

milk to pool plants, then pumping it back out into trucks that would haul it to nonpool plants where the milk could be used.

Because of the expected relationship between milk production and the Class I needs of the market, AMPI stated that 60 percent would be a more appropriate limit on diversions of producer milk to nonpool plants than 40 percent, and that 30 percent would be a more appropriate shipping requirement for pool supply plants than 40 percent. According to the cooperative, the temporary revisions will allow AMPI to avoid engaging in uneconomic and inefficient milk movements in order to maintain the pool status of the milk of its members who have historically supplied the fluid needs of the Nebraska-Western Iowa marketing area.

AMPI's request was supported by the National Farmers Organization (NFO), a cooperative association that also represents producers supplying milk to the market. NFO referred to the market's production and Class I sales data in concluding that not only AMPI, but also other handlers or cooperatives who have producers pooled on the market, may be required to make uneconomic and inefficient milk movements in order to maintain the pool status of producer milk historically associated with the order.

No comments opposing either of the proposed revisions of the Nebraska-Western Iowa order's supply plant shipping requirement of its diversion limits were received.

Without the temporary revisions, milk would have to be moved unnecessarily and uneconomically from farms to pool plants and from supply plants to distributing plants for the sole purpose of maintaining the pool status of producers historically pooled under the Nebraska-Western Iowa order. In addition to such movements of milk being inefficient and uneconomic, the additional pumping to which the milk would be subject would be detrimental to the quality of the milk. It is concluded that the reduction of the supply plant shipping percentage by 10 percentage points and the relaxation of the producer milk diversion limit by 20 points will prevent uneconomic movements of milk to pool distributing plants merely for the purpose of qualifying it as producer milk under the order.

It is hereby found and determined that 30 days' notice of the effective date hereof is impractical, unnecessary, and contrary to the public interest in that:

(a) This temporary revision is necessary to reflect current marketing conditions and to maintain orderly

marketing conditions in the marketing area for the months of September 1988 through March 1989;

(b) This temporary revision does not require of persons affected substantial or extensive preparation prior to the effective date; and

(c) Notice of the proposed temporary revision was given interested parties and they were afforded opportunity to file written data, views, or arguments concerning this temporary revision.

Therefore, good cause exists for making this temporary revision effective upon publication of this notice in the Federal Register.

List of Subjects in 7 CFR Part 1065

Milk marketing orders, Milk, Dairy products.

PART 1065—[AMENDED]

The authority citation for 7 CFR Part 1065 continues to read as follows:

Authority: (Secs. 1-19, 48 Stat. 31), as amended (7 U.S.C. 601-674.)

§§ 1065.7 and 1065.13 [Amended]

(It is therefore ordered, That for the months of September 1988 through March 1989 in paragraph (b) of § 1065.7, the provision "40 percent" is revised to "30 percent"; and in paragraphs (d)(2) and (3) of § 1065.13, the provisions "40 percent" is revised to "60 percent".

Signed at Washington, DC, on September 13, 1988.

W.H. Blanchard,
Acting Director, Dairy Division.

[FR Doc. 88-21219 Filed 9-15-88; 8:45 am]
BILLING CODE 3410-02-M

NUCLEAR REGULATORY COMMISSION

10 CFR Part 50

Emergency Core Cooling Systems; Revisions to Acceptance Criteria

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations to allow the use of alternative methods to demonstrate that the emergency core cooling system (ECCS) would protect the nuclear reactor core during a postulated design basis loss-of-coolant accident (LOCA). The Commission is taking this action because research, performed since the current rule was written, has shown that calculations performed using current methods and in accordance with the current requirements result in estimates

of cooling system performance that are significantly more conservative than estimates based on the improved knowledge gained from this research. While the existing methods are conservative, they do not result in accurate calculation of what would actually occur in a nuclear power plant during a LOCA and may result in less than optimal ECCS design and operating procedures. In addition, the operation of some nuclear reactors is being unnecessarily restricted by the rule, resulting in increased costs of electricity generation. This rule, while continuing to allow the use of current methods and requirements, also allows the use of more recent information and knowledge to demonstrate that the ECCS would protect the reactor during a LOCA. This amendment, which applies to all applicants for and holders of construction permits or operating licenses for light water reactors, also relaxes requirements for certain reporting and reanalyses which do not contribute to safety.

EFFECTIVE DATE: October 17, 1988.

FOR FURTHER INFORMATION CONTACT: L.M. Shotkin, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492-3530.

SUPPLEMENTARY INFORMATION:

Background

On March 3, 1987, the Nuclear Regulatory Commission published in the Federal Register proposed amendments (52 FR 6334) to 10 CFR Part 50 and Appendix K. These proposed amendments were motivated by the fact that since the promulgation of § 50.46 of 10 CFR Part 50, "Acceptance Criteria for Emergency Core Cooling Systems (ECCS) in Light Water Power Reactors," and the acceptable and required features and models specified in Appendix K to 10 CFR Part 50, considerable research has been performed that has greatly increased the understanding of ECCS performance during a LOCA. It is now confirmed that the methods specified in Appendix K, combined with other analysis methods currently in use, are highly conservative and that the actual cladding temperatures which would occur during a LOCA would be much lower than those calculated using Appendix K methods. In soliciting the public's comments on the proposed rule, the NRC specifically requested its views on questions posed by Commissioner Asselstine and the Advisory Committee on Reactor Safeguards (ACRS). The ACRS requested that the Commission

solicit the public's comments on whether the existing rule should be

"grandfathered" indefinitely. That is:

1. Should the conservative ECCS evaluation method of Appendix K be permitted indefinitely or should this aspect of the ECCS rule be phased out after some period of time?

Commissioner Asselstine requested the public's comments on the following:

2. Should this rule change include an explicit degree of conservatism that must be applied to the evaluation models?

3. This rule change would allow a 5 to 10 percent increase in the fission product inventory that could be released from any core meltdown scenario. Should this rule change explicitly prohibit any increase in approved power levels until all severe accident issues and unresolved safety issues are resolved?

4. Should the technical basis for this proposed rule change be reviewed by an independent group such as the American Physical Society?

Summary of Public Comments

The comment period for the proposed rule revision and the draft regulatory guide (52 FR 11385) expired on July 1, 1987. Twenty-seven letters addressing the proposed rule were received by the expiration date, as well as nine responses to the request for comments on questions in the regulatory guide. A number of late comments were also received. These were also considered to the extent that new and substantial comments were provided.

The public comment on the proposed rule revisions have been divided into thirteen categories and are summarized in the following paragraphs. Categories one through four represent the responses to the specific questions posed by the ACRS and Commissioner Asselstine. In general, consideration of the public comments resulted in no substantive revision to the proposed rule.

1. Grandfathering of Conservative ECCS Methods of Appendix K (Question 1).

Twenty-one of the commenters specifically addressed the ACRS question concerning the grandfathering of the current Appendix K approach. Seventeen of these commenters recommended indefinite grandfathering of the existing Appendix K evaluation models. Most cited the known conservatism as the basis of their recommendation. In addition, several commenters stated that in light of the known conservatisms not allowing continued use of existing Appendix K evaluation models would be unfairly burdensome to licensees who determine

that they would not derive an economic benefit by performing realistic analysis of ECCS performance. The position of an additional commenter is unclear concerning grandfathering. The remaining commenter was not opposed to grandfathering but thought the question is premature. This commenter believes that indefinite use of existing ECCS evaluation methods should be considered when significant experience has been gained with the implementation of the new features of the rule but makes no recommendation as to what policy the Commission should pursue in the meantime.

