



DUKE COGEMA
STONE & WEBSTER

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555

25 June 2001
DCS-NRC-000052
Response Requested: Yes
By: 20 July 2001

Subject: Docket Number 070-03098
Duke Cogema Stone & Webster
Mixed Oxide Fuel Fabrication Facility
Criticality Validation Report – Part I

Please note that the original letter transmitting the *MFFF Criticality Validation Report - Part I* (submitted to the Document Control Desk 19 June 2001) was erroneously identified with letter number DCS-NRC-000050. This is an amendment to that letter; all records should reflect letter number DCS-NRC-000052. The remainder of the letter is identical to the original submittal.

Enclosed please find Part I of DCS' Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF) Criticality Validation Report. This report is being provided as supplemental information in support of NRC review of the MFFF Construction Authorization Request (CAR). The report documents the validation of the nuclear criticality safety codes to be used in the design of the MFFF.

10 CFR 70.61(d) requires an applicant to provide assurance "...that under normal and credible abnormal conditions, all nuclear processes are subcritical, including use of an approved margin of subcriticality for safety." To obtain assurance that the regulatory requirement is met, NUREG-1718 Section 6.4.3.3.1.C includes the NRC Staff's Regulatory Acceptance Criterion that "...the applicant has, at the facility, a documented, reviewed, and approved validation report (by NCS and management) for each methodology that will be used to make an NCS determination...."

DCS is performing validation that will (1) demonstrate the adequacy of the margin of subcriticality for safety by assuring that the margin is large compared to the uncertainty in the calculated value of k_{eff} and (2) determine the area(s) of applicability (AOA) and use of the code within the AOA, including justification for extending the AOA by using trends in the bias. Five design AOAs are established to cover the range of processes and fissile materials in the MFFF. DCS has prepared Part I of its Criticality Validation Report, which addresses the first two AOAs: (1) Pu-nitrate aqueous solutions (homogeneous systems), and (2) MOX pellets, fuel rods, and fuel assemblies (heterogeneous systems). The remaining AOAs will be addressed in a separate report scheduled for completion later in 2001.

The Standard Review Plan states that the validation report should be maintained at DCS' facility, the implication being that, should the NRC Staff wish to review it, the review would

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take place at DCS' facility (i.e., either in Charlotte, NC, or in Aiken, SC). However, DCS presumes that the Staff's review of the validation report would be facilitated by making the report available directly.

DCS considers the attached Criticality Validation Report to be a technical report that backs up conclusions in the Construction Authorization Request (CAR) submitted to the NRC on 28 February 2001. DCS does not consider it to be part of the CAR.

DCS requests NRC review and comment on this report, and will be prepared to discuss its conclusions in a meeting at your convenience. If you have any questions, please feel free to contact me at (704) 373-7820.

Sincerely,



Peter S. Hastings, P.E.
Licensing Manager

Enclosure:

1. MFFF Criticality Validation Report – Part I through Attachment 5
2. MFFF Criticality Validation Report – Part I Attachment 6 (electronic copy on CD)

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