

## Section 7

### FINAL SUPPORTING STATEMENT FOR ACCEPTANCE CRITERIA FOR EMERGENCY CORE COOLING SYSTEMS (ECCS)

10 CFR 50.46, 10 CFR 50.46(a)(3)(i), 10 CFR 50.46(a)(3)(ii) and 10 CFR 50 Appendix K

#### DESCRIPTION OF THE INFORMATION COLLECTION

10 CFR 50.46 provides an alternate method of meeting the 10 CFR 50 Appendix K requirements for Emergency Core Cooling Systems (ECCS). It permits licensees or applicants to analyze ECCS performance using realistic calculations. This method of calculation may remove some operating restrictions and, thus, motivate licensees to submit realistic analyses for review. This aspect of the rule represents a voluntary information collection burden to the industry. Realistic analyses are not required of licensees not electing this option.

10 CFR 50.46(a)(3)(i) requires that each applicant for, or holder of, an operating license or construction permit, other than a holder of a license for a reactor facility for which the certifications required under 10 CFR 50.82(a)(1) have been submitted, shall estimate the effect of any change to, or error in, an acceptable evaluation model, or in the application of such a model, to determine if the change or error is significant. For this purpose, a significant change or error is one which results in a calculated peak fuel cladding temperature differing by more than 50°F from the temperature calculated for the limiting transient using the last acceptable model, or is a cumulation of changes and errors, such that the sum of the absolute magnitudes of the respective temperature changes is greater than 50°F.

10 CFR 50.46(a)(3)(ii) requires that, for each change to, or error discovered in, an acceptable evaluation model or in the application of such a model that affects the temperature calculation, the applicant or licensee shall report the nature of the change or error, and its estimated effect on the limiting ECCS analysis, to the Commission at least annually. If the change or error is significant, the applicant or licensee shall provide this report within 30 days and include with the report a proposed schedule for providing a re-analysis or taking other action as may be needed to show compliance with 10 CFR 50.46 requirements. This schedule may be developed using an integrated scheduling system previously approved for the facility by the NRC. For those facilities not using an NRC-approved integrated scheduling system, a schedule will be established by the NRC staff within 60 days of receipt of the proposed schedule. Any change or error correction that results in a calculated ECCS performance that does not conform to the criteria set forth in 10 CFR 50.46(b) is a reportable event as described in 10 CFR 50.55(e), 10 CFR 50.72 and 10 CFR 50.73. The affected applicant or licensee shall propose immediate steps to demonstrate compliance or bring plant design or operation into compliance with 10 CFR 50.46 requirements.

The effort associated with the reports required by 10 CFR 50.46 will vary, depending upon the nature of the ECCS model change or error being addressed. Most of the annual reports disclose that no changes were made to the ECCS evaluation or convey information about minor changes. These reports will require little effort to prepare. Other annual reports may be based

on extensive re-analysis of ECCS performance, resulting in a greater expenditure of effort. To arrive at its estimate of the burden associated with the annual reports, the staff used its understanding of the types of reports typically submitted and its experience in the level of effort required to conduct ECCS evaluations.

10 CFR 50, Appendix K.I.A., offers licensees the option to use a reduced power level margin for ECCS evaluation or maintain the current margin of 2% power. To use this option and apply a lower assumed power level, licensees would be required to demonstrate the uncertainties associated with measuring reactor thermal power. The resulting change to ECCS evaluation results must be reported per 10 CFR 50.46(a)(3) and filed as a license amendment. The burden for license amendments is included in Section 1 of the Part 50 supporting statement.

10 CFR 50, Appendix K.II.1.a., requires that a description of each evaluation model be furnished. The description shall be sufficiently complete to permit technical review of the analytical approach including the equations used, their approximations in difference form, the assumptions made, and the values of all parameters or the procedure for their selection, as for example, in accordance with a specified physical law or empirical correlation.

10 CFR 50, Appendix K.II.1., requires that a complete listing of each computer program be furnished to the NRC upon request in the same form as used in the evaluation model (EM). NRC does not anticipate the need to request such information during this clearance period.

