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| Duke Power Company<br>Charlotte, N.C. 28201<br>Mr. A.C. Thies | 7-30-74 | 8-5-74 | X | | | |

| TO: | ORIG | CC | OTHER | SENT AEC PDR | SENT LOCAL PDR |
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| A. Giambusso | 1 signed | | | XXX | XXX |

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|---|---|---|---|---|---|
| | XXX | | XXX | 40 | 50-269/270/287 |

DESCRIPTION:

Ltr requesting an amdt to the tech specs to delete the restriction limiting Oconee Unit #1 to 7500 effective full Power hours.....

NOTE: Input on 269 only

PLANT NAME: Oconee

ENCLOSURES:

Proposed changes to tech specs....

ACKNOWLEDGED

(40 cys encl rec'd)

DO NOT REMOVE

FOR ACTION/INFORMATION 8-6-74 JB

| | | | |
|---|---|---|---|
| BUTLER (L)<br>W/ CYS | SCHWENCER (L)<br>W/ CYS | ZIEMANN (L)<br>W/ CYS | REGAN (E)<br>W/ CYS |
| CLARK (L)<br>W/ CYS | STOLZ (L)<br>W/ CYS | DICKER (E)<br>W/ CYS | W/ CYS |
| ~~PARR (L)~~<br>W/ CYS | ~~VASSALLO (L)~~<br>W/ CYS | ~~KNIGHTON (E)~~<br>W/ CYS | W/ CYS |
| KNIEL (L)<br>W/ CYS | ✓PURPLE (L)<br>W/9 CYS | YOUNGBLOOD (E)<br>W/ CYS | W/ CYS |

INTERNAL DISTRIBUTION

| | | | | |
|---|---|---|---|---|
| ✓REG FILE | TECH REVIEW | DENTON | LIC ASST | A/T IND |
| ✓~~AEC PDR~~ | HENDRIE | GRIMES | DIGGS (L) | BRAITMAN |
| ✓OGC | SCHROEDER | GAMMILL | GEARIN (L) | SALTZMAN |
| ✓MUNTZING/STAFF | MACCARY | KASTNER | GOULBOURNE (L) | B. HURT |
| CASE | KNIGHT | BALLARD | KREUTZER (E) | |
| GIAMBUSSO | PAWLICKI | SPANGLER | LEE (L) | PLANS |
| BOYD | SHAO | | MAIGRET (L) | MCDONALD |
| MOORE (L)(LWR-2) | STELLO | ENVIRO | REED (E) | CHAPMAN |
| DEYOUNG (L)(LWR-1) | HOUSTON | MULLER | SERVICE (L) | ✓DUBE w/input |
| SKOVHOLT (L) | NOVAK | DICKER | ✓SHEPPARD (L) | ✓E. COUPE |
| ✓GOLLER (L) | ROSS | KNIGHTON | SLATER (E) | ✓Schemel |
| P. COLLINS | IPPOLITO | YOUNGBLOOD | SMITH (L) | D. THOMPSON (2) |
| DENISE | TEDESCO | REGAN | TEETS (L) | KLECKER |
| ✓REG OPR | LONG | ✓PROJECT MGR | WILLIAMS (E) | EISENHUT |
| FILE & REGION (3) | LAINAS | Scaletti | WILSON (L) | |
| MORRIS | BENAROYA | HARLESS | | |
| STEELE | VOLLMER | | | |

EXTERNAL DISTRIBUTION

| | | |
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| ✓1 - LOCAL PDR Walhalla, S.C. | (1)(2)(10)-NATIONAL LABS | 1-PDR-SAN/LA/NY |
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| ✓1 - NSIC (BUCHANAN) | 1-W. PENNINGTON, Rm E-201 GT | 1-G. ULRIKSON, ORNL |
| 1 - ASLB | 1-B&M SWINEBROAD, Rm E-201 GT | 1-AGMED (RUTH GUSSMAN) Rm B-127 GT |
| 1 - P. R. DAVIS | 1-CONSULTANTS NEWMARK/BLUME/AGBABIAN | 1-RD..MUELLER, Rm F-309 GT |
| ✓16 - ACRS ~~HOLDING~~ Sent to Sheppard 8-6-74 | | |

