(1) of the rule. The risk determination method recommended in NUMARC 93-01

involves the use of an expert panel utilizing the Delphi method of NUREG/CR-5424, supplemented by Probabilistic Risk (or Safety) Assessment (PRA) or Individual Plant Evaluation (IPE) insights, to identify risk-significant SSCs. These PRA/IPE insights can include risk reduction worth (RRW), risk achievement worth (RAW), and core damage frequency contribution (CDF). Licensees may also use other methods to determine risk significance. Additional guidance is provided under "risk determination" in the general guidance section of this inspection procedure.

The inspector should select a sample of SSCs for which the licensee has established goals and verify, by reviewing licensee records and speaking with responsible personnel, that risk or safety was taken into account when establishing goals.

2. Industrywide Operating Experience for Goal Setting: The licensee should also, where practical, take into account industrywide operating experience when establishing goals. Industrywide operating experience includes information from NRC, industry, and vendor sources that is generally available to the nuclear industry. Sources of such information could include: NRC bulletins, information notices, generic letters, 10 CFR Part 21 reports; the INPO NPRDS system, vendor service information letters (SILs), technical information letters (TILs), significant event reports (SERs), significant operating experience reports (SOERs) and others. Licensees should also take into account the reliability and availability data available from the Safety System Performance Indicator database which is maintained by the Institute of Nuclear Power Operation (INPO). It is intended that licensees make use of these types of information, where practical, when setting goals under (a)(1) of the rule and when performing the periodic evaluations required by (a)(3) of the rule.

During the pilot maintenance inspections (ref. 6) the NRC review team noted that most licensees had taken OE into consideration in varying degrees when setting goals. Many licensees' procedures did not have adequate guidance for ensuring that OE is taken into consideration, where practical, when establishing goals. The persons responsible for establishing goals at some sites had easy access to the OE database; at other sites the access was limited or cumbersome and could inhibit the use of the data base. The team also noted that licensees had not established a systematic and consistent method of collecting and using SSC reliability and availability data from other licensees when setting goals.

The inspector should review the licensee's procedures to ensure that the guidance for taking OE into account when establishing goals is adequate, that OE data is readily

accessible to plant staff, and that OE is collected and factored into goal setting activities in a systematic and consistent manner.

c. Corrective Action: Licensees are required to monitor the performance or condition of SSCs against the established goals and take appropriate corrective action where the goals are not met. The SOC (ref. 7 and 8) clarify that corrective action must also be taken where a clearly declining trend in SSC performance or condition indicates the goals would not be met before the next cycle of monitoring is scheduled to be performed. Where analysis determines that the performance or condition of the SSC is acceptable, the licensee may elect to modify the original goals and continue monitoring.

The inspector should select a sample of maintenance monitoring records and compare them to the established goals. Where goals were not met, or where a clearly declining trend in SSC performance or condition is indicated, the inspector should examine the licensee's corrective actions to determine if the root cause was identified, if reasonable corrective action was taken, and if an evaluation of the effectiveness of the corrective action was performed. The extent of the root cause determination should be commensurate with the safety or risk significance of the SSC or the consequences of the failure. Licensee activities such as root cause analysis and corrective actions should be documented by the licensee.

03.02. Preventive Maintenance, 50.65(a)(2). The maintenance rule states that monitoring as specified in paragraph (a)(1) is not required if it has been demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance so that the SSC remains capable of performing its intended function. The statements of consideration (SOC) (Ref. 7 and 8) clarify that licensees are not required to monitor under paragraph (a)(1) of the rule if they have demonstrated that preventive maintenance has been effective or if an SSC has inherently high reliability and availability as discussed below.

a. Demonstrated Effective Maintenance: As stated in the SOC, under the terms of paragraph (a)(2), preventive maintenance must be demonstrated to be effective in controlling the performance or condition of an SSC so that the SSC remains capable of performing its intended function. In order to assure that preventive maintenance is effective, some evaluation or monitoring process needs to be established under paragraph (a)(2).

1. Performance Criteria: NUMARC 93-01 (Ref. 5) uses performance criteria as a method of demonstrating satisfactory performance or condition under paragraph (a)(2) of the rule. Where the performance or condition is not adequately controlled, the SSC would generally be

dispositioned to paragraph (a)(1). Section 9.3.2 of NUMARC 93-01 recommends that performance criteria should be availability, reliability, or condition. However, since paragraph (a)(3) of the rule requires that adjustments be made to balance availability and reliability, it would be necessary, at a minimum, to establish both reliability and availability performance criteria. NUMARC 93-01 also recommends that specific performance criteria be established for all risk significant SSCs and for non-risk significant SSCs that are in a standby (not normally operating) mode. Plant-level performance criteria could be established for all remaining non-risk significant, normally operating SSCs. Performance criteria would not be required for SSCs determined to be inherently reliable[3] or for those SSCs that contribute little or nothing to safety function and that could be allowed to run to failure (i.e., perform corrective maintenance rather than preventive maintenance).

