Section 24

DRAFT SUPPORTING STATEMENT
FOR
REQUIREMENT FOR MONITORING THE EFFECTIVENESS OF MAINTENANCE AT NUCLEAR POWER PLANTS

10 CFR 50.65

Description of the Information Collection

Requirements pertaining to maintenance at nuclear power plants are provided in 10 CFR 50.65, effective July 10, 1996. 10 CFR 50.65 requires monitoring of the overall continuing effectiveness of licensee maintenance programs to ensure that: (1) safety-related and certain non-safety related, structures, systems, and components (SSCs) are capable of performing their intended functions; and (2) for non-safety related equipment, failures will not occur which prevent the fulfillment of safety-related functions, and failures resulting in reactor scrams or trips and unnecessary actuations of safety-related systems are minimized. For a nuclear power plant for which the licensee has submitted the certifications specified in 10 CFR 50.82(a)(1), 10 CFR 50.65 applies to the extent that the licensee shall monitor the performance or condition of all structures, systems, or components associated with the storage, control, and maintenance of spent fuel in a safe condition, in a manner sufficient to provide reasonable assurance that such structures, systems, and components are capable of fulfilling their intended functions.

The performance-oriented maintenance regulation requires that the licensees monitor the performance or condition of SSCs within the scope of the regulation against licensee-established goals, in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions. Monitoring is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled by appropriate preventive maintenance, such that the SSC remains capable of performing its intended function. Performance and condition monitoring activities and associated goals and preventive maintenance activities shall be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months. The objective of preventing failures through maintenance is to be balanced against the objective of minimizing unavailability of SSCs. In performing monitoring and preventive maintenance activities, an assessment of the total plant equipment that is out of service is to be taken into account to determine the overall effect on performance of safety functions.

Regulatory Guide 1.160, Rev. 2, which provides regulatory guidance to implement the rule, endorses an industry guidance document, NUMARC 93-01, Rev. 2, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." Although adoption of the regulatory guidance by licensees is voluntary, licensees have adopted this guidance. Therefore, the information collections and burden are based on this guidance.

The industry guidance is described as follows:

Utilities are required to identify plant SSCs that are within the scope of 10 CFR 50.65 that perform a safety-related function, or upon failure could prevent a safety-related function from being fulfilled or cause a scram or actuation of a safety-related system (Section 8.0)[1]. For SSCs not within the scope of 10 CFR 50.65, each utility is to continue existing maintenance programs.

10 CFR 50.65 requires that all SSCs that are within the scope of the regulation will have had their performance assessed and will have been placed in 50.65(a)(2) and be part of the preventive maintenance program. In addition, those SSCs with unacceptable performance will have been moved to 50.65(a)(1) with goals established and monitoring to meet the goals expected. This determination was to be made by licensees' assessments of the risk significance as well as the performance of the SSCs against utility-specific performance criteria. Specific performance criteria must be established for those SSCs that are either risk significant or standby mode; the balance are monitored against the overall plant level performance criteria.

The process addressing 50.65(a)(1) includes licensees establishing goals for structures, systems, trains, and components that have not demonstrated acceptable performance. The key parameter is performance, which includes availability, reliability, or condition, as appropriate.

Risk significant SSCs should be identified by using tools such as an Individual Plant Examination, a Probabilistic Risk Assessment, critical safety functions (e.g., inventory), or other methods, provided they are systematic and documented.

The performance of SSCs that do not meet the performance criteria established by a utility shall be subjected to goal setting and monitoring that leads to acceptable performance. Many goals must be set at the system level. In addition, train and component level goals should be established (Section 9.0) when determined appropriate by the utility. Performance of structures, systems, trains, or components, as measured against established goals, must be monitored and documented until it is determined that the goals have been achieved and performance can be addressed in 50.65(a)(2).

SSCs within the scope of 10 CFR 50.65 whose performance is currently determined to be acceptable must be assessed periodically to assure that acceptable performance is sustained (Section 10.0).

Although goals are established and monitored as part of 50.65(a)(1), the preventive maintenance and performance monitoring activities are part of 50.65(a)(2) and apply to all of the SSCs that are within the scope of 10 CFR 50.65.

An assessment of the overall effect on plant safety must be performed for SSCs that support plant safety functions when they are taken out of service for monitoring or preventive maintenance activities.

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[1] Refer to sections in NUMARC 93-01.

Periodic performance assessment and monitoring must be implemented through utility specific programs that include, as appropriate, event cause determination, corrective action, consideration of industry operating experience, and trending.

On July 19, 1999, the NRC issued a revised final rule to require that power plant licensees, before performing maintenance, assess and manage the increase in risk that may result from maintenance activities. The revised rule becomes effective 120 days after issuance of the associated regulatory guidance which is currently scheduled for issuance in the 3rd quarter of FY 2000. The staff has developed Draft Regulatory Guide DG-1082, which endorses Final Draft Section 11 of NUMARC 93-01. Section 11 of NUMARC 93-01, “Industry Guidelines for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” deals with the assessment of risk resulting from performance of maintenance activities.