DUKE POWER COMPANY
POWER BUILDING
422 SOUTH CHURCH STREET, CHARLOTTE, N. C. 28201

A. C. THIES
SENIOR VICE PRESIDENT
PRODUCTION AND TRANSMISSION

P. O. BOX 2178

July 30, 1974



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

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

Dear Mr. Giambusso:

Oconee Nuclear Station Technical Specification 3.11, "Maximum Power Restriction," limits first fuel cycle operation until supporting analyses and data pertinent to fuel clad collapse under fuel densification conditions have been approved by the Directorate of Licensing. On May 31, 1974, Babcock & Wilcox submitted their proprietary report BAW-10084, "Program to Determine In-Reactor Performance of B&W Fuels-Cladding Creep Collapse." The techniques defined in this report were utilized to perform cladding collapse analyses for Oconee Unit 1. Attachment 1, "Oconee 1 Clad Collapse Analysis," presents the results of this analysis and supports three-cycle operation of Oconee Unit 1.

Pursuant to 10CFR50.59, it is requested that the restriction limiting Oconee Unit 1 to 7500 effective full power hours be deleted from Technical Specification 3.11. Attachment 2 is the proposed replacement page 3.11-1 for the Oconee Nuclear Station Technical Specifications.

Very truly yours,

A. C. Thies

ACT:vr



8140

A. C. THIES, being duly sworn, states that he is Senior Vice President of Duke Power Company; that he is authorized on the part of said Company to sign and file with the Atomic Energy Commission this request for amendment of the Oconee Nuclear Station Technical Specifications, Appendix A to Facility Operating Licenses DPR-38, DPR-47, and DPR-55; and that all statements and matters set forth therein are true and correct to the best of his knowledge.

A. C. Thies, Senior Vice President

ATTEST:

John C. Goodman, Jr.
Assistant Secretary

Subscribed and sworn to before me this 30th day of July, 1974.

Edna B. Farmer
Notary Public

My Commission Expires:

Oct. 24, 1977

ATTACHMENT 1

# OCONEE 1 CLAD COLLAPSE ANALYSIS

The analysis of Oconee 1 3-cycle fuel assemblies for cladding creep collapse is complete and indicates no collapse of fuel rod cladding into axial gapped regions of the fuel. The analysis was performed according to Section 4, design analysis procedures, of Topical Report BAW-10084 "Program to Determine In-Reactor Performance of B&W Fuel - Cladding Creep Collapse", May, 1974.

Densification was assumed to occur in two ways. The first method was to assume densification occured immediately at beginning of life while the second assumed the fuel densified slowly and was complete at 2400 hours. Section 4 of BAW-10084 specifies that densification be assumed complete in 2000 hours, however in this analysis 2400 hours was used for calculational convience and introduces only a slight conservative effect.

Power histories of the 3-cycle assemblies in the core were used as input for cladding temperature determination and in calculating the flux and internal pressure histories. Because of symmetry, one eighth of the core is representative of all 3-cycle assemblies. The appropriate nuclear uncertainty factors were applied to the power histories.

The fuel rod geometry, initial prepressure level, and the prepressure level after densification were determined from Oconee 1 as-built data.

Attached are the predicted times to collapse (Table 1) and the flux, pin pressure, and cladding temperature histories for the worst case assembly (Table 2).

## TABLE 1

| ASSEMBLY* | TIMES TO COLLAPSE, EFPH<br>DENSIFICATION ASSUMED COMPLETE AT:<br>TIME = 0 | TIME = 2400 |
|---|---|---|
| A | >30,000 | >30,000 |
| B | >30,000 | >30,000 |
| C | >30,000 | >30,000 |
| D | >30,000 | 28,640 |
| E | 28,490 | 25,650 |
| G | >30,000 | 28,790 |
| H | >30,000 | >30,000 |
| I | >30,000 | 28,480 |

3-Cycle Time = 21,500 Hours

*The eight different cases calculated represent all core locations for Batch 3 when symmetry is considered.