2. Maintenance-Preventable (Functional) Failure: Section 9.4.5 of NUMARC 93-01 (Ref. 5) recommends the use of the term "maintenance preventable functional failures (MPFFs)" rather than "maintenance preventable failures (MPFs)" as described in the SOC, in order to differentiate between failures that cause an SSC to be incapable of performing its intended function and failures that do not affect an SSC's function. There are many possible failures of some SSCs that would not affect the intended safety function of the system. For purposes of this inspection procedure the term MPFF will be used in lieu of MPF. A definition of MPFF is provided in Appendix B to NUMARC 93-01 (Ref. 5).

3. Dispositioning from paragraph (a)(2) to paragraph (a)(1): Section 9.4.4 of NUMARC 93-01 (Ref. 5) provides guidance on determining when dispositioning SSCs from paragraph (a)(2) to paragraph (a)(1) is required.[4] This

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[3]The statements of consideration (Ref. 4) describe the purpose of (a)(2) of the maintenance rule as to provide an alternate approach for those SSCs where it is not necessary to establish the monitoring regime required by paragraph (a)(1). This provision might be used where an SSC, without preventive maintenance, has inherent reliability and availability (e.g., electrical cabling) or where the preventive maintenance necessary to achieve high reliability does not itself contribute significantly to unavailability (e.g., moisture drainage from an air system accumulator). NUMARC 93-01, sections 9.3.3 and 10.2 (Ref.2), describe an inherently reliable SSC as one that, without preventive maintenance, has high reliability (e.g., jet shields, raceways).

[4] The SOC (Ref. 4) states that it is expected that where one or more maintenance preventable failures (or MPFFs) occur on SSCs

would generally be required if a performance criterion were not met or if a repetitive MPFF occurred. An SSC could continue to be treated under paragraph (a)(2) after experiencing a single MPFF if the root cause evaluation determined the cause of the failure and if the corrective action that was taken prevented recurrence. However if a repetitive MPFF occurred, then the SSCs would have to be dispositioned to paragraph (a)(1). Note that this requirement applies whether the failure occurs to a structures, systems, or a train or component in a system. Any repetitive failure of a structure, system, train, or component would require that the structure, system or component be placed under the (a)(1) category and subjected to goal setting and monitoring. Note this requirement exists irrespective of whether the performance criteria are monitored at the plant, system, train or component level.

Once an SSC's preventive maintenance has been demonstrated effective again, it would be acceptable to return to treating the SSC under paragraph (a)(2). Section 9.4.3 of NUMARC 93-01 (Ref. 5) provides guidance for dispositioning SSCs from paragraph (a)(1) to paragraph (a)(2).

The inspector should verify that the licensee has established and implemented some monitoring or assessment process for determining if the preventive maintenance program is effectively maintaining the reliability of those SSCs (except for inherently reliable SSCs described below) that are maintained exclusively under paragraph (a)(2) of the maintenance rule. The inspector should review the maintenance history for a sample of SSCs maintained under paragraph (a)(2) to verify that the monitoring or assessment process ensures that acceptable performance or condition of the SSCs is maintained and, where that performance or condition degrades to an unacceptable level or experiences a second maintenance preventable functional failure, the SSC is treated under paragraph (a)(1) until such time as the performance or condition improves to an acceptable level. The inspector should select a sample of SSCs that experienced maintenance preventible functional failures and review the licensee's actions to determine if they were dispositioned properly.

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treated under paragraph (a)(2)...the SSC would be required to be treated under the requirements of paragraph (a)(1) until such time as a performance history is established to demonstrate that performance or condition are once again effectively controlled by an established preventive maintenance regimen. However the SOC is not clear on whether an SSCs must be moved to (a)(2) after the first or second MPFF. This issue was subsequently clarified in section 9.4.4 of NUMARC 93-01 (Ref. 2) which provides guidance on determining when dispositioning SSCs from paragraph (a)(2) to paragraph (a)(1) is required.

b. Preventive Maintenance Not Required: As indicated in the SOC (Ref. 7), the purpose of paragraph (a)(2) of the rule is to provide an alternate approach for those SSCs where it is not necessary to establish the monitoring regimen required by paragraph (a)(1). This includes those SSCs that are adequately controlled by preventive maintenance (described above) and those SSCs that are inherently reliable without maintenance (described below), or those SSCs that are non-risk significant (described below):

1. Inherently Reliable: This provision might be used where an SSC, without preventive maintenance, has inherent reliability and availability (e.g., electrical cabling). It is expected that some structures, such as cable raceways, water storage tanks, and buildings, could be considered inherently reliable. However, it should be noted that such activities as inspections, surveys, and walkdowns could be considered maintenance activities and, therefore, most SSCs would be subject to some maintenance. Licensees should document their reasons for concluding that individual or groups of SSCs are inherently reliable. During the pilot site visits (see NUREG 1526, ref. 6), the inspectors noted that some licensees had made inappropriate use of this category by assuming that many structures were inherently reliable when in fact the licensees had many longstanding inspection and preventive maintenance activities already in place. These licensees made the assumption that most structures were inherently reliable without considering that these existing preventive maintenance activities contradicted their assumption.

