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November 25, 1981

Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Transmittal of CEN-185, Supplement 1, Heated Junction Thermocouple Phase I Test Report, and CEN-185, Supplement 2, Heated Junction Thermocouple Phase II Test Report

References: (A) NRC letter from Dennis M. Crutchfield to the C-E Owners Group, "C-E Reactor Vessel Level Measurement System," July 31, 1981.

(B) NUREG-0737, "Clarification of TMI Action Plan Requirements," November, 1980.

(C) Letter from K. P. Baskin, C-E Owners Group, to D. M. Crutchfield, NRC, "Transmittal of CEN-185, Documentation of Inadequate Core Cooling Instrumentation for Combustion Engineering Nuclear Steam Supply Systems, and CEN-181, Generic Responses to NRC Questions on the C-E Inadequate Core Cooling Instrumentation," September 15, 1981.

(D) Letter from K. P. Baskin, C-E Owners Group, to H. R. Denton, NRC, "Communications Between the Combustion Engineering Owners Group and the Nuclear Regulatory Commission," dated December 2, 1980.

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SEND Prop Encl. to:
T. Huang (8)
I+E (3)
ACRS (16)
ORAB (3)
Reg Files
T. Shea (Advanced)

Dear Mr. Crutchfield:

The purpose of this letter is to transmit to you the subject reports. These reports were prepared by Combustion Engineering for the C-E Owners Group in response to your request stated in Reference (A) and according to requirement II.F.2 defined in Reference (B). This submittal is intended to satisfy a commitment made in Reference (C), and the enclosed reports are companions of the reports provided by Reference (C).

SEND Entire to:
H. Smith

This transmittal by the C-E Owners Group is made in order to assist you and the C-E Owners Group members in reaching resolution of requirement II.F.2. The transmittal is made according to the terms stated in Reference (D), a copy of which is attached for your convenience. In particular, this submittal is

not applicable to any individual licensee or license applicant until the submittal is referenced by that licensee or license applicant for use in his docket. Furthermore, this submittal does not imply a commitment by any individual utility or group of utilities to install or use the equipment described in this submittal. Please send copies of any correspondence concerning this submittal to individuals identified in the attached list.

Combustion Engineering with support from the C-E Owners Group has developed a heated junction thermocouple (HJTC) system for use in a reactor vessel level monitoring system (RVLMS). This RVLMS is described as part of an inadequate core cooling instrumentation system in report CEN-185 which was transmitted to you by Reference (C). Section 6.2 of CEN-185 describes the three-phase, HJTC testing program which is being conducted. Results from the first two phases of this program are provided by the enclosed reports. The third phase will demonstrate performance of an HJTC production prototype and will be used primarily to determine system operating specifications and setpoints for field application.

The test results presented in CEN-185, Supplement 1 provide the basic response characteristics of various components of an HJTC sensor over a wide range of fluid conditions. These tests were conducted using a variety of sensor configurations under thermal-hydraulic conditions much more severe than will exist in an RVLMS application. Therefore, the results of these tests provide only background information and are not being relied upon to provide demonstration of HJTC performance in an RVLMS.

The test results presented in CEN-185, Supplement 2 do provide a verification of HJTC probe performance in an RVLMS. The tests were conducted under thermal-hydraulic conditions which simulate those which will surround an HJTC probe installed in a pressurized water reactor (PWR). The report explains the relationship between test conditions and those which have been calculated to occur in a PWR during various accidents. The report also explains how to use the test results to understand the performance of an HJTC probe as part of an RVLMS.

The descriptions of HJTC testing contained in the enclosed reports provide documentation of information previously discussed with the NRC staff by the C-E Owners Group during meetings on May 28, 1980, March 4, 1981, and June 25, 1981.

We would be glad to meet with you and your staff to resolve any remaining concerns on this issue should you desire. If I can be of further assistance to you on this matter, please feel free to contact me at (213) 572-1401.

Very truly yours,

Kenneth P. Baskin
Chairman
C-E Owners Group

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Enclosures: CEN-185, Supplement 1, Heated Junction Thermocouple Phase I Test Report (Five copies are included. An additional 35 copies will be sent separately.)

CEN-185, Supplement 2-P, Heated Junction Thermocouple Phase II Test Report (Five copies are included. An additional 35 copies will be sent separately.)

CEN-185, Supplement 2-NP, Heated Junction Thermocouple Phase II Test Report (Five copies are included. An additional 35 copies will be sent separately.)