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Duke Power Company Charlotte, N. C. 28201 A. C. Thies	5-14-73	5-15-73	X			

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TO:	ORIG	CC	OTHER	SENT AEC PDR	SENT LOCAL PDR
Mr. Giambusso	1 signed			X	X

CLASS: (U) PROP INFO	INPUT	NO CYS REC'D	DOCKET NO:
		40	50-269

DESCRIPTION:
Ltr furnishing info re BAW Topical Report re Fuel Densification.....W/Attached Tables - Fuel Rod Dimensional Data & Dimensional Data Used in TAFY3 Fuel Temperature Calculations.

ENCLOSURES:

Do Not Remove

ACKNOWLEDGED

PLANT NAMES: Oconee Unit 1

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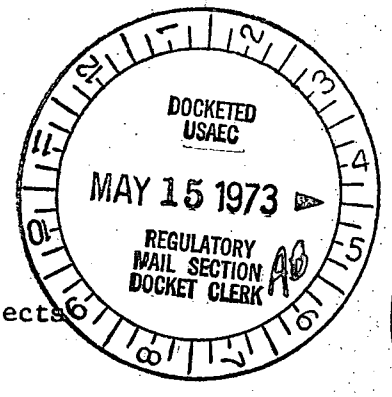

May 14, 1973

Mr. Angelo Giambusso
Deputy Director for Reactor Projects
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

Re: Oconee Nuclear Station
Unit 1
Docket No. 50-269

Dear Mr. Giambusso:

The analyses for Oconee Nuclear Station Unit 1 fuel with potential fuel densification effects are presented in Babcock & Wilcox Topical Reports BAW-10054, Rev. 1, "Fuel Densification Report," and BAW-1387, Rev. 1, "Oconee 1 Fuel Densification Report," which were filed with the Atomic Energy Commission on May 1, 1973 and April 13, 1973, respectively.

As a result of the meeting with the AEC/DOL staff on May 8, 1973, Duke Power Company and Babcock & Wilcox agreed to reevaluate the linear heat generation rates for center line fuel melt and for stored energy and resultant KW/ft limit associated with fuel clad temperature criterion using the following assumptions.

1. Gap conductance as calculated by the TAFY code (BAW-10044) should be reduced by 25 percent from the beginning of life value and not further decreased with core life.

2. A cladding ID of 0.3773 inches should be used.

3. A sorbed gas content of 0.01 cc/gm should be used.

4. No credit should be taken for fuel restructuring.

All other inputs to the TAFY calculation are as presented in BAW-1387, Rev. 1. For comparison, the attached table shows the parameters used in BAW-1387, Rev. 1 and the as-built parameters which were presented at the May 8, 1973 meeting.

The results of B&W's analyses yield a 20.1 KW/ft fuel melt limit and a 18.65 KW/ft loss-of-coolant accident limit which corresponds to a fuel

DIMENSIONAL DATA USED IN TAFY3 FUEL TEMPERATURE CALCULATIONS

PARAMETER	BAW-1387 (Rev. 1) Values	Proposed As-Built Values	Notes
FUEL			
Fuel Density			
Undensified w/o-2σ	93.558% T.D.	93.558% T.D.	This number is the mean as-built value.
Undensified w-2σ	92.668% T.D.	92.668% T.D.	
Densified	96.5% T.D.	96.5% T.D.	
Fuel Diameter			
Undensified	0.36998	0.36998	
Densified	0.36523	0.36523	
Sorbed Gas	0.02 cc/gm (UTL)	0.01 cc/gm (MEAN)	
Surface Roughness	70 micro inches RHR	50 micro inches RHR (MEAN)	
Stack Length			
Undensified	143.966	143.966	This number is the mean as-built value.
Densified	141.848	141.848	This number was obtained by densifying from the mean as-built value.
CLAD			
Gap			
Undensified	0.00842 (max. stat.)	0.00727 (MEAN)	Method of calculation on attached sheet.
Densified	0.01278 (max. stat.)	0.01202 (MEAN)	These values were derived from calculated Clad I.D. and densified pellet diameter.

clad temperature of 2300°F.

Discussions are currently proceeding among members of your staff, Duke, and B&W to revise the Technical Specifications to provide appropriate limits for fuel densification effects. We trust that these discussions will be successfully completed on May 15, 1973. Therefore, the results of the above analyses; your conclusions on clad collapse documented in R. E. DeYoung's letter of April 23, 1973 to Babcock & Wilcox; and appropriately revised technical specifications will support the conclusion that the Oconee 1 reactor can be safely operated at a power level of 2568 MWt. Consequently, we request that the power restriction of 1926 MWt be rescinded.

Sincerely,

A. C. Thies

A. C. Thies

ACT:vr

Attachment

FUEL ROD DIMENSIONAL DATA

	Nominal Spec Value & Tolerance	As-Built Values		
		Mean	Standard Deviation	Sample Size
FUEL				
Diameter, in.	0.370 ± 0.005	0.36998	0.0002	14272.
Density* gm/cc	0.935 ± 0.015	0.93558	0.00445	12755.
Sorbed Gas, cc/gm	0.02 U.T.L.	0.0102	0.000957	70.
Surface Roughness, RHR	63.0 U.T.L.	50.121	6.976	7406.
Stack Length, in.	144.0 ± 0.75	143.966	0.3253	783.
CLAD				
O.D., in.	0.430 ± 0.002	0.4294	0.00042	580.
I.D., in.	0.377 ± 0.002	0.37725	0.00054	580.
I.D. Surface Roughness, RHR	63.0 U.T.L.	16.743	3.383	580
GAP, in.	0.007 in.	0.00727	0.000574	580.
BACK FILL PRESSURE	375. ± 25. psia †	----------	NOT AVAILABLE	----------

*Geometrical densities based on fuel pellet weight, length, diameter and dish dimensions.

† The backfill pressure tolerance is met on 100% of the fuel rods using a go-no-go technique.