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MIRAGLIA,F. Licensing Branch 3

SUBJECT: Forwards responses to Reactor Sys Branch questions re steam line break analysis,per NRC 810109 telcon request.Info will be incorporated into FSAR & directly distributed as part of Amend 25.

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May 7, 1981

Director, Office of Nuclear Reactor Regulation
Attention: Mr. Frank Miraglia, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

Enclosed are sixty-three (63) copies of responses to two additional Reactor Systems Branch questions concerning the San Onfore Units 2 and 3 Steam Line Break analysis. These additional questions were asked by your Mr. Jack Guttman in a January 9, 1981, telephone conversation with Mr. David Earles of Combustion Engineering, Inc., and these responses verify the acceptability of the Steam Line Break analysis results as discussed on page 15-15 of the SER, Section 15.3.1.

This information will be incorporated into the FSAR text, and direct distribution of this information will be made as part of the Amendment 25 distribution and will be in accordance with the service list provided by SCE's letter of October 29, 1979. An affidavit attesting to the fact that distribution has been completed will be provided within ten days of docketing of Amendment 21.

If you have any questions or comments concerning this information, please contact me.

Very truly yours,

K P Baskin

Enclosures

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STEAM LINE BREAK ANALYSIS

CONFIRMATORY EVALUATION

San Onofre Nuclear Generating Station

Units 2 & 3

Question 1: Do the steam line break (SLB) analyses presented in the FSAR bound the transient which would result if the operator (following I&E Bulletin 79-06C guidance) tripped the reactor coolant pumps (RCPs) following safety injection actuation signal (SIAS) due to low pressurizer pressure?

Response: Evaluation of the effects of shutting off RCPs at various times during the SLB transient indicates that RCP shutoff following SIAS due to low pressurizer pressure does not alter the conclusions presented in the FSAR.

The effect of RCP shutoff following SIAS is illustrated for a large SLB initiated at full load conditions by the reactivity and heat flux transients presented in Figures 1-1 and 1-2, respectively. In each figure, the transients presented in the FSAR-- no RCP coastdown (solid line) and RCP coastdown at time zero (dotted line)-- are provided together with the transient (dashed line) resulting from RCP coastdown initiated at the time which causes the maximum post-trip return to power: 20 seconds after initiation of the transient (SIAS occurs at 13 seconds). Figure 1-1 shows that the transient total reactivity is bounded by the case presented in the FSAR: RCP coastdown initiated at time zero. The timing of the reactivity peak causes the maximum post-trip heat flux (Figure 1-2) to be slightly higher for the transient resulting from RCP coastdown initiated at 20 seconds than for either of the cases presented in the FSAR. This difference in post-trip heat flux is not sufficient to alter the conclusions presented in the FSAR.

Question 2: How do SLB results calculated with the CESEC code version used for the SONGS FSAR compare with results obtained with the more detailed SLB version of CESEC (which was first used for SLB analyses done for Calvert Cliffs Unit 1 Cycle 5 reload)?

Response: Figure 2-1 presents a comparison between reactivities calculated for a SLB transient using the CESEC code version used for the SONGS FSAR with reactivities calculated using the more detailed SLB version of CESEC used for the SLB analyses done for the Calvert Cliffs Unit 1 Cycle 5 reload. The comparison was done for a large steam line break occurring during full load operation for a 2700 MWt plant, with reactor coolant pump trip assumed to occur following a safety injection actuation signal due to low pressurizer pressure. The results obtained using the two code versions are essentially the same.

