Section 23

FINAL 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 the monitoring of the effectiveness of maintenance at nuclear power plants are provided in 10 *Code of Federal Regulation* (CFR) 50.65. The latest version of the rule became effective on November 30, 2000. This performance-based rule requires monitoring of the overall continuing effectiveness of licensee maintenance programs by means of licensee tracking of the performance (in terms of availability and/or reliability) or condition of structures, systems or components (SSCs) within the scope of the rule as defined in 10 CFR 50.65(b), with the objective that: (1) safety-related and certain non-safety related SSCs remain capable of performing their intended functions; and (2) the non-safety related SSCs will not fail in a manner that could prevent the fulfillment of safety-related functions, or result in reactor scrams or trips and unnecessary actuations of safety-related systems. For a nuclear power plant for which the licensee has submitted the certifications specified in 10 CFR 50.82(a)(1) (i.e., a decommissioned plant), 10 CFR 50.65 applies to the extent that the licensee shall monitor the performance or condition of all SSCs 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 remain capable of fulfilling their intended functions. 10 CFR 50.65(a)(4), added in 2000, requires assessing and managing risk associated with maintenance activities.

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. Before performing maintenance activities, the licensee must assess and manage the increase in risk that may result from the proposed maintenance activities. The scope of the assessment may be limited to SSCs that a risk-informed evaluation process has shown to be significant to public health and safety.

Regulatory Guide 1.160, Rev. 2, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," which provides guidance for implementing the rule, endorses an industry guidance document, Nuclear Utility Management and Resources Committee (NUMARC) 93-01, Rev. 2, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power

Plants." In addition, RG 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants," endorsed a February 2000 revision to Section 11 of NUMARC 93-01 which provided the industry guidance on implementation of 10 CFR 50.65(a)(4). The rule does not explicitly require any information collection or record keeping by the licensees or the U.S. Nuclear Regulatory Commission (NRC). Although adoption of the regulatory guidance by licensees is voluntary, licensees have accepted and adopted this guidance. Therefore, the information collection and record keeping burdens are based on this guidance and are captured in each of the discussions below.

The industry guidance provides for demonstrating effective control of SSC performance or condition through appropriate preventive maintenance as allowed by 10 CFR 50.65(a)(2) in lieu of monitoring under 10 CFR 50.65(a)(1). Those SSCs with unacceptable performance or condition will then be monitored in accordance with the requirements of 10 CFR 50.65(a)(1). The effective control of performance or condition is demonstrated by means of utility-specific performance measures or criteria. High-safety or high-risk-significant SSCs and certain ones of lower-risk significance that are in a standby mode are normally tracked at the system or train level, and the rest are tracked on the basis of their contributing to plant-level events.

Utilities are required to identify plant SSCs that are within the scope of 10 CFR 50.65 because they 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 expects that all SSCs that are within the scope of the regulation will have had their performance assessed and will be included in preventive maintenance program. Those SSCs with acceptable performance will be monitored in accordance with paragraph 50.65(a)(2). Those SSCs with unacceptable performance will be monitored in accordance with the requirements of paragraph 50.65(a)(1). This determination was made by licensees= assessments of the performance of the SSCs compared to utility-specific performance measures, or criteria. Specific performance criteria should be established for those SSCs that are either risk significant or normally operate in a standby mode. The balance is monitored against the overall plant level performance criteria.

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

Risk-significant SSCs should be identified by using a group of experts, termed an expert panel, normally aided by tools such as an Individual Plant Examination, a Probabilistic Risk Assessment, critical safety functions (e.g., inventory), or other systematic methods of assessment.

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. Performance

1 Refer to sections in NUMARC 93-01.

of structures, systems, trains, or components, as measured against established goals, must be monitored until the goals have been achieved and performance can be addressed by paragraph 50.65(a)(2).

SSCs within the scope of 10 CFR 50.65 whose performance is currently determined to be acceptable should 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 performance monitoring activities associated with normal preventive maintenance are part of 50.65(a)(2) and apply to all of the SSCs that are within the scope of 10 CFR 50.65.

Licensees must assess the risk that may result from proposed maintenance activities and manage the increase in risk that may result. Licensees may limit the scope of those assessments to SSCs that a risk-informed evaluation process has shown to be significant to public health and safety.

Periodic performance assessment and monitoring should 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 became effective November 28, 2000. The staff developed Regulatory Guide 1.182, which endorses a revised Section 11, dated February 22, 2000, of NUMARC 93-01. The revised Section 11 provides guidance for 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 continues to be reliance on licensees' existing documentation collection activities to the greatest extent possible in order to show progress in maintenance by results in terms of SSC performance (reliability and/or availability) or condition.

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-suggested documentation. Plant-specific SSC maintenance history, and performance trends based on that history, should 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 data should 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.

Licensees must also evaluate their maintenance programs at least once during every refueling cycle, not to exceed 24 months between evaluations, in accordance with 10 CFR 50.65(a)(3). Programs must be balanced such that reliability is maintained, without excessive unavailability due to maintenance, and industry operating experience must be taken into account where practicable.

A.JUSTIFICATION

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

Licensees need to collect and analyze information concerning the performance of SSCs within the scope of 10 CFR 50.65 so that they can 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 periodic assessments developed by the licensees to implement 10 CFR 50.65, may be reviewed at the licensee's facilities by NRC inspectors in order to independently evaluate SSC performance and ensure that the SSCs are capable of fulfilling their intended function, and thereby maintain safe operation of the plant. Licensee reporting of information to the NRC is not required.