The Commission agrees with the majority of the commenters that existing Appendix K evaluation models should be permitted indefinitely. The Commission also believes that the decision to permit continued use of such models can and should be made at this time because it believes that both methods provide adequate protection of the public health and safety. As described in the regulatory analysis, the probability of a large break is so low, that the choice of best estimate versus Appendix K has little effect on public risk. The TMI action plan calls for industry to improve their small break LOCA evaluation models to be more realistic when evaluating the more probable small break accident scenario. This has been done within the context of § 50.46 and Appendix K compliance and was entirely appropriate since small breaks are not limiting in design basis performance and a better understanding of small break behavior is a desirable safety goal from a risk perspective. Therefore, the grandfathering provision has been retained in the final rule.

2. *Specification of Explicit Degree of Conservatism (Question 2).* The majority of the responses to this question indicated that the proposed rule already contains conservatism in the required uncertainty evaluation.

The use of additional conservatism would be inconsistent with the objective of the rule which is to provide a realistic evaluation of plant response during a LOCA. The NRC has not included an additional explicit degree of conservatism in this rule.

3. *Resolution of all Safety Issues Prior to Allowing Power Level Increases (Question 3).* Some commenters pointed out that fission product inventory is not a direct function of total power, but rather it is the rate of fission product formation that is a direct function of power. Fission product inventory available for release during a core meltdown would be a function of burnup, not total power.

Actually, the inventory of fission products is a complex function of both time and power and not as simple as described by the commenters. Short lived isotopes, such as xenon and iodine, quickly reach an equilibrium inventory and total steady state inventory of these fission products is a direct function of power. Inventories of long-lived isotopes, such as strontium and cesium, are functions of total fuel burnup, as described by the commenters. Intermediate-lived isotopic inventories are complex functions of time, power, and integrated power. In an independent study, documented in chapter XII of NUREG 1230, the staff determined that the change in risk due to a 5% power increase is negligible. The arguments above do not alter the Commission's position that the increase in fission products available for release during a core meltdown caused by a 5% power increase is negligible compared to the uncertainty in fission product release. The Commission has decided not to delay the proposed rule revision pending resolution of all unresolved safety issues or severe accident issues and therefore will proceed with this final rulemaking, as planned.

4. *Independent Review of Technical Basis (Question 4).* Several commenters indicated that the technical basis for the proposed rule has had adequate review as the research was being performed. A number of commenters stated that it was the role of the ACRS to perform any review of the proposed rule revision because it is uniquely qualified due to its familiarity with the research.

The Commission agrees that the technical basis has had adequate review, except for the uncertainty methodology which is new and untried except for the General Electric Company's use of an uncertainty evaluation of their SAFER code. As a proof of principle and demonstration of feasibility, the ACRS and a second independent peer group has reviewed the uncertainty methodology developed by the NRC for use in quantifying the uncertainty of NRC developed thermal hydraulic transient codes. Both the ACRS and the peer group made generally favorable comments concerning the methodology; however, both groups recognized that a complete demonstration (i.e., application to small break LOCA and the reflood portion of large break LOCA) has not yet been accomplished and certain reviewers questioned whether such a demonstration could be performed successfully. The only objectives of the NRC methodology demonstration are to demonstrate feasibility, to develop an

audit tool, and to provide the necessary experience to audit licensee submittals. The staff does not believe that an NRC demonstration of the methodology is a prerequisite to this rulemaking. Licensees wishing to adopt the best estimate approach permitted as a result of this rule are neither required to use this methodology nor to model their own methodologies after it. This methodology will play an important part in the best-estimate model review process. The NRC has determined through twenty years of experience that independent analysis with independent methodologies is the most effective way to intelligently review new vendor or licensee methodologies. It is therefore appropriate that this new methodology be subjected to stringent technical scrutiny, as directed by the Commission. The NRC staff is committed to completing this demonstration by the time that it will be needed to review licensee submittals and is confident that such a demonstration will be successful. Based on the paucity of negative response concerning the technical basis for the proposed rule revision and generally favorable review of the NRC uncertainty methodology, the Commission plans no further review of the technical basis.

5. General Comments on Proposed Rule. Twenty-one commenters made comments of this nature. The majority of the comments came from the nuclear industry of which 19 expressed support of the proposed rule. The industry also strongly supports the specific ECCS rule approach proposed by the NRC. One commenter neither supported nor opposed the proposed approach. One negative comment was received from an anonymous individual within the nuclear industry who implied, without specifics, that the ECCS rule is not sound and that public comment is not a fair hearing because expert insiders would be afraid to comment.

Based on the absence of any supporting justification for the negative response and the unprecedented amount of research supporting the rule revision, the NRC does not consider this comment to be valid and has proceeded with this rulemaking with no major revisions.

One commenter suggested that fuel reload suppliers should not be required to complete full LOCA/ECCS analyses because the hydraulics are not changed by a fuel change.

Although this point is valid, the Commission believes that it is an unworkable situation to allow fuel suppliers to make use of previous analyses performed by others. It is believed that serious questions of accountability would arise in cases

where errors are discovered in evaluation models, requests are made to revise plant technical specifications, or some other questions regarding the analyses are raised. The NRC believes that shared responsibility for evaluation models would not be in the best interest of the public health and safety and therefore has not implemented the suggestion of this commenter.

The NRC received two requests for an extension of the comment period to allow time for review of NUREG-1230, which describes the research supporting the proposed rule revision.

The NRC believes the comment period was sufficient since most of the research is not new and has been extensively reviewed in the past. Both commenters were contacted and told that comments received after the comment period would be considered if time permitted. Comments from both parties were received late and were indeed considered by the NRC.

6. Reporting Requirements. Some commenters viewed the proposed reporting procedures as new requirements needing consideration in the backfit analysis while others stated that they are a major relaxation and clarification of existing reporting requirements.

The NRC position is that the reporting requirements are new in the sense that they will now appear in the Code of Federal Regulations. However, in practice, these reporting requirements are indeed a clarification and relaxation over the current interpretation for the existing requirements and therefore the net effect of these requirements will be to reduce the frequency for reporting and reanalysis.

A number of commenters requested that only significant errors or changes in the non-conservative direction or only those that result in exceeding the 2200°F limit be required to be reported. In addition, a number of commenters suggested that the NRC require only annual reporting of significant errors or changes.

The NRC considers a major error or change in any direction a cause for concern because it raises potential questions about the adequacy of the evaluation model as a whole. Therefore, the NRC requires the reporting of significant errors or changes, in either direction, on a timely basis so that the Commission may make a determination of the safety significance. Thus, the final rule contains no change in this requirement.

One commenter recommended that the word "immediate" be deleted from the requirement to propose steps to be taken to demonstrate compliance in the

event that the criteria in § 50.46(b) are exceeded.

The Commission considers this a very serious condition in which the plant is not in compliance with the regulations and may be operating in an unsafe manner. The word "immediate" reflects this seriousness and is further defined by reference in other sections of Part 50.

Several commenters questioned the need to report minor or inconsequential errors or changes, even on an annual basis, as required in the proposed rule.

