SOUTH CAROLINA ELECTRIC & GAS COMPANY
POST OFFICE 764
COLUMBIA, SOUTH CAROLINA 29218

O. W. DIXON, JR.
VICE PRESIDENT
NUCLEAR OPERATIONS

June 20, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/395
Operating License No. NPF-12
Removal of Boron Injection Tank

Dear Mr. Denton:

In a letter to Mr. H. R. Denton from Mr. O. W. Dixon, Jr., dated April 9, 1985, South Carolina Electric and Gas Company (SCE&G) requested an amendment to the Virgil C. Summer Nuclear Station Technical Specifications allowing for the removal of the Boron Injection Tank (BIT). In discussions with the NRC Staff, additional information on the reanalysis of the main steam line break accident was requested. This letter and its Attachments are hereby provided to supply this information.

If you should have any further questions, please advise.

Very truly yours,

O. W. Dixon, Jr.

AMM/csw
Attachments

cc: V. C. Summer
T. C. Nichols, Jr./O. W. Dixon, Jr.
E. H. Crews, Jr.
E. C. Roberts
W. A. Williams, Jr.
D. A. Nauman
J. Nelson Grace
Group Managers
O. S. Bradham
C. A. Price
C. L. Ligon (NSRC)
K. E. Nodland
R. A. Stough
G. O. Percival
C. W. Hehl
J. B. Knotts, Jr.
H. G. Shealy
NPCF
File

A001
1/1

Attachment "A"

Summary of the Analyses Performed Supporting Removal of the BIT

NOTE: All analyses were performed utilizing end of life core conditions, minimum safety injection flow, and the highest worth control rod fully withdrawn from the core. In addition, the BIT was assumed to be installed in the flow path and filled with water containing 0 ppm boric acid.

I. Accidental Depressurization of the Main Steam System - FSAR 15.2

Evaluation of this event considered the opening and sticking of one steam line safety valve at hot zero power. Offsite power was available to drive the reactor coolant pumps. This evaluation indicated that a reactor restart occurred with the power reaching a maximum of 3%.

II. Major Rupture of a Main Steam Line - FSAR 15.4

Two analyses were done for this event, one with offsite power available and one without power. The analysis assuming offsite power availability was the bounding event because greater heat transfer was available with the Reactor Coolant Pumps in operation. These analyses assumed hot, zero power conditions and the largest size postulated break. The analyses showed restart with power levels remaining below 15%. See the attached Figures 15.4-59 and 15.4-60.

III. Containment Analysis for Peak Pressure - FSAR 6.2

The main steam line breaks that were analyzed and the failures associated with the analyzed breaks are shown on the attached Table 6.2-1a. The results of the analyses showed peak reactor building pressure (45.8 psig) was generated for the 1.4 ft^2 double ended rupture from 102% power with a diesel generator failing to start, a main steam isolation valve failing to close, and an emergency feedwater control valve failing to isolate.

IV. Containment Analysis for Peak Temperature - FSAR 6.2

The main steam break (see Table 6.2-1a) which gave the highest temperature in containment (321°F) was the .645 ft^2 split break from 102% power with a diesel generator failing to start and an emergency feedwater control valve failing to isolate. The analyses were combined (i.e. multiple failures assumed in each break) to limit the time and cost of the modification analyses. Results with multiple failures represent a conservative analysis methodology.

Attachment "B"

TABLE 6.2-1a

Main Steam Line Breaks Analyzed

Double Ended Ruptures[1]

Area/Power	Failure(s) Assumed[2]
1.4 ft^2/ 0%	EFWV
1.4 ft^2/ 0%	MSIV
1.4 ft^2/ 0%	DG
1.4 ft^2/ 30%	EFW , MSIV, DG
1.4 ft^2/ 70%	EFW , MSIV, DG
1.4 ft^2/102%	EFW , MSIV, DG

Small Double Ended Ruptures (with Entrainment)

Area/Power	Failures Assumed[2]
0.2 ft^2/ 0%	DG, MSIV, EFW
0.5 ft^2/ 30%	DG, MSIV, EFW
0.6 ft^2/ 70%	DG, MSIV, EFW
0.7 ft^2/102%	DG, MSIV, EFW

Small Double Ended Ruptures (No Entrainment)

Area/Power	Failures Assumed[2]
0.1 ft^2/ 0%	DG, MSIV, EFW
0.4 ft^2/ 30%	DG, MSIV, EFW
0.5 ft^2/ 70%	DG, MSIV, EFW
0.6 ft^2/102%	DG, MSIV, EFW

