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SUBJECT: Responds to request for addl info re transportation of spent fuel solid waste. Environ impact of transportation of fuel & waste per Table S-4 of 10CFR51.52.

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January 15, 1987

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

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

Dear Sir:

By letter dated January 14, 1986 Duke Power Company (Duke) requested an amendment to the Oconee Nuclear Station Facility Operating Licenses in order to extend the duration of the Licenses to forty (40) years from the date of issuance of the full-power licenses. During the review of these amendments by the NRC Staff, additional information concerning the transportation of spent fuel solid waste was requested. In support of the Staff's efforts the following information is provided.

- (1) The reactor core thermal power for Oconee is 2568 megawatts.
- (2) The initial enrichment of Uranium -235 for the Oconee fuel assemblies is less than 3.5% by weight.
- (3) The average level of irradiation of the Oconee fuel assemblies is less than 38,000 megawatt-days per metric ton (MWD/MTU) and the cooling period after it is discharged prior to transportation will be greater than 270 days.

Although the average burnup level of the Oconee fuel assemblies exceeds the value reported in 10 CFR 51.52(a)(3), the additional cooling period before shipment reduces the significance of the higher average burnup. The effective levels of radioactivity of a fuel assembly with an average burnup of 38,000 MWD/MTU that has cooled for 270 days can be shown to be less than a fuel assembly with an average burnup of 33,000 MWD/MTU that has cooled for 90 days. Further, based on the current progress of the development of a high level waste repository, most fuel assemblies will have decayed for several years.

- (4) The irradiated fuel assemblies will be shipped from the reactor either by truck, rail, or barge.
- (5) The Final Environmental Statement (FES) for Oconee assumed a core reload every twelve (12) months for each unit. By 1984 all three Oconee units completed transition to eighteen (18) month fuel cycles. As a result, there will be less core reloads required for the extended operating

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period case than what was assumed in the FES for Oconee. Although the Oconee FES assumed an average fuel assembly burnup of 10,000 MWD/MTU, the long length of time after discharge from the reactor prior to transportation compensates for the higher burnup.

- (6) The transportation of radioactive material is regulated by the Department of Transportation and the Nuclear Regulatory Commission. The regulations provide protection of the public and transport workers from radiation. This protection is achieved by a combination of standards and requirements applicable to packaging, limitations on the contents of packages and radiation levels from packages, and procedures to limit the exposure of persons under normal and accident conditions.

Primary reliance for safety in transport of radioactive material is placed on the packaging. The packaging must meet regulatory standards (10 CFR 71 and 49 CFR 173 and 178) established according to the type and form of material for containment, shielding, nuclear criticality safety, and heat dissipation. The standards provide that the packaging shall prevent the loss or dispersal of the radioactive contents, retain shielding efficiency, assure nuclear criticality safety, and provide adequate heat dissipation under normal conditions of transport and under specified accident damage test conditions. The contents of packages not designed to withstand accidents are limited, thereby limiting the risk from releases which could occur in an accident. The contents of the package also must be limited so that the standards for external radiation levels, temperature, pressure, and containment are met.

Based on the above, Duke concludes that the environmental impacts attributable to transportation of fuel and waste to and from the Oconee site, with respect to normal conditions of transport and possible accidents in transport, is in accordance with the impacts set forth in table S-4 of 10 CFR 51.52. These environmental costs will not be altered by the extended period of operation.

Very truly yours,



Hal B. Tucker

PFG/01/sbn

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