FIGURE 1-1 COMPARISON OF STEAM LINE BREAK REACTIVITIES OBTAINED WITH DIFFERENT TIMES FOR INITIATION OF REACTOR COOLANT PUMP COASTDOWN

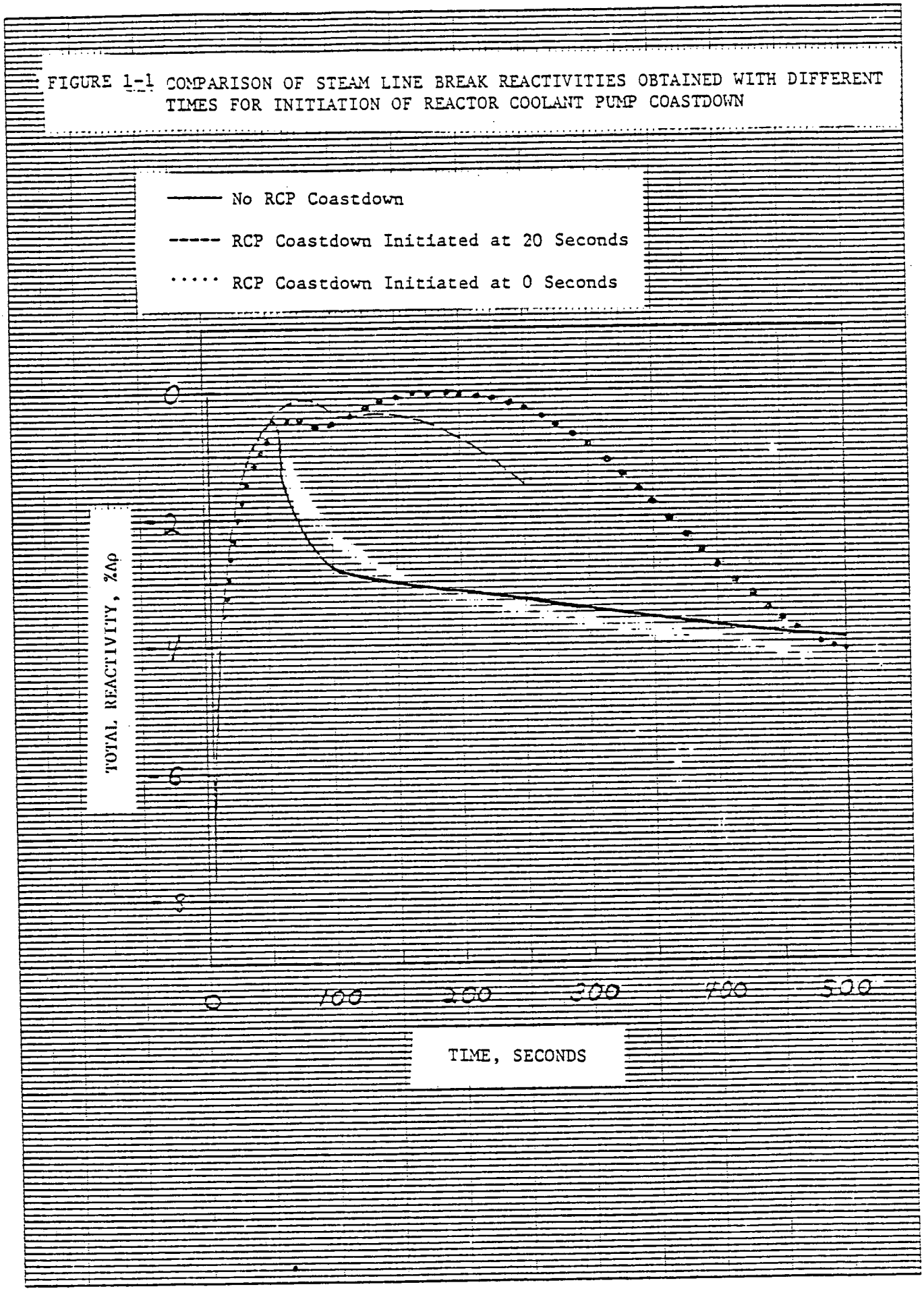

FIGURE 1-2 COMPARISON OF STEAM LINE BREAK HEAT FLUXES OBTAINED WITH DIFFERENT TIMES FOR INITIATION OF REACTOR COOLANT PUMP COASTDOWN