While errors or changes which result in changes in calculated peak clad temperatures of less than 50°F are not considered to be of immediate concern, the NRC requires cognizance of such changes or corrections since they constitute a deviation from what previously has been reviewed and accepted. The proposed annual reporting is believed to be a fair compromise between the burden of reporting and the Commission's need to be aware of changes and error corrections being made to evaluation models. Therefore, the annual reporting of minor errors remains in the final rule.

One commenter interpreted the use of the words "or in the application of such a model" as requiring reporting when facility changes (already reportable under § 50.59), resulting in model input changes, occur.

The regulatory language referred to is intended to ensure that applications of models to areas not contemplated during initial review of the model do not result in errors by extending a model beyond the range that it was intended. The Commission does not believe that further clarification of this requirement is necessary and has not done so in the final rule.

Several commenters requested a further relaxation of the reporting requirement by changing the definition of significant code errors from 50°F to 100°F.

While justification for the 50°F criteria is largely judgmental, the NRC believes that it is sufficiently large to screen the code error corrections and changes which have little safety significance while providing a mechanism for timely reporting of more serious errors and changes. Since 50°F is a threshold for reporting and no further action is required pending NRC determination of safety significance, the Commission has retained this criteria in the final rule.

One commenter requested consideration for allowing that the cumulative effect of several errors and corrections be applied towards the 50°F threshold.

The requirement, which states that the 50°F criteria applies to the sum of the absolute magnitudes of temperature changes from numerous error corrections or model changes was formulated specifically because the Commission requires knowledge of serious deficiencies in evaluation models in use by licensees. Allowing errors or corrections which offset one another to relieve a licensee of the thirty-day reporting requirement, would be counter to this objective. If this recommendation were accepted, two errors or changes, having a large impact on the calculated peak cladding temperature but in the opposite direction, would not be reportable if the net magnitude of their difference was less than 50°F. For this reason, and the fact that no further action (beyond reporting within thirty days) is required, the Commission retained this requirement in the final rule.

7. Continued Use of Dougall-Rohsenow. Five comments that addressed this aspect of the proposed rule were received. One commenter believed that this correlation should not be permitted without further verification and should be phased out. Other commenters supported continued use of the correlation subject to the provisions of the proposed rule.

The NRC position is that no safety concern is created by continued use of the correlation, as long as the evaluation model is overall conservative. Therefore, the Commission can not justify the burden of requiring licensees to modify their evaluation models and to perform reanalysis. As discussed in SECY 83-472, current evaluation models contain more conservatism than just those required by Appendix K. However, error corrections or changes could alter the conservatism of the model. Therefore, the Commission believes that it is necessary to ensure continued overall conservatism in the evaluation models as a basis for continued use of the correlation. Therefore, the final rule does not modify this requirement except for the correction of a typographical error identified by one commenter.

8. Uncertainty Evaluation. The comments received on the uncertainty evaluation support the proposed rule, particularly the flexibility provided by a non-prescriptive requirement. Therefore, the Commission is publishing the final rule without modification of this requirement.

9. Acceptance Criteria. The three comments received on this topic were all supportive of the existing criteria, as contained in § 50.46(b), and thus the

Commission did not give consideration to altering them in the final rule.

10. Cladding Materials. Three commenters requested that the Commission consider broadening the language of the rule to allow the use of a range of zirconium based alloys for cladding material.

The Commission believes that this modification is beyond the scope of the current rule revision and should be considered in a separate rulemaking action in which it would receive appropriate public review and comment prior to implementation. In addition, zircaloy cladding material is specified in other portions of the Code of Federal Regulations, such as § 50.44. Making a change of this type is more suitable in a broader regulatory context. Therefore, the Commission is not broadening the definition of cladding materials within this rulemaking.

11. Other Suggested Expansions to Rule Scope. One commenter believes that hydraulic loads occurring during a LOCA could cause steam generator tubes to rupture and that the NRC should resolve steam generator tube integrity safety issues prior to publishing this rule.

Steam generator tubes are designed to withstand LOCA loads at allowed thinning, and there is no evidence to contradict this. If anything, the problem would be with inspection techniques to detect the actual tube thinning and whether there is an unacceptably high probability that a tube rupture during a LOCA due to tube thinning is in excess of the design basis. However, the risk from LOCA with concurrent tube rupture will not be greatly affected by the proposed rule change. As a result of the commenter's concerns, this issue has been assigned as a generic issue (GI-141) to be prioritized by the NRC staff. The results of the prioritization process will determine if further action is required.

A second commenter believes that the ECCS rule does not adequately address a plant's long term decay heat removal capability, and recommends a "short/long term integrative analysis approach." Both the existing requirements and the proposed rule contain the requirement to provide for long term cooling subsequent to a LOCA. Small increases in power that may result from the proposed rule should not greatly change decay heat removal requirements following a LOCA or any other accident or transient. Thus, the issue of decay heat removal is not materially impacted by this rulemaking. Moreover, any proposed increase in power resulting from this rule

promulgation would be approved only after the licensee demonstrates that decay heat removal capacities remain adequate. The Commission is planning no further action with regard to this issue.

12. Acceptability of Models Approved Under SECY-83-472. One commenter requests that the rule language be modified to state explicitly that ECCS evaluation models that have been previously approved under SECY-83-472 continue to be acceptable under this rule.

SECY 83-472 provides an alternative, acceptable method for developing ECCS evaluation models. Licensees were still required, however, to demonstrate that evaluation models developed using the SECY-83-472 approach complied with the requirements of Appendix K to Part 50. This final rule explicitly finds that ECCS evaluation models, which have been previously approved as satisfying the requirements of Appendix K, remain acceptable. Therefore, the Commission sees no need for further clarification of this issue.

13. Comments Received After Comment Period. Six letters commenting on the proposed rule were received subsequent to the end of the comment period. The Commission considered these comments to the extent that the comments provided substantive information not previously considered.

One commenter believes that the proposed § 50.46(a)(2) expands the discretion of the Director of the Office of Nuclear Reactor Regulation (NRR) by allowing imposition of immediate effective restrictions on reactor operation without a prior determination that such action is required to protect the public health, safety, or interest. NRC's intent is not to alter the responsibilities of the Director of NRR but to simply retain the description of the scope of the authority that is currently found in § 50.46(a)(1)(v). Furthermore, the provisions of § 50.46(a)(2) do not specify the procedure to be followed by the Director of NRR. These procedures are set out in Part 2 and remain unchanged by this rulemaking.

One commenter believes that the rule is illegal because it is based solely on cost savings considerations and that there is nothing wrong with large conservatisms.

The Commission disagrees with this assessment. Safety factors are required to protect the health and safety of the public when uncertainties in plant response exist. As these uncertainties are reduced, it is appropriate to modify these safety factors to provide more

realistic evaluation of actual plant response. The large conservatisms of Appendix K served the public well in 1974 when there was great uncertainty in ECCS performance. However, these conservatisms are now known to be very large, and there is no need to "over regulate" by maintaining this unnecessary margin. This type of activity can often result in the expenditure of resources that would be better spent improving safety in other areas. The benefits to safety, while difficult to quantify, are believed to be substantial. While cost savings may have been one factor resulting in the rule change, the Commission believes that the conservatisms contained in the acceptance criteria themselves, as well as those required in the uncertainty evaluation required in this rule, are adequate to protect the health and safety of the public.

This commenter also cites portions of the 1975 General Electric Company's Nuclear Reactor Study (Reed Report), which claims that there is a lack of understanding of phenomena and small safety margins.

