



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

October 26, 1999

Mr. Peter S. Hastings, Licensing Manager  
Duke Cogema Stone & Webster  
P.O. Box 31847  
Charlotte, NC 28231-1847

SUBJECT: DISCUSSION OF DESIGN BASES APPLICABLE TO MIXED OXIDE FUEL  
FABRICATION FACILITY

Dear Mr. Hastings:

At the conclusion of our meeting on August 31, 1999, one of the outstanding items was the U.S. Nuclear Regulatory Commission's (NRC's) definition of "design bases," as used in 10 CFR Part 70. As you are aware, the NRC must provide prior approval for the construction of the principal structures, systems, and components (SSCs) of Duke Cogema Stone & Webster's (DCS's) mixed-oxide (MOX) fuel fabrication facility. As stated in 10 CFR 70.23(b), this approval would be given on:

...the basis of information filed pursuant to § 70.22(f) when the Commission has determined that the design bases of the principal structure, systems, and components, and the quality assurance program provide reasonable assurance of protection against natural phenomena and the consequences of potential accidents.

Per § 70.22(f), the Commission requires DCS to submit:

...a description of the plantsite, a description and safety assessment of the design bases of the principal structure, systems, and components of the plant, including provisions for protection against natural phenomena, and a description of the quality assurance program to be applied to the design fabrication, construction, testing, and operation of the structures, systems, and components of the plant.

Further, the footnote to § 70.22(f) states that the quality assurance description "... should include a discussion of how the criteria in appendix B of Part 50 ..." will be met.

Based on these requirements, the NRC is providing DCS with the following definition of "design bases" as guidance. This definition will be incorporated into a Standard Review Plan (SRP), which is currently under development for the MOX fuel fabrication facility. The NRC will use the definition provided in 10 CFR 50.2, which reads:

Design bases means that information which identifies the specific functions to be performed by a structure, system, or component of a facility, and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. These values may be (1) restraints derived from generally accepted "state of the art" practices for achieving functional goals, or (2) requirements derived from analysis (based on calculation and/or experiments) of the effects of a postulated accident for which a structure, system, or component must meet its functional goals.

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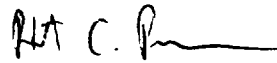
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The safety assessment of the design basis should explain why DCS selected particular functions or values and demonstrate how DCS determined that the design basis will provide reasonable assurance of protection against natural phenomena and the consequences of potential accidents. Accident consequences are defined in the performance requirements of Subpart H to the proposed 10 CFR Part 70. In addition, the safety assessment should demonstrate how the requirements for new facilities identified in the proposed 10 CFR 70.64 are satisfied by the design basis.

As a minimum for approval under 10 CFR 70.23(b), the material submitted in the application should contain the information described in § 70.22(f) in sufficient detail for the staff to review the safety assessment of the design bases. The NRC anticipates that this will require DCS to define the terms "highly unlikely," "unlikely," and "likely," establish a "controlled area," and support the safety assessment of the design bases with an appropriate hazard analysis.

If you would like to discuss this further, or have any questions, please contact the MOX Project Manager, Mr. Andrew Persinko, at (301) 415-6522.

Sincerely,

A handwritten signature in black ink, appearing to read "R. C. Pierson", with a long horizontal flourish extending to the right.

Robert C. Pierson, Chief  
Special Projects Branch  
Division of Fuel Cycle Safety  
and Safeguards, NMSS

Docket: 70-3098

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P. Hastings, DCS

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The NRC recommends that for approval under 10 CFR 70.23(b), DCS submit an application that contains the material defined in 10 CFR 70.22 and proposed § 70.65, and that DCS use the additional content of applications of proposed 10 CFR 70.65 to support the safety assessment of the design basis. DCS should commit to update the application prior to NRC verification of construction in accordance with 10 CFR 70.23(a)(8).

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