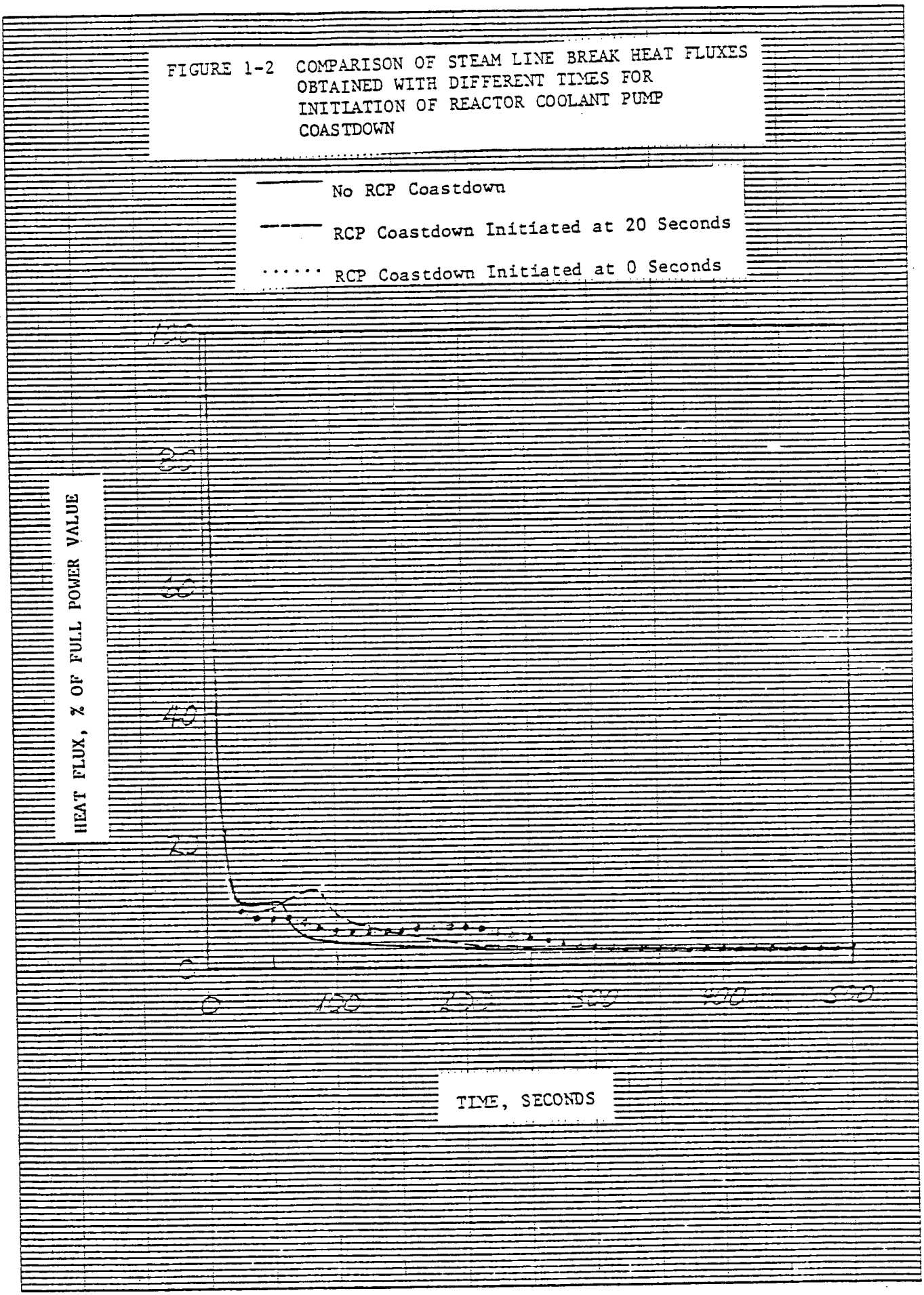

FIGURE 2-1 COMPARISON OF STEAM LINE BREAK REACTIVITIES OBTAINED WITH DIFFERENT CESEC VERSIONS