Many of the conclusions of the "Reed Report" were valid in 1975 when it was written and due to this fact it was difficult to show that sufficient safety margins existed. Most of the research discussed in NUREG-1230 has been conducted since the "Reed Report" was written and has resulted in significant improvement in understanding LOCA phenomena. We now know that significant margin to the ECCS acceptance criteria exists, particularly for the BWR/6 which was of concern in the "Reed Report." The contents of this report have been reviewed by the Commission on several occasions, most recently in NUREG-1285, and the finding has been made that no new significant safety issues are identified. For these reasons, the NRC is proceeding with this rulemaking, as proposed.

The same commenter also recommends that credit for ECCS margins be taken in the Individual Plant Examinations (IPE) and not through generic rulemaking.

The Commission agrees that plant specific differences may justify the application of different margins and that these may be addressed through Individual Plant Examinations. However, the requirement for licensees to evaluate ECCS performance and meet the acceptance criteria specified in 10 CFR 50.46(b) is generic. The Commission believes that margins that may be reduced due to a better understanding of a reactor's response to a LOCA should be applied through a generic rulemaking action because it allows a broad range

of technical review of the issues, enhances public participation in the process, and provides a complete public record. Therefore, the Commission has decided to proceed with the rulemaking as planned.

Finally, this commenter questions the experimental basis for this rule because full-scale ECCS bypass data is not yet available.

The 2D/3D tests which will provide this important data represent a small portion of the total research upon which this rule relies. Significant research on ECCS bypass has already been completed in small scale vessels and the full-scale work is required only to confirm the smaller scale results and quantify any uncertainty due to scale effects. One full-scale ECCS bypass test has already been completed under the 2D/3D program which showed that more margin exists than expected from the small scale tests. Completion of the full-scale tests only affects the uncertainties in the calculations, and reduces them. Uncertainties must be addressed by licensees in any analysis under the revised rule whether 2D/3D results are available or not. The Commission concludes that there is no need to delay the final rule, while awaiting these data.

Summary of Rule Changes

Section 50.46 Acceptance Criteria for Emergency Core Cooling Systems for Light Water Reactors.

Section 50.46(a)(1) is amended and redesignated § 50.46(a)(1)(i) to delete the requirement that the features of Section I of Appendix K to Part 50 be used to develop the evaluation model. This section now requires that an acceptable evaluation model have sufficient supporting justification to show that the analytical technique realistically describes the behavior of the reactor system during a LOCA. The NRC expects that the analytical technique will, to the extent practicable, utilize realistic methods and be based upon applicable experimental data. The amended rule also requires that the uncertainty of the calculation be estimated and accounted for when comparing the results of the calculation to the temperature limits and other criteria of § 50.46(b) so that there is a high probability that the criteria would not be exceeded. The Commission expects the realistic evaluation model to retain a degree of conservatism consistent with the uncertainty of the calculation. The final rule does not specifically prescribe the analytical methods or uncertainty evaluation techniques to be used. However, guidance has been provided in the form

of a Regulatory Guide.¹ In SECY-83-472, the NRC has found acceptable an approach for estimating the 95th percentile of the probability distribution. This percental is considered adequate to meet the high level of probability required by the rule. It is also recognized that the probability cannot be determined using totally rigorous mathematical methods due to the complexity of the calculations. However, the NRC requires that any simplifying assumptions be stated so that the Commission may evaluate them to ensure that they are reasonable. The NRC has independently developed and exercised a methodology to estimate the uncertainty associated with its own thermal-hydraulic safety codes. This methodology is described in the "Compendium of ECCS Research."² This document also provides reference to the large body of relevant thermal-hydraulic research, documents NRC studies on the effects of reactor power increases on risk, and provides background information on the ECCS rule. While this method has not been reviewed for acceptability from the standpoint of safety licensing, it may provide additional guidance on how the uncertainty may be quantified. In addition to providing guidance to industry, this work was undertaken to provide a proof of principle and a tool to independently audit submittals. Appendix K, Section II, "Required Documentation," remains generally applicable, with only minor revisions made to be consistent with the amended rule.

A new paragraph (ii) has been added to § 50.46(a)(1) to allow the features of Section I of Appendix K to be used in evaluation models as an alternative to performing the uncertainty evaluation specified in the amended § 50.46(a)(1)(i). This method would remain acceptable because Appendix K is conservative with respect to the realistic method proposed in the amended § 50.46(a)(1)(i). This would allow both current and future applicants and licensees to use existing evaluation models if they did not need or desire relief from current operating restrictions.

In § 50.46, paragraphs (a) (2) and (3) have been revised to eliminate portions of those paragraphs concerned with historical implementation of the current file. These provisions have been

¹Regulatory Guide, "Best Estimate Calculations of Emergency Core Cooling Systems Performance," RG 1.157.

²"Compendium of ECCS Research for Realistic LOCA Analysis," NUREG-1230, TBP.

replaced as described in the following paragraphs.

Section 50.46(a)(2) has been revised to indicate that restrictions on reactor operation may be imposed by the Director of Nuclear Reactor Regulation, if the ECC cooling performance evaluations are not consistent with the requirements of § 50.46(a)(1) (i) and (ii). This section has been added to retain similar requirements that have been deleted from § 50.46(a)(1)(i) by this rule revision. This section does not specify the procedures to be followed by the Director. These procedures are found in Part 2 and are unchanged by this rulemaking.

The current rule contains no explicit requirements concerning reporting and reanalysis when errors in evaluation models are discovered or changes are made to evaluation models. However, current practice has required reporting of errors and changes and reanalyses with the revised evaluation models. This final rule explicitly sets forth requirements to be followed in the event of errors or changes. The definition of a significant change is currently taken from Appendix K, Section II.1.b which defines a significant change as one which changes calculated cladding temperature by more than 20 °F.

The revised § 50.46(a)(3) states specific requirements for reporting and reanalyses when errors in evaluation models are discovered or changes are made to evaluation models. It requires that all changes or errors in approved evaluation models be reported at least annually and does not require any further action by the licensee until the error is reported. Thereafter, although reanalysis is not required solely because of such minor error, any subsequent calculated evaluation of ECCS performance requires use of a model with such error, and any prior errors, corrected. The NRC needs to be apprised of even minor errors or changes in order to ensure that they agree with the applicant's or licensee's assessment of the significance of the error or change and to maintain cognizance of modifications made subsequent to NRC review of the evaluation model. Past experience has shown that many errors or changes to evaluation models are very minor and the burden of immediate reporting cannot be justified for these minor errors because they do not affect the immediate safety or operation of the plant. The NRC therefore requires periodic reporting to satisfy NRC's need to be apprised of changes or errors without imposing an unnecessary burden on the applicant or licensee. This

report is to be filed within one year of discovery of the error and must be reported each year thereafter until a revised evaluation model or a revised evaluation correcting minor errors is approved by the NRC staff.

Significant errors require more timely attention since they may be important to the safe operation of the plant and raise questions as to the adequacy of the overall evaluation model. This final rule defines a significant error or change as one which results in a calculated peak fuel cladding temperature different by more than 50 °F, or an accumulation of errors and changes such that the sum of the absolute magnitude of the temperature changes is greater than 50 °F. More timely reporting (30 days) is required for significant errors or changes. This definition of a significant change is based on NRC's judgment concerning the importance of errors and changes typically reported to the NRC in the past. This final rule revision also allows the NRC to determine the schedule for reanalysis based on the importance to safety relative to other applicant or licensee requirements. Errors or changes that result in the calculated plant performance exceeding any of the criteria of § 50.46(b) mean that the plant is not operating within the requirements of the regulations and require immediate reporting as required by § 50.55(e), § 50.72 and § 50.73 and immediate steps to bring the plant into compliance with § 50.46.