The inspector should review a sample of SSCs that have been determined to be inherently reliable, verify that the licensee's methodology appears reasonable, and that the SSC's condition or performance is acceptable without maintenance.

2. Run to Failure: Methods for determining risk (or safety) significance are described in NUMARC 93-01, section 9.3.3. SSCs that provide little or no contribution to system safety function could be allowed to run to failure (i.e., perform corrective maintenance rather than preventive maintenance). Licensees should establish appropriate methodology for determining risk significance and should use these criteria to identify SSCs that could be allowed to run to failure. Licensees should document these criteria and their reasons for deciding that individual SSCs could be allowed to run to failure.

The inspector should select a sample of these SSCs and evaluate them to verify that the licensee has followed their own methodology for determining risk significance and that these evaluations are reasonable.

03.03. Periodic Evaluations, 50.65 (a)(3). The licensee is required by paragraph (a)(3) of the maintenance rule to perform the following periodic assessments and evaluations:

a. Refueling Cycle Evaluation: The rule requires that licensees evaluate performance and condition monitoring activities and associated goals and preventive maintenance activities at least every refueling cycle, provided the interval between evaluations does not exceed 24 months. The SOC (Ref. 7 and 8) state that these activities are to be evaluated in light of SSC reliabilities and availabilities as well as the following:

1. Goals and Monitoring: For SSCs under paragraph (a)(1), adjustments are to be made to goals, monitoring, or preventive maintenance activities when equipment or performance has not met established goals. Conversely, the licensee may, at any time, eliminate the monitoring activities initiated in response to problematic equipment performance or industry experience once the root cause of the problem has been corrected and the adequacy of the equipment performance has been confirmed.

On the basis of a review of records and discussions with responsible personnel, the inspector should verify that the licensee has reviewed goals, monitoring, and preventive maintenance activities and made adjustments, where necessary.

2. Preventive Maintenance: For SSCs under paragraph (a)(2), adjustment of preventive maintenance activities may be warranted where SSC performance does not meet performance criteria (for those licensees that have implemented the rule using NUMARC 93-01) or is otherwise determined to be unacceptable. SSCs treated under paragraph (a)(2) which experience repetitive maintenance-preventable functional failures (MPFFs), become subject to the requirements of paragraph (a)(1) or, where this is not feasible, may require other remedial action (e.g., modification or replacement).

On the basis of a review of records and discussions with responsible personnel, the inspector should verify that the licensee has adjusted preventive maintenance activities where necessary and dispositioned SSCs that experienced repetitive MPFFs to the requirements of paragraph (a)(1).

3. Industrywide Operating Experience: The maintenance rule also requires that the evaluations shall take into account, where practical, industrywide operating experience. This type of information may be available from the licensee’s existing operating experience program. However the licensee is responsible for assuring that the

information obtained from the existing operating experience program is adequate for purposes of the maintenance rule.

Applicable industrywide operating experience should be incorporated as soon as it is available. Sources like NRC bulletins, Generic Letters, and information notices, TILs, SILs, SERs, SOERs, should be evaluated when received by the plant and then incorporated into the preventive maintenance program, or training program, as appropriate.

The inspector should verify that the licensee had taken appropriate action to address industrywide operating experience.

4. Schedule for Periodic Evaluation: During the pilot maintenance inspections the NRC review team reviewed each licensees planned schedule for performing the periodic evaluation. The team concluded that the periodic evaluation does not have to be performed at any particular time during the refueling cycle as long it is performed at least one time during the cycle, and the interval between evaluations does not exceed 24 months. For example, one licensee's plans to perform the periodic evaluation on an annual basis would meet the intent of the rule (assuming that the refueling cycle is longer than one year). Another licensee's plans to perform the evaluation at the same time for both units at a two units site, even though the refueling cycles for the units are staggered, would also meet the intent of the rule. A third licensee's plans to use ongoing evaluations combined with a higher level summary evaluation performed at least once per refueling cycle would also meet the intent of the rule.

The inspector should verify that the licensee performed the periodic evaluation at least one time each refueling cycle, not to exceed 24 months between evaluations.

b. Balancing Unavailability and Reliability: The maintenance rule requires that licensees make adjustments 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 due to monitoring or preventive maintenance activities. The intent of this requirement is to ensure; that monitoring or preventive maintenance activities do not result in excessive unavailability that would negate any improvement in reliability achieved as a result of the monitoring or maintenance activity or, that deferring monitoring or preventive maintenance to achieve a high availability does not result in low reliability.

Due the fact that it might be impractical to perform this balancing on a continuous (day to day) basis, licensees may establish their own schedule for performing these reviews and

make any needed adjustments to their preventive maintenance activities. However, at a minimum the licensee must perform this balancing at least every refueling cycle and include an evaluation of this activity as part of the refueling cycle evaluation process described above. This process can be qualitative, but it should be documented.