#### A. JUSTIFICATION

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

In order to determine licensee compliance with the regulations set forth in 10 CFR 50.46 and 10 CFR 50 Appendix K, the NRC needs to know what models and methods have been used to assess ECCS performance.

##### 2. Agency Use of Information

The information identified will be used to determine licensee compliance with the requirements of 10 CFR 50 Appendix K and 10 CFR 50.46(b) and, thus, ensure that the reactor operates within the limits required to protect public health and safety. If not in compliance, the information will allow NRC to assess how and when compliance to the applicable requirements will be achieved.

Without the information required in 10 CFR 50, Appendix K.II., the NRC staff would be unable to determine the adequacy of the calculation methods used to evaluate ECCS performance.

##### 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. 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. It is estimated that approximately 85% of all the potential responses are 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.

5. Effort to Reduce Small Business Burden

The provisions of this regulation do not affect small businesses.

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

The frequency with which this information is collected is determined by how often the accepted ECCS EM is modified and whether these changes significantly affect the calculated peak clad temperature. Less frequent collection could adversely affect public health and safety.

7. Circumstances which Justify Variation From OMB Guidelines

A licensee must submit a report under 10 CFR 50.46(a)(3)(ii) within 30 days of discovering any significant change or error so that NRC is apprised of significant safety issues requiring immediate resolution.

8. Consultations Outside the NRC

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.

10. 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).

11. Justification for Sensitive Questions

This regulation does not request sensitive information.

12. Estimated Industry Burden and Burden Hour Cost

Based on staff experience, the annual burden to industry for modified EM submittals, realistic generic model submittals, and schedule and computer printout submittals is estimated at 3,575 burden hours. Attachment A provides a breakdown of this burden.

This is based on an estimate that the average annual cost to industry for performing an analysis of ECCS performance is 2,500 person hours, a modified EM will involve 1,050 hours, and that preparation and submittal of an average of 1.6 schedules would involve about 25 person hours (16 hours per schedule). An EM printout, if submitted, is expected to involve approximately one hour. Based on an estimate of an average of 1.6 submittals annually (one generic realistic model submittal and 0.6 modified EM submittals annually:  $1,750 \times 0.6 = 1,050$ ), the total burden to industry is estimated at 3,575 person hours annually ( $2,500 + 1,050 + 25 = 3,575$ ).

One annual report required by 10 CFR 50.46(a)(3)(ii) will be submitted by each of the 104 licensees. Based on the staff's experience, the effort involved to prepare these reports is dependent upon the nature of the change to the ECCS evaluation. The staff estimates that, on average, it will take a licensee approximately 20 hours to prepare an annual report. Therefore, the staff expects that the requirement for an annual report will result in approximately 2,080 hours annually ( $104 \times 20 = 2,080$ ).

Approximately half of the licensees will encounter a change or error deemed to be significant by 10 CFR 50.46(a)(3)(i), therefore, having to submit a report within 30 days under 10 CFR 50.46(a)(3)(ii). The staff estimates that, on average, it will take a licensee approximately 20 hours to prepare 30-day report. Therefore, the staff expects that the requirement for submitting a 30-day report will result in approximately 1,040 hours annually ( $104 \times 0.5 \times 20 = 1,040$ ).

Therefore, the total annual burden for industry is estimated to be 6,695 hours ( $3,575 + 2,080 + 1,040$ ), at an estimated annual cost of \$1,834,430 ( $6,695 \text{ hours} \times \$274$ ).

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 670 hours, the storage cost for this clearance is \$73 ( $670 \text{ hours} \times 0.0004 \times \$274/\text{hour}$ ).