Appendix K ECCS Evaluation Models

Amendments have been made to Appendix K, Section I.C.5.b, to modify the post-CHF heat transfer correlations listed as acceptable. The "McDonough" reference has been replaced with a more recent paper by the same authors entitled "An Experimental Study of Partial Film Boiling Region With Water at Elevated Pressures in a Round Vertical Tube" which is more generally available and which includes additional data.

The heat transfer correlation of Dougall and Rohsenow, listed as an acceptable heat transfer correlation in Appendix K, paragraph I.C.5.b, has been removed, because research performed since Appendix K was written has shown that this correlation overpredicts heat transfer coefficients under certain conditions and therefore can produce nonconservative results. A number of applicants and licensees currently use the Dougall-Rohsenow correlation in approved evaluation models. The NRC has concluded that the continued use of this correlation can be allowed. This is appropriate (even though parts of the approved evaluation model, Dougall-

Rohsenow, are known to be nonconservative) because the existing evaluation models are known to contain a large degree of overall conservatism even while using the Dougall-Rohsenow correlation. This large overall conservatism has been demonstrated through comparisons between evaluation model calculations and calculations using NRC's best-estimate computer codes. Thus, requiring that the applicants and licensees remove the Dougall-Rohsenow correlation from their current evaluation models cannot be justified as necessary to maintain safety. The stipulation that the Dougall-Rohsenow correlation will cease to be acceptable for previously approved evaluation models applies only when changes to the model are made which reduce the calculated peak clad temperature by 50 °F or more. However, the requirement to report any changes or culmination of changes, such that the sum of the absolute magnitudes of the respective temperature changes is greater than 50 °F, still applies.

A new Section I.C.5.c has been added to Appendix K to state the Commission's requirements regarding continued use of the Dougall-Rohsenow correlation in existing evaluation models. Evaluation models which make use of the Dougall-Rohsenow correlation and have been approved prior to the effective date of this rule may continue to use this correlation as long as no changes are made to the evaluation model which significantly reduce the current overall conservatism of the evaluation model. If the applicant or licensee submits proposed changes to an approved evaluation model, or submits corrections to errors in the evaluation model which significantly reduce the existing overall conservatism of the model, continued use of the Dougall-Rohsenow correlation under conditions where nonconservative heat transfer coefficients result would no longer be acceptable. For this purpose, significant reduction in overall conservatism has been defined as a "net" reduction in calculated peak clad temperature of at least 50 °F from that which would have been calculated using existing evaluation models. A reduction in calculated peak clad temperature could potentially result in an increase in the actual allowed peak power in the plant. An increase in allowed plant peak power with a known nonconservatism in the analysis would be unacceptable. This definition of a significant reduction in overall conservatism is based on a judgment regarding the size of the existing overall conservatism in evaluation model calculations relative to

the conservatism required to account for overall uncertainties in the calculations.

Appendix K, Section II.1.b, has been removed since this requirement has been clarified in the amended § 50.46(a)(3). Likewise, Appendix K, Section II.5, has been amended to account for the fact that not all evaluation models will be required to use the features of Appendix K, Section I. These minor changes to Appendix K do not affect any existing approved evaluation models since the changes are either "housekeeping" in nature or are changes to "acceptable features," not "required features."

Availability of Documents

1. Copies of NUREGs 1230 and 1285 may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013-7082. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is also available for public inspection and/or copying at the NRC Public Document Room, 2120 L Street NW., Washington, DC 20555.

2. Copies of SECY-83-472, an information report entitled "Emergency Core Cooling Systems Analysis Methods," dated November 17, 1983, is available for inspection and copying at the NRC Public Documents Room, 2120 L Street NW., Washington, DC 20555. Single copies of this report may be obtained by writing L. M. Shotkin, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

3. Regulatory Guide, "Best Estimate Calculations of Emergency Core Cooling Systems Performance," Task RS 701-4, may be obtained by writing to the Division of Information Support Services, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

4. The Paraphrased Summary of Public Comments on the ECCS Rule is available for public inspection at the NRC Public Documents Room, 2120 L Street NW., Washington, DC 20555.

Finding of No Significant Environmental Impact: Availability

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required. The primary effect of the rule is to allow an increase in the peak local power in the reactor. This could be used

either to tailor the power shape within the reactor or to increase the total power. Changing the power shape without changing the total power has a negligible effect on the environmental impact. The total power could also be increased, but is expected to be increased by no more than about 5% due to hardware limitations in existing plants. This 5% power increase is not expected to cause difficulty in meeting the existing environmental limits. The only change in non-radiological waste will be an increase in waste heat rejection commensurate with any increase in power. For stations operating with an open (once through) cooling system, this additional heat will be directed to a surface water body. Discharge of this heat is regulated under the Clean Water Act administered by the U.S. Environmental Protection Agency (EPA) or designated state agencies. It is not intended that NRC approval of increased power level affects in any way the responsibility of the licensee to comply with the requirements of the Clean Water Act. The environmental assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 2120 L Street NW., Washington, DC. Single copies of the environmental assessment and the finding of no significant impact are available from L. M. Shotkin, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington DC 20555, telephone (301) 492-3530.

Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*). These reporting requirements were approved by the Office of Management and Budget (Approval Number 3150-0011).

Regulatory Analysis

The Commission has prepared a regulatory analysis for this final regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The regulatory analysis is available for inspection and copying for a fee at the NRC Public Document Room, 2120 L Street NW., Washington, DC. Single copies of the analysis may be obtained from L. M. Shotkin, Office of Nuclear Regulatory Research, Washington, DC 20555, telephone (301) 492-3530.

Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b),

the Commission certifies that this rule will not have a significant economic impact upon a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration in 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the Act.

Backfit Analysis

A backfit analysis is not required by 10 CFR 50.109 because the rule does not require applicants or licensees to make a change but only offers additional options and provides a clarification and relaxation of existing reporting requirements. Nonetheless, the factors in 10 CFR 50.109(c) have been analyzed for the entire rule.

1. Statement of the specific objectives that the backfit is designed to achieve.

The objective of the rule is to modify 10 CFR 50.46 and Appendix K to permit the use of realistic ECCS evaluation models. More realistic estimates of ECCS performance, based on the improved knowledge gained from recent research on ECCS performance, may remove unnecessary operating restrictions. Also experience with the previous version of § 50.46 has demonstrated that a clearer definition of reporting requirements for changes and errors is very desirable.

2. General description of the activity that would be required by the licensee or applicant in order to complete the backfit.

The amendment allows alternative methods to be used to demonstrate that the ECCS would protect the nuclear reactor core during a postulated design basis loss-of-coolant accident (LOCA). While continuing to allow the use of current Appendix K methods and requirements, the rule also allows the use of more recent information and knowledge currently available to demonstrate that the ECCS would perform its safety function during a LOCA. If an applicant or licensee elects to use a new realistic model they will be required to provide sufficient supporting justification to validate the model and include comparisons to experimental data and estimates of uncertainty. In accounting for the uncertainty, the analysis would have to show, with a high level of probability, that the ECCS performance criteria are not exceeded.