During the pilot maintenance inspections the team reviewed the plans and procedures licensees had developed for accomplishing this activity. Two licensees plan to balance unavailability and reliability on an ongoing basis as an integral part of monitoring against performance criteria under the rule. Since performance history, preventive maintenance activities, and out-of-service time are taken into consideration when developing the performance criteria, the licensee believes that meeting these performance criteria will assure that a satisfactory balance of reliability and unavailability has been achieved. At another site, the licensee plans to accomplish this balancing by calculating the risk contribution associated with unavailability of the system due to preventive maintenance activities and the risk contribution due to the reliability of the SSC. The licensee would then compare and attempt to balance the contribution to risk from each source to assure consistency with PRA/IPE evaluations. The NRC review team concluded that either of these methods could be a reasonable approach to satisfying this requirement of the rule. However, neither approach had been fully implemented at time of the site visit and therefore could not be evaluated.

Additional guidance is provided in NUMARC 93-01 (Ref. 5), section 12.2.4, "Optimizing Availability and Reliability for SSCs." The inspector should note that this section limits the need to make adjustments to balance availability and reliability to risk significant SSCs.

The inspector should verify that the licensee has implemented a method or process for evaluating maintenance activities and making adjustments where necessary at least every refueling cycle. The inspector should select a sample of risk significant SSCs that were subjected to this process and verify that the adjustments made to balance availability and reliability appear to be reasonable.

c. Assessment of Equipment Out of Service: In performing monitoring and preventive maintenance activities, an assessment of the total plant equipment that is out of service should be taken into account by the licensee to determine the overall effect on the performance of safety functions. This assessment is to be performed on an ongoing basis, not just during the periodic assessment performed at the end of every refueling cycle. This ongoing assessment should be performed regardless of plant mode; i.e., whether the plant is operating or shutdown. As stated in the SOC (ref. 7 and 8), assessing the cumulative impact of out-of-service equipment on the

performance of safety functions is intended to ensure that the plant is not placed in risk significant configurations. These assessments do not necessarily require that a quantitative assessment of probabilistic risk be performed. However the PRA or IPE may provide useful information on risk significance of various SSCs. The level of sophistication with which such assessments are performed is expected to vary, according to the assessments performed. These assessments may range anywhere from simple deterministic judgments to the use of an on-line living PRA. It is expected that, over time, assessments of this type will be refined as the technology improves and experience is gained. In order to accomplish these assessments licensees must keep track of the status (in or out of service) of plant equipment. This status may be kept as a manual list or on a database but must be easily accessible and kept up to date. In order to be useful and accessible the information should be kept in one location and not scattered among several documents (shift logs, status boards, tag out status boards) in various locations. Additional guidance is provided in section 11.0 of NUMARC 93-01 (ref. 5).

During the pilot maintenance inspections, the NRC review team found that licensees planned to use, or had used, a variety of approaches for assessing the overall effect on the performance of safety functions of taking plant equipment out of service for monitoring or preventive maintenance. Many licensees approached the problem by developing a matrix which defines which system combinations could be allowed out of service at the same time. An advantage to using the matrix is that it is simple. However, a disadvantage is that the matrix defines a limited number of combinations that may not address all operational situations and may unnecessarily limit operational flexibility. Several licensees are planning to use real time (or near-real time) risk monitors that can calculate the risk changes associated with the planned maintenance activities. An advantage is that risk monitors can be used to analyze a greater number of possible combinations of out of service systems. A disadvantage is that it may require specially trained personnel to operate the risk monitor or to interpret the results. Both the matrix approach and the risk monitor approach appeared to be reasonable ways of assessing the impact on plant safety when taking equipment out of service for monitoring or preventive maintenance. However, the effectiveness of either of these methods could not be evaluated by the team because they had not been fully implemented at the time of the site visits.

The inspector should verify, based on a review of licensee records and discussions with appropriate personnel, that the licensee has established and implemented an ongoing, documented process for assessing the overall effect on the performance of safety functions before SSCs are taken out of service for monitoring or preventive maintenance. The

inspector should verify that the licensee maintains a current status of all SSCs within the scope of the maintenance rule and that the licensee updates this status to indicate when SSCs are in or out of service. The inspector should select a sample of SSCs from the licensee's list of SSCs that have been taken out of service and review the adequacy of the evaluations made by the licensee before taking the SSCs out of service.

03.04 Scope of the Rule, 50.65(b). The scope of SSCs that are required to be included within the rule is defined in 10 CFR 50.65(b). Section 8.0 of NUMARC 93-01 (Ref. 5) provides additional guidance on methods for selecting SSCs to be included in the scope of the maintenance rule. In order to verify that the licensee has correctly identified and documented SSCs at its facility the inspector should perform the following reviews.

a. Safety-Related SSCs per 50.65(b)(1): The scope of the rule includes safety related SSCs that are relied upon to remain functional during and following a design basis events to assure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintaining 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 100 guidelines. All licensees should have a well-defined list of safety-related SSCs in their final safety analysis report (FSAR), Q-lists or master equipment lists (MEL). In general all SSCs on these lists are safety related and would be included within the scope of the maintenance rule. However, for convenience, some licensees may have categorized some SSCs as safety related on their Q-list even though they do not meet the definition of safety related. These SSCs could be excluded from the scope of the rule if the licensee can show that these SSCs are truly not safety related.