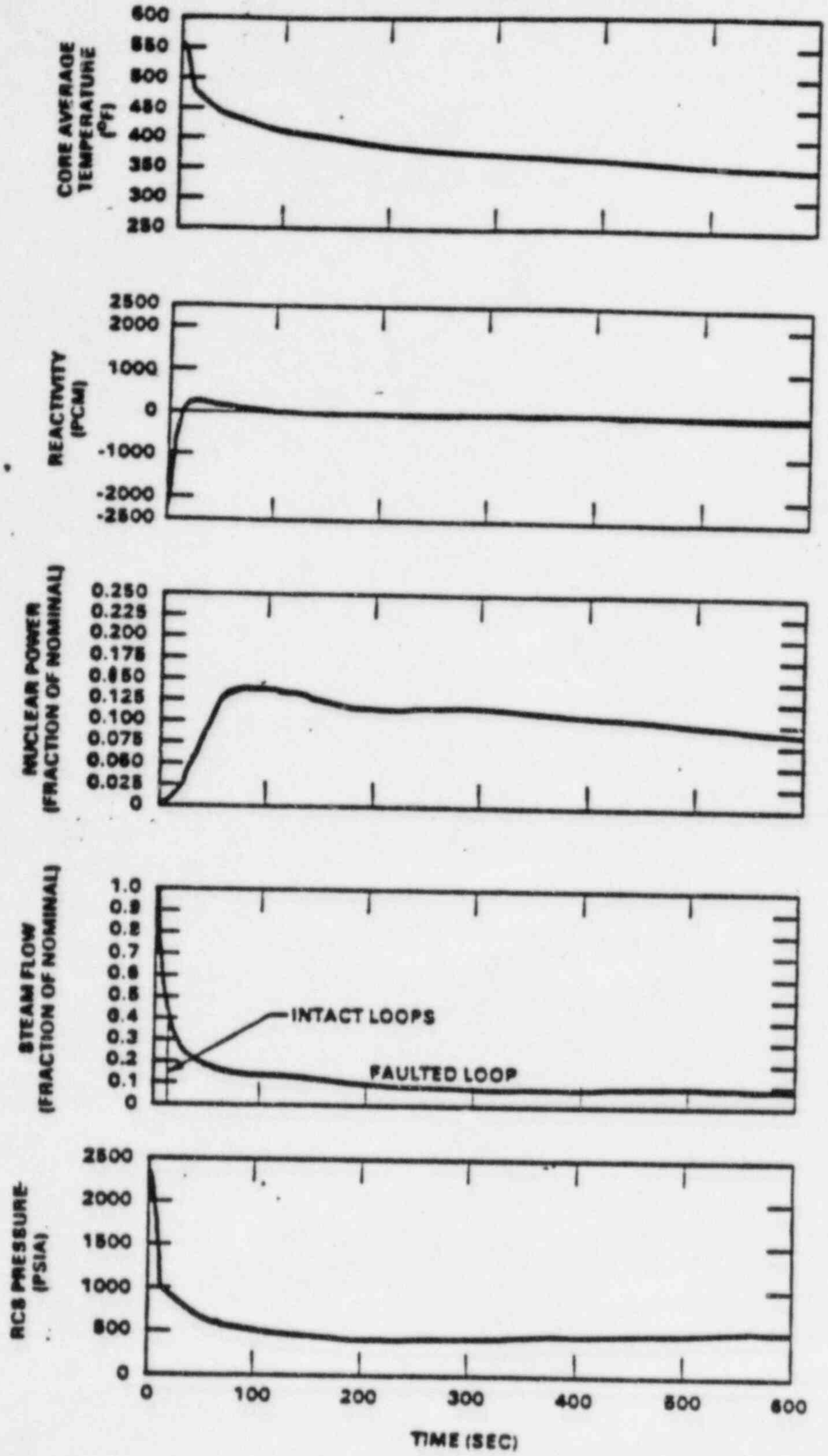
Split Ruptures (No Entrainment)

Area/Power	Failures Assumed[2]
0.30 ft^2 / 0%	DG, EFW
0.7065 ft^2/ 30%	DG, EFW
0.681 ft^2 / 70%	DG, EFW
0.645 ft^2 /102%	DG, EFW

Note:

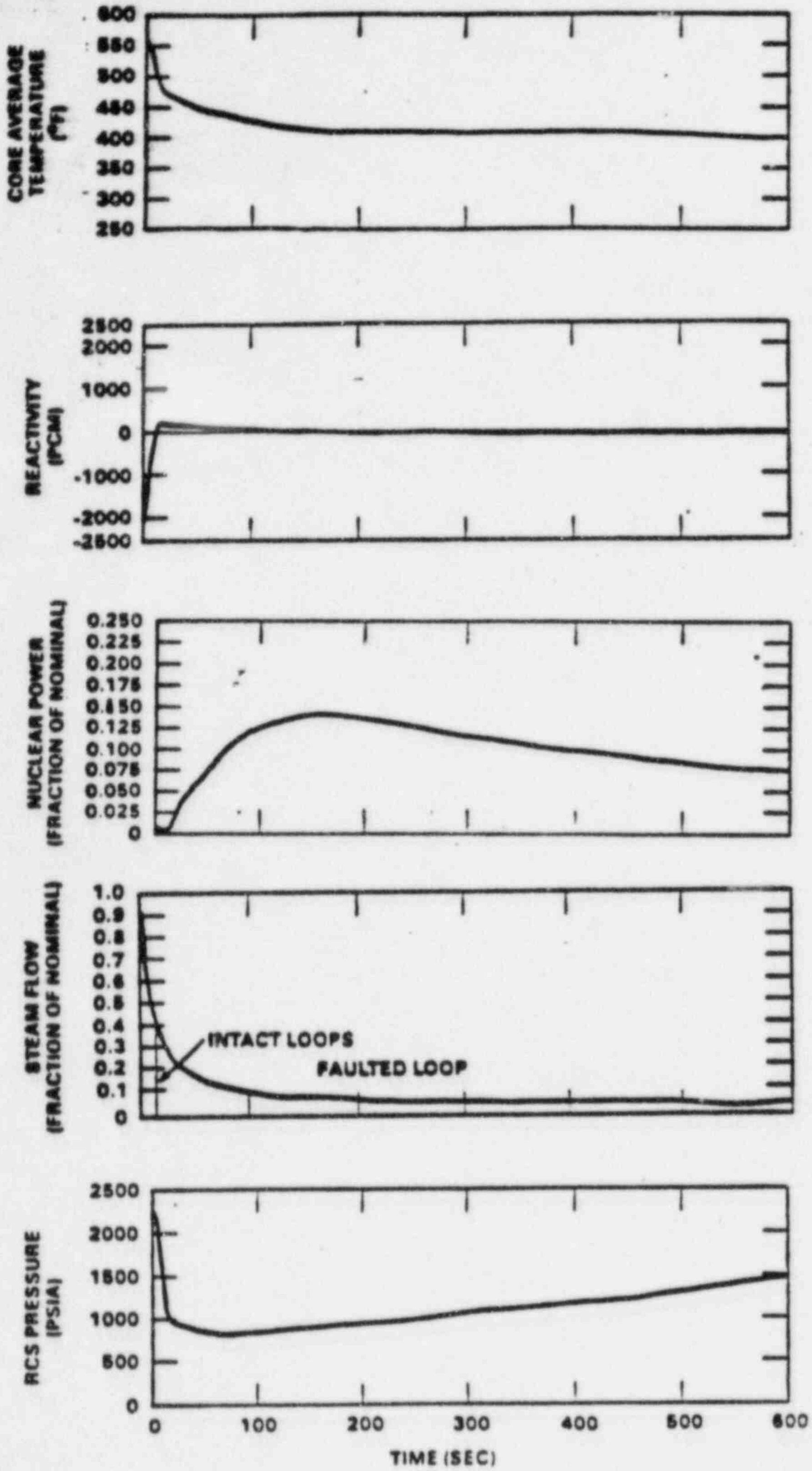
1. Effective break area for broken loop is 1.4 ft^2.
2. DG = Diesel generator fails to start.
   MSIV = Main steam isolation valve fails to close.
   EFW = Emergency feedwater fails to isolate.

Attachment "C"



SOUTH CAROLINA ELECTRIC & GAS CO. VIRGIL C. SUMMER NUCLEAR STATION
Transient Response to Steam Line Break with Safety Injection and Offsite Power (Case a) Figure 15.4-59

Attachment "D"



SOUTH CAROLINA ELECTRIC & GAS CO. VIRGIL C. SUMMER NUCLEAR STATION
Transient Response to Steam Line Break with Safety Injection and Without Offsite Power (Case b) Figure 15.4-60