14. Estimated Annualized Cost to the Federal Government

It is expected that three generic calculations using realistic models will be submitted during the clearance period, and three modified EM models will be submitted during the next 5-year period, or an average of 0.6 submittals per year. Staff review of a modified EM will require one-half of a staff year (SY), and a generic analysis of ECCS performance will require an average of one SY per submittal. The number of reviews performed per year as a result of this regulation is estimated as follows:

Modified EM Submittals:	0.6/yr at .5 SY =	.3 SY
Generic Model Submittals:	<u>1.0/yr</u> at 1 SY =	<u>1.0 SY</u>
Totals:	1.6/yr	1.3 SY

The annualized cost to the NRC would be \$569,920 (2,080 hours x \$274) for the generic analyses and \$170,976 (624 hours x \$274) for modified EM submittals. The total annualized cost to the NRC for both generic and modified submittals is estimated as \$740,896.

The regulation requires that a schedule for completing the actions needed to comply with applicable 10 CFR 50 Appendix K and 10 CFR 50.46(b) requirements be submitted to NRC with each analysis. Schedule review would require 4 hours of staff time per submittal. At \$274 per hour and an average of 1.6 submittals per year, the annualized cost to the NRC would be \$1,754 (1.6 x 4 hours x \$274).

The annual reports required by the provisions of 10 CFR 50.46(a)(3)(ii) will result in a total burden of 52 hours. One report is expected to be submitted by each of 104 licensees. It is estimated that it would take approximately 30 minutes on average for the staff to peruse these reports. At \$274 per hour, the annual cost to NRC would be \$14,248 (104 reports x 0.5 hour x \$274).

The 30-day reports required by the provisions of 10 CFR 50.46(a)(3)(ii) will result in a total burden of 104 hours. Approximately half of all licensees are expected to submit a 30-day report. It is estimated that it would take 2 hours on average for the staff to peruse these reports. At \$274 per hour, the annual cost to NRC would be \$28,496 (52 reports x 2 hour x \$274).

Listings of computer programs as required by 10 CFR 50 Appendix K.II.1.b. are not expected during this clearance period.

The total cost to the NRC is therefore \$785,394 (\$740,896 + \$1,754 + \$14,248 + \$28,496) annually.

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

15. Reasons for Changes in Burden or Cost

The overall burden has increased by 1,040 hours from 5,655 to 6,695 hours. There has also been an increase in responses by 52 responses from 107 to 159 over the previous clearance period due to the staff accounting for 30-day reports. In the previous renewal zero reports were estimated and now there are 52, 30-day reports. 10 CFR 50.46(a)(3)(ii) requires that, for each change to, or error discovered in, an acceptable evaluation model or in the application of such a model that affects the temperature calculation, the applicant or licensee shall report the nature of the change or error, and its estimated effect on the limiting ECCS analysis, to the Commission at least annually. If the change or error is significant, the applicant or licensee shall provide this report within 30 days. Staff projects approximately 52 of these reports may be received annually, increasing the number of annual responses and burden respectively.

Additionally, there was an increase in the overall fee rate from \$257 to \$274.

16. Publication for Statistical Use

The information being collected is not expected to be published 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. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

Not applicable.

Enclosure:  
Attachment A

ATTACHMENT A

OMB STATEMENT FOR THE ECCS RULE CONTAINED IN 10 CFR 50, APPENDIX K  
AND 10 CFR 50.46  
ANNUAL BURDEN AND COST TO INDUSTRY

		Annual Number of Responses	Burden Hours per Response	Total Annual Burden Hours	Annual Industry Cost @\$274/hour
1.	<u>10 CFR 50.46 Requirements</u> -Realistic EM Submittals -Modified EM Submittals -Schedule Submittals -EM Printout Submittal	1 0.6 1.6 0	2,500 1,750 16 0	2,500 1,050 25 0	\$ 685,000 \$ 287,700 \$ 6,850 0
2.	10 CFR 50 Appendix K.II.1.b.	0	0	0	0
	Subtotals	3.2		3,575	\$ 979,550
3.	10 CFR 50 Appendix K.I.A.	Burden included in Section 1 for license amendments.			
4.	Reports under 10 CFR 50.46(a) (3)(ii) -Annual Reports -30-day Reports	104 52	20 20	2,080 1,040	\$ 569,920 \$ 284,960
	TOTALS	159.2		6,695	\$1,834,430