The inspector should independently review the FSAR, Q-list, or MEL to select a sample of SSCs and then verify that the licensee has included these safety-related SSCs within the scope of the maintenance rule.

b. Non-Safety-Related SSCs That are Relied Upon to Mitigate Accidents or Transients per 50.65(b)(2)(i): The FSAR, the emergency operating procedures (EOPs), and the IPE insights describe non-safety-related SSCs needed to mitigate accidents and transients. Examples of non-safety-related SSCs that are sometimes used in the FSAR analysis to mitigate accidents include: the condensate storage tank (supply to auxiliary feedwater), the fire-suppression system, and the boric acid transfer system used for emergency boration and makeup water to the refueling water storage tank.

Inspectors may find that some utilities have made design changes that add an SSC which is classified as non safety related but provides an accident mitigating function. Such SSCs should be included within the scope of the rule. The inspector may find such information from IPE insights and the EOPs. The IPE insights and the licensee's scheduling and planning group may also provide information on when the design change is scheduled to be completed. For example, at one utility a design change was made which utilized an existing non safety related diesel generator to provide emergency power to a charging pump that provides water flow to reactor coolant pump seals (i.e., to mitigate seal loss of coolant accident (LOCA) events) under station blackout conditions. At other utilities, design changes were made which added a non-safety related diesel generator and an additional offsite power source to address station blackout concerns. In all three cases, SSCs involved in the design change provided an accident mitigating function and therefore were required to be added to the scope of the rule.

During one of the pilot maintenance rule inspections the team noted that the licensee had excluded the control room annunciators from the scope of the rule. The licensee explained that these control room annunciators were not required for operation of systems required for mitigating accidents because they only served as backups for other plant instruments and controls. The NRC inspectors questioned licensed control room operators at the plant who confirmed that these annunciators often gave the first indication of an evolving transient or accident. Based on this the inspectors concluded that these annunciators were required for mitigating accidents or transients and therefore should be included within the scope of the rule at that site.

The inspector should independently review the FSAR, IPE insights, and emergency operating procedures (EOPs) to identify a sample of nonsafety-related SSCs relied upon to mitigate accidents or transients. The inspector should then compare this list of SSCs with the list of nonsafety-related SSCs identified by the licensee. The inspector should review the licensees determinations and verify that they appear to be reasonable. The inspector should ask the licensee to justify any SSCs that were excluded from the scope of their program.

c. <u>Non-Safety-Related SSCs That Are Used in Emergency Operating Procedures (EOPs) per 50.65(b)(2)(i)</u>: Paragraph (b)(2)(i) of the maintenance rule states that SSCs used in EOPs are required to be included within the scope of the rule. However, many utilities have included more SSCs in their EOPs than are required by the Emergency Procedure Guidelines. Some of these SSCs were included because they could possibly protect other equipment from being damaged or contaminated in the event of an emergency, not because they are relied upon in

the licensee's accident analysis. Subsequently, the NRC staff endorsed the guidance contained in section 8.2.1.3 of NUMARC 93-01 (ref. 5) which allows the exclusion from the rule of those non-safety-related SSCs that do not add significant value to the mitigation function of an EOP by providing a significant fraction of the total functional ability required to mitigate core damage or radioactive release. Some examples of SSCs that might be excluded on this basis are instrumentation that provides redundant local information and does not provide a control function, fire-protection system capacity capable of supplying only a small fraction of what is required to mitigate the accident, and portable emergency equipment that is available from offsite sources and is not under utility control. Conversely, if a fire-protection system provides a large fraction of the cooling water supply that is required to mitigate the accident, it should be under the scope of the rule.

The inspector should independently review the EOPs to identify a sample of non-safety-related SSCs and verify that they are included within the scope of the rule or were excluded based on the criteria described above. The inspector should select a sample of SSCs from the EOPs that were excluded from the rule and verify that the licensee had followed their own methodology for excluding the SSC from the rule appear to be reasonable.