Whether or not a licensee or applicant chooses to use realistic analysis, complete with an uncertainty analysis, each licensee must comply with the requirement to report changes to their evaluation models (i.e., less than 50°F change in calculated peak cladding temperature) annually to the NRC. In addition, significant changes (those which have a greater than 50°F change in calculated peak cladding temperature) have to be reported within 30 days.

3. Potential change in risk to the public from the accidental offsite release of radioactive materials.

The rule could result in increased local power within the reactor core and possible increases in total power. Power increases on the order of 5 will have an insignificant effect on risk. One effect of increased power could be to increase the fission product inventory. A five percent power increase would result in a less than five percent increase in fission products. Thus, less than five percent more fission products might be released during core melt scenarios and potentially released to the environment during severe accidents.

The rule still requires the fuel rod peak cladding temperature (PCT) remain below 2200°F. Reactors choosing to increase power by about five percent will be operating with less margin between the PCT and the 2200°F limit than previously. The increased risk represented by this decrease in margin and increase in fission product inventory is negligible and falls within the uncertainties of PRA risk estimates. In addition, other safety limits, such as departure from nucleate boiling (DNB), and operational limits, such as turbine design, will limit the amount of margin reduction permitted under the rule. The rule could also potentially reduce the risk from pressurized thermal shock by allowing the reactor to be operated in a manner which reduces the neutron fluence to the vessel.

4. Potential impact on radiological exposure to facility employees.

Since the primary effect of the rule involves the calculational methods to be used in determining the ECCS cooling performance, it is expected that there will be an insignificant impact on the radiological exposure to facility employees. Because of the reduced LOCA restrictions resulting from the new calculations it is possible for the plant to achieve more efficient operation and improved fuel utilization with improved maneuvering capabilities. As a result, it is conceivable that there could be a reduction in radiological exposure if the fuel reloads can be

reduced. This effect is not expected to be very significant.

5. Installation and continuing costs associated with the backfit, including the cost of facility down times or the cost of construction delay.

LOCA considerations resulting from the present rule are restricting the optimum production of nuclear electric power in some plants. These restrictions can be placed into the following three categories:

- (1) Maximum plant operating power,
- (2) Operational flexibility and operational efficiency of the plant, and
- (3) Availability of manpower to work on other activities.

The effect of the rule will vary from plant to plant. Some plants may realize savings of several million dollars per year in fuel and operating costs. Significantly greater economic benefit would be realized by plants able to increase total power as a result of this final rule. The regulatory analysis cited above indicates that the total present value of the energy replacement cost savings for a five percent power upgrade would vary between 18 and 127 million dollars depending on the plant. Additional information concerning these potential cost savings are included in the regulatory analysis.

The costs associated with the new reporting requirements are deemed to be minimal. Although the existing Appendix K has no official reporting requirements, paragraph II.1.b was interpreted by the staff to require a reanalysis and report to NRC when significant changes are made which change the peak cladding temperature by more than 20 °F. Therefore, this rule change, by changing the definition of significant changes to 50 °F, is actually a relaxation of current practices. The annual reporting of changes that are not significant is not viewed by the NRC as a major burden since no other action is required.

6. The potential safety impact of changes in plant or operational complexity including the effect on other proposed and existing regulatory requirements.

There are safety benefits derivable from alternative fuel management schemes that could be utilized. The higher power peaking factors that would be allowed with the final rule provide greater flexibility for fuel designers when attempting to reduce neutron flux at the vessel wall. This can result in a corresponding reduction in risk from pressurized thermal shock.

The reduced cladding temperatures that would be calculated under the revised rule offers the possibility of other design and operational changes

that could result from the lower calculated temperatures. ECCS equipment numbers, sizes or surveillance requirements might be reduced and still meet the ECCS design criteria (if not required to meet other licensing requirements). Another option may be to increase the diesel/generator start time duration.

In summary, the effect of this rule on safety would have both potential positive and negative aspects. The potential for reduction of ECCS system capability in existing or new plants is present. However, several positive aspects may also be realized under the final rule. The net effect on safety would be plant specific. However, the probability of a large break LOCA is so low that the choice of best estimate versus Appendix K would have little effect on public risk.

7. The estimated resource burden on the NRC associated with the proposed backfit; and the availability of such resources.

The major staff resources required under the final rule are to review the realistic models and uncertainty analysis required by the revised ECCS Rule. Based on previous experience with the General Electric Company's SAFER model and the learning that has resulted from these efforts, it is estimated that approximately one staff year would be required to review each generic model submitted. There are four major reactor vendors (GE already has a revised evaluation model approved under the existing Appendix K for both jet pump and non-jet pump plants and may update their methodology under this new rule) and several fuel suppliers and utilities which perform their own analyses and potentially might submit generic models for review. However, it is expected that only 3 or 4 generic models would be submitted since not all plants would benefit from this rule. Thus, about 3-4 staff years would be required to review the expected generic models. Once a generic model is approved, the plant specific review is very short. In addition, several vendors are currently planning to submit realistic models in conjunction with the use of SECY-83-472. Therefore, staff resources would be expended to review these models in any event. Since these models would not change as a result of the revised ECCS rule, there should be no net increase in resources required over that already planned to be expended. In summary, while it is difficult to estimate accurately, it is expected that the rule change will have a small overall impact on NRC resources.

8. The potential impact of differences in facility type, design or age on the relevancy and practicality of the backfit.

The degree to which the rule would affect a particular plant depends on how limited the plant is by the LOCA restrictions. General Electric Company (GE) plants do tend to be limited in operation by LOCA restrictions and would benefit from relief from LOCA restrictions. However, this relief is already available for most GE plants through the recently approved SAFER evaluation model. Any additional relief due to a rule change would be of little further benefit. Westinghouse (W) plants would appear to directly benefit from relaxation of LOCA limits. W plants represent the largest number of plants, with 47 plants operating and 10 additional plants being constructed. W indicates that most of these plants are limited by LOCA considerations. The potential benefit for plants of B&W and CE design is uncertain at this time.

9. Whether the proposed backfit is interim or final and if interim, the justification for imposing the proposed backfit on an interim basis.

The rule, when made effective, will be in final form and not interim form. It will continue to permit the performance of ECCS cooling calculations using either realistic models or models in accord with Appendix K.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and Recordkeeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the NRC is adopting the following amendments to 10 CFR Part 50.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 102, 103, 104, 105, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 938, 948, 953, 954, 955, 956, as amended, sec. 234, 63 Stat. 1244, as amended (42 U.S.C. 2132, 2133, 2134, 2135, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, as amended, 202, 206, 68 Stat. 1242, as amended, 1244, 1246, (42 U.S.C. 5841, 5842, 5846).

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 50.10 also issued under secs. 101, 185,

68 Stat. 936, 955, as amended (42 U.S.C. 2131, 2235); sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.23, 50.35, 50.55, 50.56 also issued under sec. 185, 68 Stat. 955 (42 U.S.C. 2235). Sections 50.33a, 50.55a, and Appendix Q also issued under sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Sections 50.34 and 50.54 also issued under sec. 204, 88 Stat. 1245 (42 U.S.C. 5844). Sections 50.58, 50.91, and 50.92 also issued under Pub. L. 97-415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80-50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 50.103 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138). Appendix F also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10 (a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10 (b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.9, 50.55(e), 50.59(b), 50.70, 50.71, 50.72, 50.73, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 50.46, paragraph (a) is revised to read as follows:

§ 50.46 Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors.

