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 FACIL: 50-270 Oconee Nuclear Station, Unit 2, Duke Power Co.
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 RECIP. NAME RECIPIENT AFFILIATION
 DENTON, H.R. Office of Nuclear Reactor Regulation, Director
 STOLZ, J.F. Operating Reactors Branch 4

DOCKET #
05000270

SUBJECT: Advises that mark BZ demonstration assembly is not suitable for reinsertion in Cycle 6 core, supplementing 811113 proposal for OL amend & Tech Spec revision to support operation at full rated power during Cycle 6.

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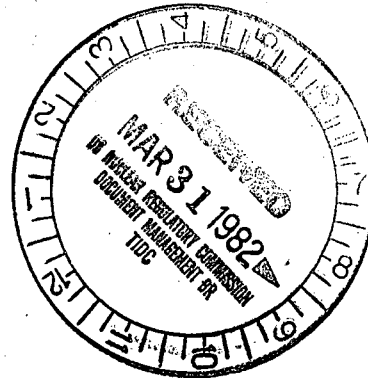
March 24, 1982

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373-4083

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

Attention: Mr. J. F. Stolz, Chief
Operating Reactors Branch No. 4

Subject: Oconee Nuclear Station, Unit 2
Docket No. 50-270



Dear Sir:

By letter dated November 13, 1981 Duke Power Company submitted a proposed Facility Operating License amendment and Technical Specification revision to support the operation of Oconee Unit 2 at full rated power during Cycle 6.

During the refueling outage, the one mark BZ demonstration assembly that Duke had planned to reinstall was determined to be not suitable for reinsertion in the Cycle 6 core. This was reported to the Staff in LER 50-270/82-05.

The one Mark BZ demonstration assembly had been irradiated during Oconee 2 Cycle 5 and was examined following removal. A visual examination revealed that the zircaloy grid had slid vertically such that it would no longer be in contact with grids of adjacent Mark B fuel assemblies had it been reinstalled. As this was a demonstration assembly, the decision was made not to reinstall it and to perform a minor core design change. Four similar Mark BZ demonstration assemblies are in the Unit 1 core; however, their design is different. These four assemblies have longer sleeves on the center instrument tube than the one in Unit 2.

The distance the grid can move is established by the cumulative gaps in the assembly. For the Unit 2 assembly, this is 2.73 inches, while for the Unit 1 assemblies, it is 1.2 inches. The width of a grid is 1.895 inches; thus the Unit 2 assembly could move enough to cause misalignment while those in Unit 1 could not move a sufficient distance. This matter was discussed by telephone conference call between the Staff and Duke on March 15, 1982.

A preliminary evaluation was made with respect to the safety aspects of reinserting the assembly, recognizing that the grids would remain mismatched. Under seismic/LOCA conditions, adjacent fuel assemblies would interact between fuel rods and grids rather than grid to grid. This condition was evaluated and shown to be acceptable. The potential for wear between the outside of the spacer grid and the fuel rods in adjacent assemblies was also assessed.

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Mr. Harold R. Denton, Director
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Because of the low contact stresses, vibration frequency, and amplitudes, no significant wear would be expected. Also, the visual examination showed no significant wear. Evaluation shows the instrument tube sleeves would continue to maintain spacing under operating conditions (i.e., prevent gross movement).

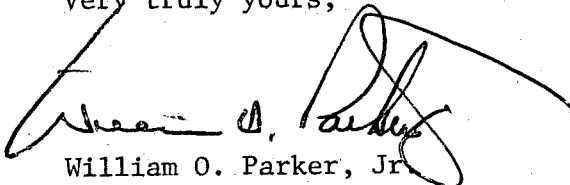
The preliminary evaluation included the thermal hydraulic aspects of reinserting the demo assembly considering the effects of mismatched grids. This evaluation considered the influence of the mismatched grids on crossflow velocities, hydraulic forces, and departure from nucleate boiling (DNB) performance. Crossflow velocities increased somewhat but remained within allowable limits. Hydraulic forces on the demo assembly were found to be essentially unaffected. The DNB performance of the peripheral channel was found to be adversely affected by the mismatched grids. However, the core location for the demo in this particular cycle provided sufficient peaking margin to ensure that the demo and neighboring assemblies would not become limiting for DNB even with a conservative penalty from mismatched grids applied.

Even though the preliminary evaluation performed indicated that reinserting this fuel assembly may be acceptable, it was believed prudent to recommend not reinserting this assembly. Therefore, it was recommended to reinsert an assembly from the spent pool which had similar reactivity and consequently, would result in minimal perturbation to the upcoming fuel cycle.

The Mark BZ assembly with apparent grid displacement has not been reloaded. The core reload design was modified slightly by the removal of one adjacent assembly and the loading of two substitute assemblies near the center of the core. The appropriate nuclear, thermal-hydraulic, mechanical, accident, and radiation reanalyses were completed, and no changes to the previously proposed Technical Specifications revisions for Ocone 2 Cycle 6 are required. The conclusions of the previously submitted Cycle 6 reload safety analysis remain valid.

This submittal is considered to supplement the proposal made by letter dated November 13, 1981. As such, no license fees are considered necessary.

Very truly yours,



William O. Parker, Jr.

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Mr. Harold R. Denton, Director

March 24, 1982

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cc: Mr. James P. O'Reilly, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

Mr. W. T. Orders
NRC Resident Inspector
Oconee Nuclear Station