Based on the NRC staff's regulatory guidance, the licensee's information collections normally consist of program descriptions, data on goals and monitoring efforts, trends of failure data, and trends of availability data. The information is not sent to the NRC, nor is it separately compiled unless it is information that is not otherwise collected. The objective is to rely on licensees' existing documentation collection activities to the greatest extent possible in order to show progress in maintenance by results in terms of performance, condition and availability of SSCs within the scope of 10 CFR 50.65.

Although not explicitly required by 10 CFR 50.65, each licensee needs to collect, process and use existing maintenance records, data, and industry information in setting and monitoring goals. Section 13 of NUMARC 93-01 indicates industry proposed documentation. Plant-specific SSC maintenance history and performance trends based on SSC history must be maintained and kept current by licensees and compared with the licensee's established goals and objectives. The SSC history may include data obtained from the plant-specific maintenance surveillance, preventive and corrective maintenance programs, and industry-wide experience. The monitoring activities must be trended and the results compared with established goals to determine the need for corrective action, e.g., SSC modification, repair, replacement, or changes to maintenance procedures.

A. JUSTIFICATION

1. Need for and Practical Utility of the Collection of Information

Licensees must collect and analyze information concerning the performance of SSCs within the scope of 10 CFR 50.65 in order for them to use information from past experience to predict future plant vulnerabilities and plan appropriate maintenance activities aimed at eliminating or mitigating those vulnerabilities.

2. Agency Use of Information

Information on performance criteria, goal setting and monitoring results, failure data, unavailability data, and documentation of periodic assessments required by 10 CFR 50.65 is reviewed at the licensee's facilities by NRC inspectors in order to evaluate SSC performance and ensure that the SSCs are capable of fulfilling their intended function, and thereby maintain safe operation of the plant. Reporting of information to NRC headquarters or regional offices is not required.

3. Reduction of Burden Through Information Technology

There is no legal obstacle to the use of information technology. Moreover, NRC encourages its use; however, at the current time, no responses are submitted electronically.

4. Effort to Identify Duplication and Use Similar Information

Licensees are currently required to collect and document information concerning the condition and behavior of certain plant equipment in accordance with 10 CFR 50, Appendix B (e.g., procedures, quality assurance programs, records), 50.36 (surveillance requirements), 50.48 (fire protection), 50.49 (environmental qualification), 50.55a (in-service inspection requirements), 50.61 (pressurized thermal shock), 50.62 (anticipated transient without scram), 50.63 (station blackout), and 10 CFR 54 if applicable (license renewal). At least some of this same information will be used by licensees to partially meet the requirements in 50.65 with respect to safety-related SSCs.

5. Effort to Reduce Small Business Burden

10 CFR 50.65 affects only nuclear power reactor licensees. None of these licensees fall within the definition of a small business, as defined in the Commission's Size Standards (50 FR 50241; December 9, 1985).

6. Consequences to Federal Program or Policy Activities if the Collection is Not Conducted or is Conducted Less Frequently

Licensees must establish procedures for addressing the scope of 10 CFR 50.65, setting goals, monitoring, assessing, and correcting performance, as appropriate. This is a one-time collection. Licensees thereafter have to collect, document, and maintain failure histories for maintenance-preventable functional failures (MPFFs), as defined in the industry guidance. Licensees use collected information to identify trends, update component failure data bases, and propose design, operational, procedural, or other maintenance related corrective action. Licensees are required to assess the overall effectiveness of their maintenance efforts at least once every refueling cycle provided the interval between evaluations does not exceed 24 months.

Collection of failure and unavailability information and attendant cause analyses is driven by the frequency and type of failures. NRC inspectors are expected to judge

the adequacy of each licensee's efforts by the results in terms of acceptability of failure rates and unavailability of plant equipment. Accordingly, the frequency of collection of data is driven by events as well as the existing maintenance schedule for each plant. If the information were not collected or collected less frequently, it would not be possible to ensure the safety of the public and plant operation.

7. Circumstances Which Justify Variation from OMB Guidelines

10 CFR 50.65 does not change any of the existing requirements for records retention. Maintenance surveillance and failure records and data must be retained in accordance with existing plant procedures and requirements. If this results in a need for licensees to retain records for longer than three years, it will result from trends in failures and unavailability of SSCs and not as a result of any specific requirements of 10 CFR 50.65 or its implementing guidance. The adequacy of licensees' efforts is judged on the basis of acceptability in equipment performance and availability. Therefore, record retention periods are driven by the needs of licensees to show acceptable trends.

