OMB Control No. 3150-0011

UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
WASHINGTON, DC 20555-0001

June 24, 1999

NRC GENERIC LETTER 83-11, SUPPLEMENT 1: LICENSEE QUALIFICATION FOR PERFORMING SAFETY ANALYSES

Addressees

All holders of operating licenses for nuclear power plants, including those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

Purpose

The U.S. Nuclear Regulatory Commission (NRC) is issuing this supplement to Generic Letter (GL) 83-11 to notify licensees and applicants of modifications to the Office of Nuclear Reactor Regulation (NRR) practice regarding licensee qualification for performing their own safety analyses. This includes the analytical areas of reload physics design, core thermal-hydraulic analysis, fuel mechanical analysis, transient analysis (non-LOCA), dose analysis, setpoint analysis, containment response analysis, criticality analysis, statistical analysis, and Core Operating Limit Report (COLR) parameter generation. It is expected that recipients will review the information for applicability to their facilities. However, suggestions contained in this supplement to the generic letter are not NRC requirements; therefore, no specific action or written response is required.

Background

Over the past decade, substantially more licensees have been electing to perform their own safety analyses to support such tasks as reload applications and technical specification amendments, rather than to contract the work out to their nuclear steam supply system (NSSS) vendor, fuel vendor, or some other organization. The NRC encourages utilities to perform their own safety analyses, since doing this significantly improves licensee understanding of plant behavior. GL 83-11 presented guidance on the information that NRC needs in order to qualify licensees to perform their own safety analyses using approved computer codes.

Description of Circumstances

NRC's experience with safety analyses using large, complex computer codes has shown that errors or discrepancies discovered in safety analyses are more likely to be traced to the user rather than to the code itself. This realization has led the NRC to place additional emphasis on

assuring the capabilities of the code users as well as on assuring the codes themselves. In the past, NRC obtained this assurance by reviewing the code verification information submitted by the licensee. The reviews focused primarily on the licensee's quality assurance practices and the technical competence of the licensee with respect to their ability to set up an input deck, execute a code, and properly interpret the results. The information which was reviewed generally included comparisons (performed by the user of the code results) with experimental data, plant operational data, or other benchmarked analyses, as well as compliance with any restrictions or limitations stated in the generic NRC Safety Evaluation Report (SER) that approved the code.

Since GL 83-11 was issued, many licensees have submitted information in the form of topical reports demonstrating their ability to perform their own safety analyses, such as reload analyses using NRC-approved methods and codes. Preparation and review of a qualification topical report is resource intensive on the part of the staff and the licensee, and because the review is usually assigned a low priority, it is difficult to schedule the review for timely completion.

Discussion

To help shorten the lengthy review and approval process, the NRC has adopted a generic set of guidelines which, if met, would eliminate the need to submit detailed topical reports for NRC review before a licensee could use approved codes and methods. These guidelines are presented in the Attachment to this Generic Letter. Using this approach, which is consistent with the regulatory basis provided by Criteria II and III of Appendix B to Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR Part 50), the licensee would institute a program (such as training, procedures, and benchmarking) that follows the guidelines, and would notify NRC by letter that it has done this and that the documentation is available for NRC audit.

Summary

The revised guidance on licensee qualification for using safety analysis codes is intended for licensees who wish to perform their own licensing analyses using methods that have been reviewed and approved by the NRC, or that have otherwise been accepted as part of a plant's licensing basis.

Backfit Discussion

This supplement does not involve a backfit as defined in 10 CFR 50.109(a)(1), since it does nothing more than offer guidance as to an acceptable means by which a licensee may verify to the NRC its qualifications to use approved codes and methods for performing safety analyses. Therefore, the staff has not prepared a backfit analysis.

Federal Register Notification

A notice of opportunity for public comment was published in the *Federal Register* (60 FR 54712) on October 25, 1995. Comments were received from 13 licensees, 3 fuel vendors, and 3 industry interest groups. Copies of the comment letters received and the staff's evaluation of these comments are available in the NRC Public Document Room. Because of concurrent issues that arose at the Maine Yankee nuclear power reactor facility regarding the improper application of approved methods, the NRC decided to withdraw the issuance of the supplement to GL 83-11 pending a complete review of these issues. Subsequent review of the lessons learned from Maine Yankee indicated that the issues involved were adequately addressed in the GL 83-11 supplement as published for public comment. Therefore, the NRC decided to proceed with the issuance of the supplement.

In addition to the proposed supplement to GL 83-11, the staff also requested comments on modified procedures for reducing the resource effort for acceptance of new or revised licensee or vendor analysis methods. These comments will be addressed in a future staff action.

Paperwork Reduction Act Statement

This generic letter contains a voluntary collection that is subject to the Paperwork Reduction Act of 1995 (22 U.S.C. 3501 et seq.). This information collection was approved by the Office of Management and Budget, approval number 3150-0011, through September 30, 2000.

The public reporting burden for this collection of information is estimated to average 100 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The NRC is seeking public comment on the potential impact of the collection of information contained in the generic letter and on the following issues:

(1) Is the proposed collection of information necessary for the proper performance of the functions of the NRC, including consideration of whether the information will have practical utility?

(2) Is the estimate of burden accurate?

(3) Is there a way to enhance the quality, utility, and clarity of the information to be collected?

(4) How can the burden of the collection of information be minimized, including consideration of the use of automated collection techniques?

Send comments on any aspect of this collection of information, including suggestions for reducing this burden, to the Information and Records Management Branch, T-6 F33, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555-0001, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0011), Office of Management and Budget, Washington, D.C. 20503.