3. Reduction of Burden Through Information Technology

There are no legal obstacles to reducing the burden associated with this information collection. The NRC encourages respondents to use information technology when it would be beneficial to them. The NRC issued a regulation on October 10, 2003 (68 FR 58791), consistent with the Government Paperwork Elimination Act, which allows its licensees, vendors, applicants, and members of the public the option to make submissions electronically via CD-ROM, e-mail, special Web-based interface or other means. Due to the nature of this requirement, it is estimated 0% of the potential responses will be filed electronically.

4. Effort to Identify Duplication and Use Similar Information

No sources of similar information are available. There is no duplication of requirements. NRC has in place an ongoing program to examine all information collections with the goal of eliminating all duplication and/or unnecessary information collections. However, 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), 10 CFR 50.36 (surveillance requirements), 10 CFR 50.48 (fire protection), 10 CFR 50.49 (environmental qualification), 10 CFR 50.55a (in-service inspection requirements), 10 CFR 50.61 (pressurized thermal

shock), 10 CFR 50.62 (anticipated transient without scram), 10 CFR 50.63 (station blackout), and 10 CFR 54 (license renewal), if applicable. Some of this same information will be used by licensees to partially meet the requirements of 10 CFR 50.65 with respect to safety-related SSCs.

5. Effort to Reduce Small Business Burden

These information collection requirements do not affect small businesses.

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

If the information were not collected, or were collected less frequently, licensees would perform maintenance activities more haphazardly, the plant would operate less predictably, and the health and safety of the public would be less reliably protected.

7. Circumstances Which Justify Variation from Office of Management and Budget Guidelines

There is no variation. 10 CFR 50.65 does not change any of the existing requirements for records retention. Maintenance surveillance and failure records and data are retained in accordance with existing plant procedures and requirements. If the licensee chooses to retain records for longer than three years, that 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 of equipment performance or condition. Therefore, record retention periods are driven by the needs of licensees to develop useful trending information.

8. Consultations Outside the Agency

Opportunity for public comment on the information collection requirements for this clearance package was published in the Federal Register on May 14, 2013 (78 FR 28244). No comments were received.

9. Payment or Gift to Respondents

Not applicable.

1. Confidentiality of Information

Confidential and proprietary information is protected in accordance with NRC regulations at 10 CFR 9.17(a) and 10 CFR 2.390(b). However, no information normally considered confidential or proprietary is requested.

11. Justification for Sensitive Questions

No sensitive information is requested under this regulation.

12. Estimated Industry Burden and Burden Hour Cost

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, therefore there is no reporting burden.

The burden varies depending on the quality of the current maintenance program and is calculated for marginally satisfactory plants, satisfactory plants, and good plants (no new plants are expected to be in a maintenance mode during this clearance period). Additionally, 12 plants are in a permanently shutdown status and have a significantly reduced maintenance program. The hourly recordkeeping burdens are listed below.

a. 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 the time on these information collection activities.

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

b. 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

Category	No. of Plants	Burden per Plant	Total Burden
Permanently Shutdown	12	80	960
Total			83,815

c. 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 assessment, 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
12	8	96
Total		145,696

d. Section 11 of NUMARC 93-01: Risk Assessment and Management

Number of Plants	Burden per Plant	Total Burden
104	700	72,800
12	40	480
Total		73,280

e. Total Burden

The total burden is 448,391 hours per year (145,600 + 83,815 + 145,696 + 73,280 hours). Of this, 446,855 burden hours represents an industry total for operating plants (145,600 + 21,000 + 61,855 + 145,600 + 72,800), an average of 4,297 hours per plant. The rest, 1,536 hours, represents an industry total for shutdown plants (960 + 96 + 480), for an average of 128 hours per plant.

f. Total Industry Burden and Cost

Based on the above, the annual burden per operating plant is estimated to be 4,296 hours with a cost of $1,177,104 per plant (4,296 hours x $274 per hour), and the cost to a shutdown plant is $35,072 (128 hours x $274 per hour). The total annual industry burden is estimated to be 448,391 hours at a total annual cost of $122,859,134 (448,391 hours x $274 per hour).

13. Estimate of Other Additional Costs

The NRC has determined that the quantity of records to be maintained is roughly proportional to the recordkeeping burden and, therefore, can be used to calculate approximate records storage costs. Based on the number of pages maintained for a typical clearance, the records storage cost has been determined to be equal to 0.0004 times the recordkeeping burden cost. Because the recordkeeping burden is estimated to be 448,391 hours, the storage cost for this clearance is $49,144 (448,391 hours x 0.0004 x $274/hour).

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. Of the 104 licensed to operate nuclear power plants, during this clearance period, 65 sites are subject to inspection and evaluation of maintenance activities. 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 12 permanently shutdown power reactor plants for inspection and evaluation of maintenance activities. Therefore, the burden estimated for this effort is 33,762 hours (510 x 65 sites + 51 x 12 plants), at a cost of $9,250,788 (33,762 hours x $274).

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

The overall burden has decreased by 256 hours, from 448,647 hours to 448,391. As a result of two plants completing decommissioning, their license has been terminated and the facility no longer falls under NRC regulatory purview, 10 CFR 50.65 no longer applies, thus decreasing the number of permanently shutdown plants from 14 to 12. The total industry cost increased from

$115,302,279 to $122,859,134 due to the increase in hourly costs, from $257 per hour to $274 per hour.

16. Publication for Statistical Use

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

17. Reason for Not Displaying the Expiration Date

The requirement is contained in a regulation. Amending the CFR 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 implementation of the rule. Use of statistical methods is allowed but not required by 10 CFR 50.65 and its implementing guidance.