8. Consultations Outside the Agency

No comments were received on the discussion of information collections associated with the final rulemaking issued on July 19, 1999, that require power plant licensees, before performing maintenance, to assess and manage the increase in risk that may result from maintenance activities.

In addition, Notice of Opportunity for Public Comment on this information collection has been published in the Federal Register.

9. Payment or Gift to Respondents

Not applicable.

10. Confidentiality of Information

None, except for proprietary information. Proprietary information is handled in accordance with 10 CFR 2.790 of the NRC's regulations.

11. Justification for Sensitive Questions

No sensitive information is requested under this regulation.

12. Estimated Industry Burden and Burden Hour Cost

The burden varies depending on the quality of the current maintenance program and is calculated for marginally satisfactory plants, satisfactory plants, and good plants. Additionally, 19 plants are in a permanently shutdown status and are required to maintain a significantly reduced maintenance program. The hourly burdens are listed below.

Section 13.3 of NUMARC 93-01: Documentation of Performance Against Goals, Changes to Goals, Expanded Data Collection, Data Analysis, Trending, Cause Analysis, and Programs Analysis

All three categories of operating plants require additional staff for necessary documentation. It is assumed that one additional staff person spends two-thirds of his time on these information collection activities.

Number of Plants	Burden per Plant	Total Burden
104	1,400	145,600

Section 13.4 of NUMARC 93-01: Documentation of Preventive Maintenance Program

It is assumed that one-third of a staff person's time is devoted to related information collection activities for satisfactory and good plants. Marginally satisfactory plants require two-thirds of a staff person's time. It is further assumed that the burden at a permanently shutdown plant is approximately 80 hours per year.

Category	No. of Plants	Burden per Plant	Total Burden
Marginally Satisfactory	15	1,400	21,000
Satisfactory and Good	89	695	61,855
Permanently Shutdown	19	80	1,520
Total			84,375

Section 13.5 of NUMARC 93-01: Periodic Assessments

It is assumed that two-thirds of a staff person's time is devoted to information collections associated with feedback and corrective actions for operating plants. For permanently shutdown plants, 10 CFR 50.65 only applies to maintenance of spent fuel in a safe manner. Thus, the burden is much less.

Number of Plants	Burden per Plant	Total Burden

104	1,400	145,600
19	8	152

Total Burden: 375,727 hours per year. Of this, 374,055 burden hours represent an industry total for operating plants (145,600 + 21,000 + 61,855 + 145,600) for an average of 3597 hours per plant; and 1672 hours represent an industry total for shutdown plants (1520 + 152) for an average of 88 hours per plant.

Total Industry Burden and Cost

Based on the above, the annual burden per operating plant is estimated to be 3,597 hours with a cost of $507,177 per plant (3,597 hours x $141 per hour) and the cost to a shutdown plant is $12,408 (88 hours x $141 per hour). The total annual industry burden is estimated to be 375,727 hours at a total annual cost of $52,977,507 (375,727 hours x $141 per hour). This includes time the licensee expends on all maintenance inspection activities with inspection personnel, i.e. meetings, interviews, locating information, etc.

13. Estimate of Other Additional Costs

None.

14. Estimated Annualized Burden to the Federal Government

The NRC already performs maintenance inspections and maintenance evaluations. 10 CFR 50.65 strengthens the basis for the inspections and evaluations, but does not require additional inspection activities. The focus of the NRC inspections has changed but the burden is not expected to change. Therefore, there will be no increased burden to the Federal government for information collection activities related to 10 CFR 50.65.

The annual cost to the government is associated with inspection and evaluation of maintenance activities at power reactor facilities. NRC estimates 510 hours per year for each of the 65 operating nuclear power reactor sites and 51 hours per year for each of the 13 permanently shutdown power reactor sites for inspection and evaluation of maintenance activities. Therefore, the burden estimated for this effort is 33,813 hours (510 x 65 sites + 51 x 13 sites), at a cost of $4,767,633 (33,813 hours x $141).

The cost is fully recovered by fee assessments to NRC licensees pursuant to 10 CFR 170 and/or 171.

15. Reasons for Changes in Burden and Cost

Although estimated burden hours have decreased as some operating power reactors shifted from operating to shutdown status, the total industry cost increased due to the use of a higher value for hourly costs ($141 per hour).

16. Publication for Statistical Use

There will be no publication by the NRC of the collected information for statistical use.

17. Reason for Not Displaying the Expiration Date

The requirement is contained in a regulation. Amending the Code of Federal Regulations to display information that, in an annual publication, could become obsolete would be unduly burdensome and too difficult to keep current.

18. Exceptions to the Certification Statement

None.

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

Statistical methods may be used by licensees for the collection or analysis of plant information. NRC inspectors are not expected to use statistical methods in their reviews of licensee documentation. Use of statistical methods is allowed but not required by 10 CFR 50.65 and its implementing guidance.