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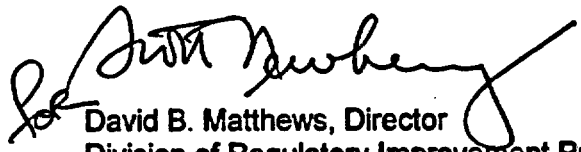

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Attachments:
1. Guidelines for Qualifying Licensees to Use Generically Approved Analysis Methods
2. List of Recently Issued NRC Generic Letters

GUIDELINES FOR QUALIFYING LICENSEES TO USE GENERICALLY APPROVED ANALYSIS METHODS

1.0 INTRODUCTION

This attachment presents a simplified approach for qualifying licensees to use NRC-approved analysis methods. Typically, these methods are developed by fuel vendors, utilities, national laboratories, or organizations such as the Electric Power Research Institute, Incorporated, (EPRI). To use these approved methods, the licensee would institute a program (e.g., training, procedures) that follows the guidelines below and notify the NRC that it has done so.

The words "code" and "method" are used interchangeably within this document, i.e., a computer program. In many cases, however, an approved method may refer not only to a set of codes, an algorithm within a code, a means of analysis, a measurement technique, a statistical technique, etc., but also to selected input parameters which were specified in the methodology to ensure conservative results. In some cases, due to limitations or lack of appropriate data in the model, the code or method may be limited to certain applications. In these cases, the NRC safety evaluation report (SER) specifies the applicability of the methodology.

2.0 GUIDELINES

A commitment on the part of a licensee to implement the guidelines delineated in this document is sufficient information for the NRC to accept the licensee's qualification to use an approved code or method to perform safety-related evaluations such as reload physics design, core thermal-hydraulic analysis, fuel mechanical analysis, non-LOCA transient analysis, dose analysis, setpoint analysis, containment response analysis, criticality analysis, statistical analysis, and Core Operating Limit Report (COLR) parameter generation. To document its qualification in this manner, the licensee should send the NRC a notification of its having followed the guidelines at least 3 months before the date of its intended first licensing application.

2.1 Eligibility

The only codes and methods that are addressed by this process are those that NRC has reviewed and approved generically, or those that have been otherwise accepted as part of a plant's licensing basis. The use of a new methodology or a change to an existing methodology is not applicable to this process.

2.2 Application Procedures

In-house application procedures, which ensure that the use of approved methods is consistent with the code qualification and, in most instances, with the approved application of the methodology, should be established and implemented. Because of the bounding nature of

restrictions, including any defined in the licensing topical report, correspondence with the NRC, and the SER. The applicability of a particular method to either a specific fuel design or to a core which contains a mixture of fuel types is important. For example, the use of one vendor's hot channel analysis code with a different vendor's transient codes may not necessarily yield conservative results and, in fact, may not be consistent with the NRC-approved reload analysis package. Therefore, in-house application procedures should have the proper controls to preclude such a misapplication but should also include the flexibility to allow comparison tests between the different methodologies to show that a conservative assessment can be made.

2.3 Training and Qualification of Licensee Personnel

A training program should be established and implemented to ensure that each qualified user of an approved methodology has a good working knowledge of the codes and methods, and will be able to set up the input, to understand and interpret the output results, to understand the applications and limitations of the code, and to perform analyses in compliance with the application procedure. Training should be provided by either the developer of the code or method, or someone who has been previously qualified in the use of the code or method.

2.4 Comparison Calculations

Licensees should verify their ability to use the methods by comparing their calculated results to an appropriate set of benchmark data, such as physics startup tests, measured flux detector data during an operating cycle, higher order codes, published numerical benchmarks, analyses of record, etc. These comparisons should be documented in a report which is part of the licensee's quality assurance (QA) records. Significant, unexpected, or unusual deviations in the calculations of safety-related parameters should be justified in the report. All comparisons with startup test data should agree within the acceptance criteria defined in the plant startup test plan.

2.5 Quality Assurance and Change Control

All safety-related licensing calculations performed by a licensee using NRC-approved codes and methods should be conducted under the control of a QA program which complies with the requirements of Appendix B to Part 50 of Title 10 of the *Code of Federal Regulations* (10 CFR Part 50). The licensee's QA program should also include the following:

(1) a provision for evaluating vendor (or other code developer) updates and implementing those updates, if applicable, in codes, methods, and procedures; and
(2) a provision for informing vendors (or code developers) of any problems or errors discovered while using their codes, methods, or procedures.

LIST OF RECENTLY ISSUED GENERIC LETTERS

GENERIC LETTER	SUBJECT	DATE OF ISSUANCE	ISSUED TO
99-02	Laboratory Testing of Nuclear-Grade Activated Charcoal	6/3/99	All holders of operating Licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.
99-01	Recent Nuclear Material Safety and Safeguards Decision on Bundling Exempt Quantities	5/3/99	All materials licensees.
98-01, Supp. 1	Year 2000 Readiness of Computer Systems at Nuclear Power Plants	1/11/99	All holders of operating li licenses for nuclear power Plants, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.
98-05	Boiling Water Reactor Licensees Use of the BWRVIP-05 Report To Request Relief From Augmented Examination Requirements on Reactor Pressure Vessel Circumferential Shell Welds	11/10/98	All holders of operating licenses (or construction permits) for BWRs, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.
98-04	Potential for Degradation of the Emergency Core Cooling System And the Containment Spray System After a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment	07/14/98	All holders of operating licenses for nuclear power reactors, except those who have permanently ceased operations and have certified that fuel has been permanently removed from the reactor vessel.

OP = Operating License
CP = Construction Permit
NPR = Nuclear Power Reactors

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Original /s/'d by S.F. Newberry

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Attachment filed in Docket (ADDRESSEES)

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