The inspector should note that some EOPs reference Abnormal Operating Procedures (AOP) which perform accident mitigating functions. SSCs in AOPs which perform accident mitigating functions should be included under the scope of the maintenance rule; SSCs referenced in AOPs which do not provide accident mitigating functions should not fall under the scope of the rule.

d. Non-Safety-Related SSCs Whose Failure Could Prevent Safety-Related SSCs From Fulfilling Their Intended Function as per 50.65(b)(2)(ii): To identify failure modes of non-safety-related SSCs that will directly affect safety-related functions, the licensee should investigate the systems and their interdependencies. A utility should rely on actual plant-specific and industrywide operating experience, prior engineering evaluations such as PRA, IPE, environmental qualification (EQ), and 10 CFR Part 50 (Appendix R) analyses. Industrywide operating experience should be used to the extent practical to preclude unacceptable performance experienced at a similar plant from being repeated. Examples of such non-safety-related SSCs could include instrument air system that opens containment isolation vent and purge valves, a fire damper in the standby gas treatment system whose failure would impair air flow, ventilation systems which can provide cooling to safety related systems, or a condensate storage water tank that is a source of water for emergency core cooling systems (ECCS). However, it is not intended that licensees attempt to

determine hypothetical failures that could result from system interdependencies that have not previously been experienced or analyzed. NUMARC 93-01, section 8.2.1.4 (ref. 5) provides additional guidance. See paragraph 03.04 step f below for exceptions.

The inspector should review records of failures of non-safety-related systems and attempt to identify a sample of SSCs that could have prevented a safety-related SSC from fulfilling its intended function. The inspector should verify that the licensee has included these SSCs within the scope of the maintenance rule. If it is not feasible to select an independent sample in this manner, the inspector should perform a review of the non-safety related SSCs that were identified by the licensee as likely to prevent safety related SSCs from fulfilling their intended function. The inspector should review the licensees determinations and verify that they appear to be reasonable.

e. Non-Safety-Related SSCs Whose Failure Could Cause a Scram or Actuation of a Safety System as per 50.65(b)(2)(iii): Licensees are required to identify, on the basis of utility-specific and industrywide operating experience, those non-safety-related SSCs whose failure has caused or could cause a reactor scram or safety system actuation. The licensee should consider other engineering evaluations, such as PRA, IPE, environmental qualification (EQ), and 10 CFR Part 50, Appendix R, analyses. The licensee should also consider industrywide operating experience and any event that has occurred at a similarly configured plant. However, the licensee is not required to determine hypothetical failures that could result from system interdependencies that have not previously been experienced or analyzed. Examples of transient initiators from the FSAR that are analyzed include turbine trips, loss of feedwater, and loss of instrument air.

During the pilot maintenance rule inspections the inspectors noted several examples of non-safety-related SSCs whose failure had, or could have caused plant trips. Some of these systems were; circulating water, condenser vacuum, extraction steam, non-ESF buses that power reactor coolant pumps, radiation monitoring, site grounding system, shield walls that separate the station startup transformers, the plant computer, heat tracing and freeze protection, reactor coolant pump vibration monitoring, cathodic protection systems, screen wash water, gland steam, gland seal water, generator gas, turbine lube oil, and turbine generator seal oil. NUMARC 93-01, section 8.2.1.5 (ref. 5), provides additional guidance.

The inspector should review licensee event reports, available operating history information, PRA insights, and other engineering evaluations to identify SSCs that have actually caused, or could cause a scram or safety system actuation and should verify that those SSCs had been included in the

licensee's maintenance program. The inspector should note that because a system is very reliable, or contains redundant trains, or because operator action could prevent a scram are not reasons for excluding SSCs from the scope of the rule. These considerations are not included in paragraph (b)(2)(iii) of the rule and therefore should not be considered when making scoping determinations.

f. SSCs Outside the Scope of the Maintenance Rule: Unless they meet the criteria described above, the following categories of SSCs are generally outside the scope of the maintenance rule: fire protection systems; seismic class II SSCs installed in proximity to seismic class I SSCs; security systems; and, emergency facilities described in the emergency plan. Further guidance is provided in section 8.2.1.6 of NUMARC 93-01 (ref. 5).

The inspector should not expect that these SSCs would be included within the scope of the maintenance rule because maintenance requirements for these categories of SSCs are covered in other regulations.

g. Switchyard Activities: Regulatory Guide 1.160 states that the scope of monitoring efforts under the maintenance rule, as defined in 10 CFR 50.65(b), encompasses those SSCs that directly and significantly affect plant operations, regardless of which organization actually performs the maintenance activities. Just because a maintenance activity is performed by corporate maintenance or contractor personnel (rather than plant personnel) does not mean that activity is outside the scope of the rule. Since maintenance activities that are performed on SSCs in the switchyard can directly affect plant operations, electrical distribution equipment out to the first inter-tie with the off-site distribution system (i.e., equipment in the switchyard) should be considered for inclusion under the scope of the maintenance rule. Plant management should be aware of, and should have the ability to control, these activities even if the switchyard is offsite.

The inspector should verify that the appropriate SSCs in the switchyard are included within the scope of the maintenance rule.

h. Safety Systems with Non-safety Functions: Examples provided in section 8.2.1 of NUMARC 93-01 (ref. 5) illustrate that some safety-related systems may perform safety-related as well as non-safety-related functions. In such cases, the components that perform only a non-safety-related function may not necessarily come under the scope of the rule. For example, the non-safety-related function of an ECCS could be to fill the safety injection accumulators.