(a)(1)(i) Each boiling and pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical Zircaloy cladding must be provided with an emergency core cooling system (ECCS) that must be designed such that its calculated cooling performance following postulated loss-of-coolant accidents conforms to the criteria set forth in paragraph (b) of this section. ECCS cooling performance must be calculated in accordance with an acceptable evaluation model and must be calculated for a number of postulated loss-of-coolant accidents of different sizes, locations, and other properties sufficient to provide assurance that the most severe postulated loss-of-coolant accidents are calculated. Except as provided in paragraph (a)(1)(ii) of this section, the evaluation model must include sufficient supporting justification to show that the analytical technique realistically describes the behavior of the reactor system during a loss-of-coolant accident. Comparisons to applicable experimental data must be made and uncertainties in the analysis method and inputs must be identified and assessed so that the uncertainty in the calculated results can be estimated. This uncertainty must be accounted for, so that, when the calculated ECCS cooling performance is compared to the criteria set forth in paragraph (b) of this section, there is a high level of probability that the criteria would not

be exceeded. Appendix K, Part II, Required Documentation, sets forth the documentation requirements for each evaluation model.

(ii) Alternatively, an ECCS evaluation model may be developed in conformance with the required and acceptable features of Appendix K ECCS Evaluation Models.

(2) The Director of Nuclear Reactor Regulations may impose restrictions on reactor operation if it is found that the evaluations of ECCS cooling performance submitted are not consistent with paragraphs (a)(1) (i) and (ii) of this section.

(3)(i) Each applicant for or holder of an operating license or construction permit 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 different 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.

(ii) 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 as specified in § 50.4. 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 reanalysis or taking other action as may be needed to show compliance with § 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 paragraph (b) of this section is a reportable event as described in §§ 50.55(e), 50.72 and 50.73. The affected applicant or licensee shall propose immediate steps to demonstrate compliance or bring plant design or

operation into compliance with § 50.46 requirements.

3. In 10 CFR Part 50, Appendix K, paragraph II.1.b is deleted, paragraph II.1.c is redesignated II.1.b, the introductory text to paragraph I.C.5.b and paragraphs II.1.b and II.5 are revised, and a new section I.C.5.c is added to read as follows:

APPENDIX K—ECCS EVALUATION MODELS

I. Required and Acceptable Features of the Evaluation Models * * *

C. Blowdown Phenomena * * *

5. Post-CHF Heat Transfer Correlations.

b. The Groeneveld flow film boiling correlation (equation 5.7 of D.C. Groeneveld, "An Investigation of Heat Transfer in the Liquid Deficient Regime," AECL-3281, revised December 1969) and the Westinghouse correlation of steady-state transition boiling ("Proprietary Redirect/Rebuttal Testimony of Westinghouse Electric Corporation," USNRC Docket RM-50-1, page 25-1, October 26, 1972) are acceptable for use in the post-CHF boiling regimes. In addition, the transition boiling correlation of McDonough, Milich, and King (J.B. McDonough, W. Milich, E.C. King, "An Experimental Study of Partial Film Boiling Region with Water at Elevated Pressures in a Round Vertical Tube," Chemical Engineering Progress Symposium Series, Vol. 57, No. 32, pages 197-208, (1961) is suitable for use between nucleate and film boiling. Use of all these correlations is restricted as follows:

c. Evaluation models approved after October 17, 1988, which make use of the Dougall-Rohsenow flow film boiling correlation (R.S. Dougall and W.M. Rohsenow, "Film Boiling on the Inside of Vertical Tubes with Upward Flow of Fluid at Low Qualities," MIT Report Number 9079 26, Cambridge, Massachusetts, September 1963) may not use this correlation under conditions where nonconservative predictions of heat transfer result. Evaluation models that make use of the Dougall-Rohsenow correlation and were approved prior to October 17, 1988, continue to be acceptable until a change is made to, or an error is corrected in, the evaluation model that results in a significant reduction in the overall conservatism in the evaluation model. At that time continued use of the Dougall-Rohsenow correlation under conditions where nonconservative predictions of heat transfer result will no longer be acceptable. For this purpose, a significant reduction in the overall conservatism in the evaluation model would be a reduction in the calculated peak fuel cladding temperature of at least 50 °F from that which would have been calculated on October 17, 1988, due either to individual changes or error corrections or the net effect of an accumulation of changes or error corrections.

II. Required Documentation

1.a. * * *

b. A complete listing of each computer program, in the same form as used in the evaluation model, must be furnished to the Nuclear Regulatory Commission upon request.

5. General Standards for Acceptability—Elements of evaluation models reviewed will include technical adequacy of the calculational methods, including: For models covered by § 50.46(a)(1)(ii), compliance with required features of section I of this Appendix K; and, for models covered by § 50.46(a)(1)(i), assurance of a high level of probability that the performance criteria of § 50.46(b) would not be exceeded.

Dated at Rockville, MD, this 13 day of September 1988.

For the Nuclear Regulatory Commission,
Samuel J. Chilk,
Secretary of the Commission.

[FR Doc. 88-21179 Filed 9-15-88; 8:45 am]

BILLING CODE 7590-01-M

SMALL BUSINESS ADMINISTRATION

13 CFR Part 101

[Rev. 2; Amdt. 48]

Administration; Conduct of Program Activities in Field Offices

AGENCY: Small Business Administration.

ACTION: Final Rule.

SUMMARY: On August 23, 1988, the President approved Pub. L. 100-418 (102 Stat. 1107), the Omnibus Trade and Competitiveness Act of 1988, which increases the loan limit for small business concerns (other than small concerns engaged in, or adversely affected by, international trade) from \$500,000 to \$750,000. This rule implements that enactment (with the stated exception) by amending the relevant delegations of authority to conduct program activities in field offices (§ 101.3-2).

EFFECTIVE DATE: This rule is effective September 16, 1988.

FOR FURTHER INFORMATION CONTACT: Martin D. Teckler, Deputy General Counsel, Small Business Administration, 1441 L Street, NW, Washington, DC 20416. Tel. (202) 653-6642.

SUPPLEMENTARY INFORMATION: Part 101 consists of rules relating to the Agency's organization and procedures; therefore, notice of proposed rulemaking, public participation, analysis under Executive Orders 12291 and 12612 and a regulatory flexibility review, 5 U.S.C. 601, *et seq.*, are not required and this amendment is adopted without resort to those procedures.

List of Subjects in 13 CFR Part 101

Authority delegations (Government agencies, Administrative practice and procedure, Organization and functions (Government agencies)).

PART 101—[AMENDED]

Accordingly, Part 101 of Title 13, Chapter I of the Code of Federal Regulations, is hereby amended as follows:

1. The authority citation for Part 101 continues to read as follows:

Authority: Secs. 4 and 5, Pub. L. 85-536, 72 Stat. 384 and 385 (15 U.S.C. 633 and 634 as amended); sec. 308, Pub. L. 85-699, 72 Stat. 694 (15 U.S.C. 687, as amended); sec. 5(b)(11), Pub. L. 93-386 (Aug. 23, 1974); and 5 U.S.C. 552.