## TABLE 2

### ASSEMBLY E INPUT TIME HISTORY
### DENSIFICATION AT TIME = 0 HOURS

| TIME, EFPH | CLAD TEMP., F | | PIN PRESSURE, PSI | FLUX*, $n/cm^2/sec \times 10^{13}$ |
|---|---|---|---|---|
| | I.D. | O.D. | | |
| 0 | 605.8 | 604.4 | 675 | 9.04 |
| 96 | 606.9 | 605.4 | 676 | 9.40 |
| 1200 | 608.0 | 606.5 | 681 | 9.58 |
| 2400 | 615.5 | 613.9 | 699 | 11.10 |
| 3600 | 616.6 | 614.9 | 706 | 10.40 |
| 4800 | 615.5 | 613.9 | 706 | 10.30 |
| 6000 | 615.6 | 613.9 | 711 | 10.40 |
| 6840 | 617.7 | 616.0 | 716 | 9.43 |
| 7439 | 617.7 | 616.0 | 718 | 9.43 |
| 7441 | 612.8 | 610.3 | 704 | 8.27 |
| 7536 | 610.3 | 608.1 | 699 | 7.83 |
| 8040 | 610.3 | 608.1 | 698 | 7.76 |
| 8640 | 616.0 | 613.6 | 712 | 8.63 |
| 9840 | 613.8 | 611.3 | 710 | 8.27 |
| 11040 | 612.8 | 610.3 | 712 | 8.27 |
| 12240 | 616.0 | 613.6 | 714 | 8.12 |
| 13800 | 616.0 | 613.6 | 725 | 8.63 |
| 14399 | 598.4 | 596.8 | 727 | 8.63 |
| 14401 | 598.4 | 596.8 | 718 | 6.66 |
| 14496 | 598.4 | 596.8 | 655 | 6.66 |
| 15000 | 598.3 | 596.8 | 655 | 6.66 |
| 15600 | 598.4 | 596.8 | 655 | 6.66 |
| 16800 | 599.4 | 597.8 | 655 | 6.74 |
| 18000 | 600.6 | 598.9 | 655 | 6.90 |
| 19200 | 600.8 | 599.0 | 660 | 6.98 |
| 20803 | 643.2 | 638.6 | 750 | 13.48 |
| 21403 | 638.9 | 635.0 | 740 | 12.91 |

CLADDING GEOMETRY:
Wall Thickness, h = 0.0262 inches
Initial Ovality, $W_o$ = 0.62 mils
Outside Diameter, O.D. = 0.43 inches

*Flux greater than 1 MEV at indicated EFPH considering boron dilution, rod position, and refueling.

## 3.11 MAXIMUM POWER RESTRICTION

Applicability

Applies to the nuclear steam supply system of Units 2 and 3 reactors.

Objective

To maintain core life margin in reserve until the system has performed under operating conditions and design objectives for a significant period of time.

Specification

3.11.1 The first reactor core in Unit 2 may not be operated beyond 11,040 effective full power hours until supporting analysis and data pertinent to fuel clad collapse under fuel densification conditions have been approved by the Directorate of Licensing.

3.11.2 The first reactor core in Unit 3 may not be operated beyond 10,944 effective full power hours until supporting analysis and data pertinent to fuel clad collapse under fuel densification conditions have been approved by the Directorate of Licensing.

Bases

The licensing staff has reviewed the effects of fuel densification for the first core in Oconee Units 2 and 3 and concluded that clad collapse will not take place within the first fuel cycle (11,040 effective full power hours for Unit 3 and 10,944 effective full power hours for Unit 3). However, the clad collapse model used is questionable for extrapolation of clad collapse time out beyond the first fuel cycle because of limited experimental verification.