The inspector should not expect that these SSCs with non-safety-related functions necessarily come within the scope of the maintenance rule.

i. Documentation. The licensee's process for reviewing and selecting SSCs shall be documented. The licensee shall also develop and maintain an up to date status that identifies all those SSCs selected for inclusion within the scope of the rule. This status could be maintained using a manual list, electronic database, or other methods. The licensees process must include provisions that take into account modifications or changes to the plant that could result in SSCs being added to or deleted from the scope of the maintenance rule. NUMARC 93-01, section 13.2 (ref. 5) provides additional guidance on documenting the SSC selection process.

The inspector should verify that the licensee has established adequate documentation and has established a process to control this activity.

Summary for 03.04, Scope of the Rule 50.65(b), steps a through i: If the inspector identifies one or more significant examples, or several minor examples, of failures to identify SSCs required to be within the scope of the rule, the inspector should examine the licensee' process and procedures to determine why they were not included. The results of the pilot maintenance team inspections demonstrated that licensees were able to identify most of the SSCs that were within the scope of the rule. The number of additional SSCs that the NRC team identified should have been included within the scope of the rule were: zero at two sites, one at four sites, three at one site, four at one site, and fifteen at one site. Most of these were in the category of nonsafety related SSCs whose failure could cause a reactor scram or safety system actuation.

03.05. Effectiveness of Emergency Diesel Generator Maintenance Activities. The inspection requirements and guidance given in preceding sections of this inspection procedure apply to all SSCs within the scope of the maintenance rule, including the emergency diesel generators. However, regulatory Guide 1.160 does provide additional specific guidance for emergency diesel generators.

a. Target Reliability Values as Goals or Performance Criteria: The station blackout rule (10 CFR 50.63) requires each licensee to perform plant-specific coping analyses to ensure that a plant can 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. Most licensees endorsed the program embodied in NUMARC 87-00 (ref. 9) and subsequently docketed commitments to maintain a target EDG reliability value of either 0.95 or 0.975. These target values could be used as the basis for goals or as performance criteria for EDG reliability under the maintenance rule (10 CFR 50.65). In addition, as part of their plant-specific

coping analyses, licensees were allowed to use plant-specific data concerning unavailability due to maintenance. This unavailability due to maintenance, assumed in a plant-specific individual plant examination (IPE) analysis, could also be used as the basis for goals or performance criteria for EDG availability under the maintenance rule.

The inspector should verify that the licensee has either (1) incorporated these commitments into its maintenance program as goals or performance criteria or (2) established an alternate method of meeting licensee commitments to the station blackout rule and the requirements of the maintenance rule.

b. Early Implementation of the Maintenance Rule for Emergency Diesel Generators: Generic Letter 94-01 allows licensees to remove accelerated testing and special reporting requirements for emergency diesel generators from the technical specifications or other docketed commitments and still satisfy commitments made in response to the station blackout rule (10 CFR 50.63) earlier than the effective date of the maintenance rule, July 10, 1996. This is accomplished by electing to implement the provisions of the maintenance rule and associated regulatory guidance (RG 1.160) for the emergency diesel generators, including all requisite support SSCs (cooling water, instrument air, etc.) If the decision is made to remove these commitments then the effectiveness of maintenance of the emergency diesel generators would be subject to inspection under the provisions of the maintenance rule beginning within 90 days of the issuance of the license amendment or granting relief from a docketed commitment or the effective date of the rule, July 10, 1996, whichever occurs first.

For licensees that have elected early implementation of the maintenance rule as described in Generic Letter 94-01, the inspector should verify the licensee has implemented all requirements of the maintenance rule and the associated regulatory guidance within the schedule described above.

XXXXX-04 RESOURCE ESTIMATE[5]

XXXXX-05 REFERENCES

1. 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants" (the maintenance rule).

[5]The resource estimate provides an estimate of the number of onsite inspection hours required to complete this inspection. This estimate is for broad resource planning and is not intended as a quota or standard for judging inspector or regional performance. The actual inspections performed at a specific plant may require substantially more or less time, depending on circumstances.

2. 10 CFR 50.63, "Loss of All Alternating Current Power," (Station Blackout Rule).

3. Generic Letter 94-01, "Removal of Accelerated Testing and Special Reporting Requirements for Emergency Diesel Generators."

4. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.160,"Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," June 1993

5. Nuclear Management and Resources Council, NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," May 1993

6. NUREG 1526, "Lessons Learned From Early Implementation of the Maintenance Rule at Nine Nuclear Power Plants," June 1995.

7. U.S. Nuclear Regulator Commission, "Statements of Consideration (SOC) for Monitoring the Effectiveness of Maintenance," Federal Register, Vol. 56, No. 132, Wednesday July 10, 1991, pages 31306 to 31324.

8. U.S. Nuclear Regulator Commission, "Statements of Consideration (SOC) for Monitoring the Effectiveness of Maintenance," Federal Register, Vol. 58, No. 53, Monday March 22, 1993, Pages 15303 to 15305.

