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PARKER,W.O. DUKE POWER CO.
RECIP.NAME RECIPIENT AFFILIATION
REID,R.W. OPERATING REACTORS BRANCH 4

SUBJECT: IN RESPONSE TO QUESTIONS RAISED AT 790501 MEETING,FORWARDS ADDL INFO RE PROPOSED INSTALLATION OF HIGH CAPACITY STORAGE RACKS.INFO SUPPL 790202 & 790420 SUBMITTALS.

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WILLIAM O. PARKER, JR.
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TELEPHONE: AREA 704
373-4083

May 2, 1979

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

Attention: Mr. Robert W. Reid, Chief
Operating Reactor Branch #4

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

Dear Sir:

With regard to discussions with the staff on May 1, 1979 in which additional information related to the proposed installation of high-capacity storage racks in the Oconee 1, 2 Spent Fuel Pool was requested, please find attached a revised response to Question 9 of your letter of March 29, 1979.

In that this revised response supplements my submittals of February 2, 1979 and April 20, 1979, no license fee is attached.

Very truly yours,

William O. Parker, Jr.

KRW:scs
Attachment

A001
S/1

7905080388

9. Question

Discuss the effect of increased vertical and horizontal loads on the liner and on the concrete structure (walls and bottom) of the pool.

Response

The fuel pool floor was reanalyzed taking into account any additional loads resulting from the proposed increase in pool storage capacity. Seismic loadings were based on preliminary rack pool interface loading data from Combustion Engineering's analysis procedure as described in Section 2.3.1 of the February 2, 1979 submittal. The preliminary loadings were conservatively increased by 10% in all cases to account for any possible variation between preliminary and final rack-pool interfacing loadings. Final rack-pool interface loadings will be compared to actual loadings used to insure that they were conservative in all cases.

As stated in Section 3.1 of the submittal, Oconee FSAR Appendix 5A design criteria was utilized for the reanalysis of existing structures. Table 9-1 presents a comparison of the most critical calculated moments and shears as defined by the most severe loading combinations and the allowable moments and shears. Comparision of the computed values with the allowable values shows the fuel pool floor is adequate to withstand the increased loadings resulting from the new racks and additional fuel.

The new rack modules are free standing and are not supported in any way off the pool walls. The response to Question 1 indicates that there are also no impact loadings on the pool wall during a seismic event.

A reanalysis was also conducted to determine the effect of increased vertical and horizontal loads on the liner. The resultant stresses from the maximum lateral seismic forces exerted by the rack modules on the pool floor were combined with the thermal stresses in the floor liner (i.e., the most critical combination of 1.0D+1.0E'+1.0Ta). For resistance to seismic forces, the thickness of the liner plate, exclusive of the stainless steel cladding, was used. The presence of the cladding was considered, however, with respect to thermal effects. The analysis results shown below verify that the maximum stresses in the liner and the welds connecting the liner to embedments in the concrete are below normal design allowables:

	Computed Stress	Normal Allowable Stress
Liner Plate	9.7 ksi	21.6 ksi
Welds	17.6 ksi	24 ksi

TABLE 9-1

SUMMARY OF STRUCTURAL EVALUATION FOR
ADDITION FLOOR LOADINGS

	Loading Condition	Critical Load Combination	Moment		Shear	
			Allowable*	Calculated	Allowable*	Calculated
Pool Slab	Normal (ACI-318-63)	1.5D+1.8L+1.5To	618 $\frac{K\text{-}ft}{ft}$	286 $\frac{K\text{-}ft}{ft}$	59.5 k/ft	29.2 k/ft
	Accident & Seismic	1.0D+1.0E'+1.0Ta**	618 $\frac{K\text{-}ft}{ft}$	221 $\frac{K\text{-}ft}{ft}$	59.5 k/ft	23.5 k/ft
Pool Floor Stiffening Members	Normal (ACI-318-63)	1.5D+1.8L+1.5To	4700 K-ft	3270 K-ft	411^{k}	220^{k}
	Accident & Seismic	1.0D+1.0E'+1.0Ta**	4700 K-ft	3016 K-ft	411^{k}	176^{k}

Ta - As defined in Section 3.1 of the submittal

To - As defined in Section 5.7.1.2 of the FSAR

D - Dead Load

E' - Horizontal and vertical seismic loads as described in Section 2.3.1 of the submittal and explained above.

L - Live Load

* The calculation of allowable shears and moments accounted for combined bending, shear and axial loadings per the ACI Code.