

CEN-110(N)-NP

RESPONSE TO N.R.C. QUESTION 2.2 ON THE
MILLSTONE UNIT NO. 2 CYCLE 3 RELOAD
APPLICATION, DOCKET NO. 50-336.

MAY 2, 1979

Combustion Engineering, Inc.
Nuclear Power Systems
Windsor, Connecticut

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Question 2.2: (Section 7.1.1, CEA Withdrawal Event)

The Time delay Adjustment Bias (TAB) for the TM-LP parameter is, in principle, determined by the transient, for which DNBR suffers the greatest degradation after core conditions have reached the TM-LP setpoint. All potentially limiting transients should be considered in computing the TAB. (The Loss of Flow, Seized Rotor, CEA Drop, CEA Ejection, Steam Line Rupture, and Malfunction of One Steam Generator Events do not require the TM-LP trip, and hence, are excluded from consideration in the determination of the TAB.) Ordinarily, the limiting transient is either CEA Withdrawal or RCS Depressurization. However, all transients (except those noted above) should be examined to ascertain that they are, in fact, not more limiting than those two. For those other transients, it is ordinarily not necessary to compute the TAB, but only to demonstrate that they produce substantially slower degradation in DNBR than the two limiting transients. Provide answers to the three following questions.

- a. Was the comparison of speed of degradation described above performed? If so, what transients were considered?
- b. If this comparison was performed, what is your criterion for saying that one transient produces substantially slower DNBR degradation than another transient?
- c. The transient with the fastest degradation in DNBR does not necessarily produce the limiting TAB because the shape of the turnaround in DNBR vs Time curve is a function of the particular transient being analyzed. (This is why both CEA Withdrawal and RCS Depressurization are normally both analyzed, and not simply the one with the fastest degradation in DNBR.) Explain how the criterion of questions b above is justified in view of the above consideration. Do this in numerical terms to demonstrate the confidence we can put on your criterion.

Response:

2.2.a

As stated in section 5.6.1 of CENPD-199-P, and as indicated in Table 1-3 of the same report, [

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2.2.b

The purpose of the bias factor is to accommodate the trip delays for the most severe transients for which protection is provided by the TM/LP trip. The transients with [

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2.2.c

Contrary to what is implied in this question and as already stated in answering 2.2.a and 2.2.b, the [