9. Nuclear Management and Resources Council, NUMARC 87-00, Revision 1, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors, August 1991."

Appendix A

ENFORCEMENT GUIDANCE

The maintenance rule is broad-based and performance-oriented; its goal is to ensure that licensees monitor and assess the effectiveness of their maintenance activities in order to ensure that SSCs will be capable of performing their intended functions. One factor in the Commission's decision to promulgate the rule was a belief that a need existed to broaden the Commission's capability to take timely enforcement action when maintenance activities fail to provide reasonable assurance that safety-significant SSCs are capable of performing their intended functions.

The form and philosophy of the rule allows (encourages) "maximum flexibility" for licensees in establishing their programs to meet the intent and requirements of the rule. Within these broad requirements, enforcement action would be appropriate for licensees who have inadequately implemented aspects of the rule or whose performance demonstrates a continuing ineffectiveness of maintenance activities.

Escalated enforcement would be appropriate where there was a failure to deal in good faith to implement the requirements of the rule or where significant failures of SSCs could have been prevented through effective implementation of the maintenance rule.

The inspector should be aware that the maintenance rule does not supersede any existing requirements such as those contained in 10 CFR Part 50 (including Appendix B and other sections) or a licensee's Technical Specifications. These requirements remain in effect for maintenance activities. When preparing notices of violation for maintenance activities, the inspector should consider citing against the requirements of the maintenance rule whenever a licensee has violated a specific requirement of the maintenance rule, such as those described in the examples listed above. However, where maintenance problems are caused by licensee activities not specifically related to maintenance rule, it may be preferable to cite against the requirements of Appendix B or the plant Technical Specifications. Examples of such violations could include failure to take corrective action or failure to follow documented procedures or instructions.

<u>Examples of Activities That Would Be Violations of the Maintenance Rule</u>:

1. Failure to include safety or non-safety related SSC (as defined in 10 CFR.65 (b)(1) and (2)) within the scope of the program would be a violation.

2. Failure to establish goals for SSCs in (a)(1) would be a violation. Establishment of goals that are inconsistent

with safety significance or industry experience would be a violation.

3. Failure to establish a monitoring program that adequately supports the goals set under 10 CFR 50.65 (a)(1). The monitoring program must be sufficient in scope and frequency to adequately support a determination as to whether SSCs are meeting their assigned goals. Lack of such a monitoring program would be a violation.

4. Failure to evaluate the results of monitoring activities such that a goal is exceeded without timely licensee knowledge or appropriate corrective action being taken would be a violation.

5. Failure to take timely or appropriate corrective action when a goal is exceeded. Repetitive failures due to inappropriate or ineffective corrective action could be considered a violation under this rule for all SSCs within the scope of this rule or a violation of 10 CFR 50 Appendix B safety-related SSCs.

6. Failure to analyze maintenance preventable failures of SSCs covered under (a)(2) would be a violation. Failure to develop a rationale or justification for continuing to cover an SSC under (a)(2) after it has experienced a repetitive maintenance preventable failure would be a violation.

7. Failure to perform the required periodic assessment for the activities described under (a)(3) would be a violation.

8. Failure to reasonably balance reliability and unavailability due to monitoring/maintenance activities would also be a violation.

(deleted "Failure to perform assessments of the impact on performance of safety functions of taking equipment out of service for monitoring or preventive maintenance" as a because it is a should in the rule, not a requirement) see 4 below.

9. A failure to implement or adhere to any of the procedures developed by a licensee to implement the rule may be a violation and could be assessed as a violation of Technical Specifications or 10 CFR 50 Appendix B.

<u>Examples of Activities That Would Not Necessarily Be Violations of the Maintenance Rule</u>:

1. A failure to meet a licensee developed goal under (a)(1) would not be subject to enforcement action as long as appropriate corrective action had been taken when the goal was not met.

2. It is intended that licensees be allowed flexibility when establishing goals and not be subject to enforcement on goals selection as long as these goals are reasonably based on safety significance and industry operating experience. The NRC does not intend to second guess the details of these goals. However, the NRC will review these goals to ensure that they reasonably based on safety significance and industry operating experience.

3. The details of the monitoring program would not be subject to enforcement action as long as the monitoring was sufficient to adequately support the goals and provided for an evaluation whenever a goal was exceeded. (see example of violations #3 and #4 above).

4. Since the rule states that in performing monitoring and preventive maintenance activities, an assessment of the total plant equipment that is out of service should (not shall) be taken into account to determine the overall effect on performance of safety functions, the failure to perform this assessment would not be a violation. However, where this failure to perform a safety assessment contributed to the severity of another violation of the regulations, or exacerbated the consequences of an accident, the failure to perform a safety assessment could be taken into account as a mitigating factor in any escalated enforcement action.

5. Deficiencies in records and documentation would not in themselves be subject to enforcement. However, if they contribute to an inappropriate action or inaction to correct the performance of an SSC, these record or documentation deficiencies may be cited as contributing factors in an enforcement action.