

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8001290357 DOC. DATE: 80/01/24 NOTARIZED: NO
 FACIL: 50-269 Oconee Nuclear Station, Unit 1, Duke Power Co.
 50-270 Oconee Nuclear Station, Unit 2, Duke Power Co.
 50-287 Oconee Nuclear Station, Unit 3, Duke Power Co.
 AUTH. NAME: PARKER, W.O. AUTHOR AFFILIATION: Duke Power Co.
 RECIP. NAME: DENTON, H.R. RECIPIENT AFFILIATION: Office of Nuclear Reactor Regulation

DOCKET #
 05000269
 05000270
 05000287

SUBJECT: Forwards response to NRC 791121 ltr requesting addl info re
 small break LOCA. Loads imposed on tubes of once-through
 steam generator during postulated slug flow evaluated &
 found acceptable.

DISTRIBUTION CODE: A041S COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 2
 TITLE: Resp to Lesson Learn Task Force - B&W and 50-409

NOTES: M. CUNNINGHAM - ALL AMENDMENTS
TO FSAR + CHANGES TO TECH SPECS

ACTION:	RECIPIENT		COPIES		RECIPIENT	COPIES	
	ID CODE/NAME	LTR ENCL	ID CODE/NAME	LTR ENCL			
8 BC	ORB#4	7	7				
INTERNAL:	1 REG FILE	1	1	15 I & E	2	2	
	17 TA/EDO	1	1	18 CORE PERF BR	1	1	
	19 ENG BR	1	1	2 NRC PDR	1	1	
	20 REAC SFTY BR	1	1	21 PLANT SYS BR	1	1	
	22 EEB	1	1	23 EFLT TRT SYS	1	1	
	3 LPDR	1	1	4 NSIC	1	1	
	5 C LONG	1	1	6 G LANIK	1	1	
	7 J DONOHEW	1	1	J.T. TELFORD	2	2	
	0 CHOPRA	1	1	DELD	1	0	
EXTERNAL:	24 ACRS	16	16				

JAN 30 1980

TOTAL NUMBER OF COPIES REQUIRED: LTR 43 ENCL 42

may

DUKE POWER COMPANY

POWER BUILDING

422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28242

WILLIAM O. PARKER, JR.
VICE PRESIDENT
STEAM PRODUCTION

January 24, 1980

TELEPHONE: AREA 704
373-4083

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

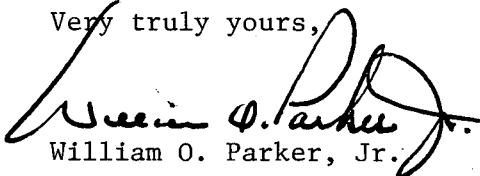
Attention: Mr. R. W. Reid, Chief
Operating Reactors Branch No. 4

Re: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

Dear Sir:

With regard to my letters of December 3 and 28, 1979 and in response to the Staff's letter of November 21, 1979, please find attached a response to the request for additional information concerning small break loss of coolant accidents.

Very truly yours,


William O. Parker, Jr.

RLG:scs

Attachment

8001290

A041
S.I.
357

DUKE POWER COMPANY
Response to Request for Additional Information
Small Break Loss-of-Coolant Accident

Oconee Nuclear Station

1. Transitions from solid natural circulation to reflux boiling and back to solid natural circulation may cause slug flow in the hot leg piping. By use of analysis and/or experiment address the mechanical effects of the induced slug flow on steam generator tubes.

RESPONSE

The loads imposed on the tubes of the OTSG during the postulated "slug flow" have been conservatively evaluated and found to be acceptable. Based on very conservative assumptions, the end loading on each tube will be 21.5 lb_f compared to a theoretical buckling load of about 700 lb_f.

It was assumed for this analysis that a water level has been established in the hot leg piping and inside the tubes of OTSG. The transient consists of a "front" of solid water impinging on the primary face of the upper tubesheet. The flow was assumed to be equal to full 100% power flow (about 70,000,000 lb/hr). The load is assumed to be a suddenly - applied load. The upper tubesheet is conservatively assumed to offer no resistance to the load and the lower tubesheet is assumed to be fixed so that the entire load is absorbed by tubes directly under the primary inlet nozzle. The flow is assumed to not follow the diffuser so that the velocity impinging on the tubesheet is the same as the velocity in the 36-inch nozzle. Hot leg temperature is assumed to be 605°F.

The velocity in the 36-inch pipe would be 64.4 ft/sec. By use of the momentum equation, the steady-state force on the upper tubesheet due to the velocity would be 16,080 lb_f. There are about 1500 tubes in a 36-inch diameter circle. Thus the 32,160 lb_f will result in 21.5 lb_f per tube. Since the cross-sectional area of each tube is 0.070 in, the momentary axial compressive stress in these tubes would be 307 psi.