FEB 5 1973

Docket Nos. 50-269/270/287

Note to Files

CONSEQUENCES OF A CFT LINE BREAK ACCIDENT AT 5% POWER

From B&W's analysis of a 0.5 ft^2 break (Oconee FSAR Supplement 13-56), an adiabatic heat up rate of approximately 14°F/sec is calculated for the time period between 190 to 250 sec. At 5% power the heat up rate would be 0.7°F/sec (14°F/sec x 0.05). Decay heat might raise this 15% at 100 sec and lower it by 30% at 1000 sec. Using a constant 0.7°F/sec would be conservative for the full period 100-1000 sec. If one assumes a dry vessel with EOB at 100 sec (worst case-homogeneous system) and takes no credit for any CFT water injection after EOB, this would bound the problem in terms of minimum water remaining in the vessel and limiting the ECCS (no CFT water).

Duke has indicated (2/1/73 letter) that the operator can provide an additional 1500 gpm of LPI water in 900 sec (15 min). Operational Safety (D. VanNeil) has reviewed this problem and have concluded that the operating staff at Oconee is sufficient to perform the required actions in 15 minutes.

If one assumes only one HPI pump until 900 sec and afterwards an additional 1500 gpm from the LPI pump, the bottom of the core is recovered at approximately 920 seconds. Based on a similar reflood transient, the clad temperature will turn around in less than 30 seconds after bottom of core recovered.

In adiabatic heat up is assumed for the entire period from 100 seconds to clad turnaround at 950 seconds. From an initial temperature of 400 to 700°F at 100 sec, the resulting maximum clad temperature is 1100 to 1400°F. At these temperatures, metal-water is essentially zero, the core geometry is still coolable and long term cooling is established.

Donald K. Davis
Pressurized Water Reactors
Branch No. 4
Directorate of Licensing

OFFICE ▶	PWR-4	L:C/PWR-4				Memo
SURNAME ▶	DKDavis:kmf	ASchwencer				
DATE ▶	2/ /73	2/ /73				

8001090668 A