

NOV 5 1974

K. R. Goller, Assistant Director for Operating Reactors, L

OCONEE UNIT 1 CLADDING COLLAPSE (TAR-1198)

Plant Name: Oconee Unit 1
 Docket No.: 50-269
 Responsible Branch ORB-1
 and Project Manager: L. McDonough
 Technical Review Branch Involved: Core Performance Branch
 Requested Completion Date: October 25, 1974
 Reference: Letter to A. Giambusso, Reactor Projects
 from A. C. Thies, Duke Power Company,
 dated July 30, 1974

The subject letter requesting deleting of the 7500 EFPH creep collapse limit on Oconee 1 has been reviewed and a summary of the evaluation is enclosed. It is recommended that the 7500 EFPH limit be removed; operation with no expected collapse through cycle 3 is likely, subject to verification of the projected cycle 2 run schedule.

Original Signed by
 Victor Stello

Victor Stello, Jr., Assistant Director
 for Reactor Safety
 Directorate of Licensing

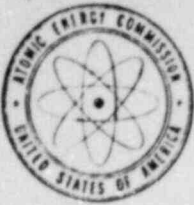
Enclosure:
 Summary of
 Evaluation

cc: S. Hanauer
 F. Schroeder
 W. McDonald
 D. Ross
 L. Rubenstein
 R. Purple
 L. McDonough
 S. Varga
 E. Leins
 F. Coffman

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DATE →	11/4/74	11/4/74	11/5/74	11/5/74		



UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

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A handwritten signature in cursive script, appearing to read "Victor Stello, Jr.", is positioned above the typed name.

Victor Stello, Jr., Assistant Director
for Reactor Safety
Directorate of Licensing

Enclosure:
Summary of
Evaluation

cc: S. Hanauer
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OCONEE UNIT 1 CLADDING COLLAPSE

We have reviewed the Duke Power Company Letter of 07/30/74, which requested deletion of the 7500 EFPH creep collapse limit (Technical Specification 3.11). This change was based on calculations made using the fuel vendor's creep collapse analysis⁽¹⁾. The vendor's analysis was accepted for license applications with three provisions⁽²⁾. The fuel vendor's collapse calculations for Oconee 1 satisfy two of our three provisions: (a) the creep equation must appropriately characterize the actual cladding material, (b) the initial ovality be no less than .0005 inches. The third provision is that of surveillance which requires that the results of the long term inreactor confirmatory tests on measured times to observed cladding collapse continue to be favorable.

The surveillance requirement (Technical Specification, Appendix A, Section 4.13)⁽³⁾ on Oconee 1 satisfies our requirement for specific confirmatory information on observed collapse. Comparable information will be available through inspections performed on the Fuel Rod and Cladding Study in Oconee II⁽⁴⁾. Information from the Point Beach and H. B. Robinson reactors suggests cladding creep collapse could occur about 21000 EFPH. The fuel in Point Beach and H. B. Robinson is similar to that in Oconee 1 but not directly equivalent.

We have independently calculated a predicted time for cladding creep collapse using the computer code BUCKLE⁽⁵⁾. BUCKLE is conservatively biased. BUCKLE uses a generally descriptive creep rate equation and predicts cladding collapse at 20500 EFPH for cycle 3 in Oconee 1.

The fuel vendor's cladding collapse analysis, CROV⁽¹⁾ is also conservatively biased. In contrast with BUCKLE, CROV uses creep rate equations specifically developed for Oconee type fuel cladding and is believed by the staff to be more appropriate for B&W cladding material. The CROV analysis predicts cladding collapse times over three months beyond the end of cycle 3 in Oconee 1. Exposure of original fuel through the first-three projected cycles is expected to be 21,500 EFPH.

It is recommended that the 7500 EFPH limit on Oconee 1 through cycle 3 be removed. It is recommended both that the available confirmatory information from inreactor tests be re-evaluated to continue compliance with the surveillance provision on the B&W analysis⁽²⁾ and that the specific operating history be used to precisely update the calculated cladding collapse time at the completion of cycle 2.

References

1. BAW-10084, "Program to Determine In-Reactor Performance of B&W Fuels-Cladding Creep Collapse, CROV".
2. Letter from V. Stello to V. Moore, "A Generic Review of the B&W Cladding Creep Collapse Analysis Topical Report BAW-10084 (TAR-970)", dated 8/9/74.
3. Section 4.13, Fuel Surveillance, Appendix A, Technical Specification, Oconee Unit 1.
4. FSER Supplement 16, Oconee 2, dated July 1973.
5. P. J. Pankaskie, "BUCKLE", BNWL-1784, May 1974.

References

1. BAW-10084, "Program to Determine In-Reactor Performance of B&W Fuels-Cladding Creep Collapse, CROV".
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4. FSAR Supplement 16, Oconee 2, dated July 1973.
5. P. J. Pankaskie, "BUCKLE", BNWL-1784, May 1974.