§ 101.3-2 [Amended]

2. In § 101.3-2, Part I, Section A, item 1.b. is revised as follows:

Section A—Loan Approval Authority

1. * * *

b. *Guaranty loans.* 7(a) business loans (except section 7(a)(13) loans):

	Approve	Decline
(1) Regional Administrator	\$750,000	\$750,000
(2) Deputy Regional Administrator	750,000	750,000
(3) Assistant Regional Administrator/F&I	750,000	750,000
(4) District Director	750,000	750,000
(5) Deputy District Director	750,000	750,000
(6) Assistant District Director/F&I	750,000	750,000
(7) Chief, Financing Division, D/O	750,000	750,000
(8) Financial/Management Assistance Officer, Minneapolis, MN, D/O	500,000	750,000
(9) Supervisory Loan Specialist, Financing, D/O	250,000	750,000
(10) Senior Loan Specialist, Financing, D/O, Region IV only	250,000	750,000
(11) Branch Manager, Corpus Christi, Milwaukee, Springfield, IL, Springfield, MO, and Sacramento	500,000	750,000
(12) Branch Manager, Buffalo and Elmira	350,000	750,000
(13) Branch Manager, except Fairbanks, Buffalo, Corpus Christi, Elmira, Milwaukee, Springfield, IL, and Springfield, MO	250,000	750,000
(14) Branch Manager, Fairbanks D/O	150,000	150,000
(15) Assistant Branch Manager/F&I, Milwaukee, Springfield, IL, and Sacramento B.O.'s	350,000	750,000
(16) Assistant Branch Manager for F&I, Gulfport, B/O	250,000	750,000
(17) Assistant Branch Manager/F&I, Corpus Christi B.O. only	500,000	750,000

3. In § 101.3-2, Part I, Section C, items 2.a, b., and c. are revised as follows:

Section C—Section 7(a)(13) Loans Approval Authority

2. * * *

- a. Unlimited project cost:
- (1) Regional Administration.....\$750,000
- b. Overall project cost not exceeding \$1,500,000:
- (2) Deputy RA (Region VII)..... 750,000
 - (3) ARA/F&I..... 750,000
 - (4) District Director..... 750,000
 - (5) Deputy District Director..... 750,000
 - (6) ADA/F&I..... 750,000
 - (7) Branch Manager..... 500,000
 - (8) Assistant Branch Manager/F&I, Corpus Christi B.O. only..... 500,000
- c. Overall project cost not exceeding \$750,000:
- (9) Chief, Financing D/O..... 750,000
 - (10) Financial/Management Assistant Officer, Minneapolis, MN D/O..... 500,000
 - (11) Assistant Branch Manager/F&I, Sacramento B.O..... 500,000

4. In § 101.3-2, Part III, Section A, items 1.a., b., and c. are revised to read as follows:

Section A—Section 503 Denture Guaranty Approval Authority (Small Business Investment Act)

1. * * *

- a. Unlimited project cost:
- (1) Regional Administrator.....\$750,000
- b. Overall project cost not exceeding \$1,500,000:
- (1) Deputy RA (Region VII)..... 750,000
 - (2) ARA/F&I..... 750,000
 - (3) District Director..... 750,000
 - (4) Deputy District Director..... 750,000
 - (5) ADA/F&I..... 750,000
 - (6) Branch Managers..... 500,000
- c. Overall project cost not exceeding \$1,000,000:
- (1) Chief, Financing D/O..... 750,000
 - (2) Assistant Branch Managers/F&I..... 500,000

Dated: September 1, 1988.

James Abdnor,
Administrator.

[FR Doc. 88-20885 Filed 9-15-88; 8:45 am]

BILLING CODE 8025-01-M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 88-CE-12-AD; Amdt. 39-6017]

Airworthiness Directives; Beech Models F33A, A36, and B36TC Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new Airworthiness Directive (AD),

applicable to certain Beech Models F33A, A36, and B36TC airplanes, which requires removal of the Mortell 931 sound deadener on the aft side of the firewall. The FAA has determined that this sound deadener material may ignite in the event of a fire in the engine compartment. This action will reduce the possibility of injury to the pilot and possible loss of control of the airplane.

EFFECTIVE DATE: October 19, 1988.

Compliance: Required within the next 100 hours time-in-service after the effective date of this AD, unless already accomplished.

ADDRESSES: Beech Service Bulletin Number 2249, dated April 1988, applicable to this AD may be obtained from Beech Aircraft Corporation, Commercial Service, Dept. 52, P.O. Box 85, Wichita, Kansas 67201-0085. This information may also be examined at the Rules Docket, FAA, Office of the Regional Counsel, Room 1558, 601 East 12th Street, Kansas City, Missouri 64106.

FOR FURTHER INFORMATION CONTACT: Larry Engler, Federal Aviation Administration, Wichita Aircraft Certification Office, ACE-12OW, 1801 Airport Road, Room 100, Mid-Continent Airport, Wichita, Kansas 67209, Telephone (316) 946-4409.

SUPPLEMENTARY INFORMATION: A proposal to amend Part 39 of the Federal Aviation Regulations to include an AD requiring removal of the Mortell 931 sound deadener on the aft side of the firewall on certain Beech Models F33A, A36, and B36TC airplanes was published in the *Federal Register* on May 31, 1988 (53 FR 19799). Recent flammability tests of a firewall with Mortell 931 material applied to the cabin side revealed that this material ignites when the engine side of the firewall is subjected to a 2000°F flame, the intensity required to substantiate the adequacy of firewall materials to contain an engine compartment fire. In the event an engine compartment fire ignited the Mortell 931 Material, the resulting fire inside the cabin could cause injury to the pilot and a potential loss of airplane control. To prevent such an occurrence, Beech has developed Service Bulletin Number 2249, dated April 1988, that defines procedures to remove the Mortell 931 sound deadener from the aft (cabin) side of the firewall. Since the condition described is likely to exist or develop in other Beech Models of the same design, the FAA proposed an AD which would require certain Beech Models F33A, A36, and B36TC airplanes to comply with Beech Service Bulletin Number 2249.

Interested persons have been afforded an opportunity to comment on the

proposal. No comments or objections were received on the proposal or the FAA determination of the related cost to the public. Accordingly, the proposal is adopted without change except for minor editorial clarifications.

The FAA has determined that this regulation only involves 94 airplanes at an approximate one-time cost of \$1,350 for each airplane, or a total one-time fleet cost of \$127,000. This cost will be absorbed by Beech Aircraft Corporation under warranty provisions specified in Beech Service Bulletin Number 2249, dated April 1988. Few, if any, small entities are expected to own a sufficient number of airplanes that the cost to them will exceed the threshold for Regulatory Flexibility action.

The regulations set forth in this amendment are promulgated pursuant to authority in the Federal Aviation Act of 1958, as amended (49 U.S.C. 1301, et seq.), which statute is construed to preempt State law regulating the same subject. Thus, in accordance with Executive Order 12612, it is determined that such regulation does not have federalism implications warranting the preparation of a Federalism Assessment.

Therefore, I certify that this action: (1) Is not a "major rule" under Executive Order 12291; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A copy of the final evaluation prepared for this action is contained in the regulatory docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption "ADDRESSES".

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends Section 39.13 of Part 39 of the FAR as follows:

1. The authority citation for Part 39 continues to read as follows:

Authority: 49 U.S.C. 1354(a), 1421 and 1423; 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983); and 14 CFR 11.89.

2. By adding the following new AD:

Beech: Applies to the following airplanes certificated in any category: