

~~SECRET~~

TERA



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

AUG 21 1979

Mr. A. E. Scherer
Combustion Engineering, Inc.
1000 Prospect Hill Road
Windsor, Connecticut 06095

Dear Mr. Scherer:

SUBJECT: STAFF EVALUATION OF CENPD-198-P

On January 16, 1978 and November 9, 1978, Combustion Engineering (CE) submitted Supplement Nos. 1 and 2 to CENPD-198-P, "Zircaloy Growth: Application of Zircaloy Irradiation Growth Correlations by the Calculation of Fuel Assembly and Fuel Rod Growth Allowances." These supplements were submitted in response to the staff's initial evaluation of CENPD-198-P issued June 22, 1976 and subsequent letters and discussions on the use of zircaloy growth correlations in CENPD-198-P. We have completed our review of Supplement Nos. 1-P and 2-P to CENPD-198-P. Our evaluation is presented in the Enclosure and is summarized below.

We have concluded that the CENPD-198-P and Supplement Nos. 1-P and 2-P (CENPD-198-P) acceptable for reference in license applications involving the calculation of allowances for (1) fuel assembly axial growth and (2) differential axial growth between fuel rods and the fuel assembly structure. There are, however, two conditions governing our approval. First, because the growth characteristics of zircaloy components are sensitive to the fabrication process, we will require that, where the approved version of CENPD-198-P is referenced in future applications, a description be given of the metallurgical state of the components being analyzed. If in our judgement the metallurgical condition of those components does not differ significantly from those described in CENPD-198-P, then the description may be brief and CENPD-198-P may be used; otherwise, the use of CENPD-198-P must be justified. Second, our approval of this topical report is limited to zircaloy growth strains corresponding to axially averaged fast neutron fluences not exceeding 4×10^{21} fn/cm² (E > 0.321 Mev), an exposure above which CE has not reported growth strain data on CE zircaloy core components. We anticipate that growth strains due to exposures in excess of 4×10^{21} fn/cm² (22500 MWd/t) will not exceed those strains predicted by the extrapolation of the CE growth correlations. However, individual safety analysis reports that reference CENPD-198-P for zircaloy growth analyses must either provide for confirmatory measurements in their surveillance programs for zircaloy growth at fluences greater than 4×10^{21} fn/cm² or cite similar data.

Should our criteria or regulations change such that our conclusions concerning CENPD-198-P are invalidated, you will be notified and given an opportunity to revise and resubmit your topical report should you so desire.

999 335

7909240 868c

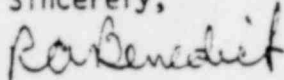
Mr. A. E. Scherer

- 2 -

AUG 21 1979

It is requested that CENPD-198-P be resubmitted as an approved report and that the following letters be incorporated as part of the document: (1) this approval letter and evaluation, (2) the approval letter and evaluation issued on June 22, 1976, (3) CE's letter to the NRC on CENPD-198-P dated August 16, 1976 and (4) NRC's letter to CE dated November 4, 1976. When CENPD-198-P is referenced in a license application, the non-proprietary version should also be referenced. We do not intend to repeat our review of this report when it appears as a reference in a particular license application.

Sincerely,



for

Robert L. Baer, Chief
Light Water Reactors Branch No. 2
Division of Project Management

Enclosure:
Evaluation of CENPD-198-P

999 336