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April 5, 1983

ØCANØ483Ø2

Director of Nuclear Reactor Regulation
ATTN: Mr. J. F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Director of Nuclear Reactor Regulation
ATTN: Mr. Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: Arkansas Nuclear One - Units 1 & 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6
Spent Fuel Storage Expansion
Clarification to Submittal OCAN038307

Gentlemen:

Our letter dated March 7, 1983, (ØCANØ383Ø7) provided additional information concerning the spent fuel storage expansion in response to your letter dated February 1, 1983, (ØCNAØ283Ø2). During the review by Mr. Raj Anand of the NRC, certain statements within the attachment to this letter required changes to provide additional clarification, specifically that the Unit 2 spent fuel pool cooling system contains two (2) pumps and one cooler. Additionally, one pump is adequate to maintain the pool temperature below 135°F during maximum heat load conditions. Pages 6 and 7 of the attachment to letter ØCANØ383Ø7 have been revised to reflect the appropriate changes and are attached to this letter. This information was previously provided verbally to Mr. Raj Anand by telecon on April 1, 1983.

Very truly yours,

John M. Griffin for

John R. Marshall
Manager, Licensing

A001

JRM:MD:sl

Attachment

The heat load shown in Table I represents the largest heat load expected in the spent fuel pool.* The calculations are based upon an 18-month cycle.

Pool temperature is maintained below 120°F by operation of the two pump-single cooler configuration for the normal heat load and at or below 150°F for the maximum heat load. Upon failure of one pump for the normal condition, sufficient cooling capacity remains to maintain bulk pool temperature below 135°F. An analysis of pool response to loss of all forced cooling is presented in Section 4.3 of this response to Question 4.

*The heat load is slightly higher for the total loss of spent fuel pool cooling.

4.2 The following information describes the design heat load capacities and the imposed heat loads for normal operation with normal refuelings.

UNIT 1

Normal Operation

For normal operation, the pool is assumed to be fully loaded with 1/3 a core being loaded over a four-day period with a three-day cooling time - with the previous batch having been loaded 18 months prior to the present loading. The total heat load for the normal case is 11.67×10^6 Btu/Hr. The hottest fuel is assumed to be loaded in the center of the pit. Rack results for this case are presented below for the three inlet temperatures of 120, 150, and 180°F.

Temp. of Water at Inlet to Storage Racks	Average Cell Water Outlet Temp.	Maximum Cell Water Temp.	Maximum Clad Surface Temp. (Typical Rod)	Maximum Clad Surface Temp. (Peak Rod)	Maximum Temp. of Water in Cap Between Cells
°F	°F	°F	°F	°F	°F
120	126.9	140.0	156.8	166.9	128.0
150	156.4	168.9	186.5	197.0	157.8
180	186.4	198.1	215.0	225.5	187.6

The following comments are in order:

1) The present heat exchangers are capable of maintaining the pool water temperature below 120°F for normal refueling operations since the ΔT across the tube side of the heat exchangers.

2) All temperatures are less than saturation temperature of 242°F so the water remains subcooled.

UNIT 2

Normal Operation

For normal operation, the pool is assumed to be fully loaded with 1/3 a core being loaded over a four-day period with a three-day cooling time - with the previous batch having been loaded 18 months prior to the present loading. The total heat load for the normal case is 13.424×10^6 Btu/Hr. The hottest fuel is assumed to be loaded in the center of the pit. Rack results for this case are presented below for the three inlet temperatures of 120, 150, and 180°F.

Temp. of Water at Inlet to Storage Racks	Average Cell Water Outlet Temp.	Maximum Cell Water Temp.	Maximum Clad Surface Temp. (Typical Rod)	Maximum Clad Surface Temp. (Peak Rod)	Maximum Temp. of Water in Cap Between Cells
°F	°F	°F	°F	°F	°F
120	129.7	138.7	155	164.8	133.4
150	159	167.5	183.3	192.8	162.4
180	188.8	196.8	212	221.4	191.9

The following comments are in order:

1) The present heat exchanger is capable of maintaining the pool water temperature below 120°F for normal refueling operations since the ΔT of the first two columns is less than the 10.1°F ΔT across the tube side of the heat exchanger.

2) All temperatures are less than saturation temperature of 242°F so the water remains subcooled.

4.3 The following describes the design basis accident heat loads for both units considering the increased storage capacity.

UNIT 1

Loss of Spent Fuel Pool Cooling

Under postulated accident conditions where all non-Category 1 spent fuel pool cooling systems become inoperative, there is an alternative method for cooling the spent fuel pool water. Although it is highly unlikely that a complete loss of cooling capability could occur, the racks are analyzed to this condition.

Basis:

a. No pool cooling implies that temperature of water at inlet to spent fuel racks is 212°F, which corresponds to the saturation temperature at the pool surface.