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ALEXICH,M.P. Indiana & Michigan Electric Co.
RECIP.NAME RECIPIENT AFFILIATION
DENTON,H.R. Office of Nuclear Reactor Regulation, Director

SUBJECT: Suppl to 810814 Tech Spec change request re Mode 6 surveillance requirement,proposing frequency of 24 h to determine RHR opertion & circulating reactor coolant flow rate.

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August 19, 1983
AEP:NRC:0420C

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
FURTHER INFORMATION ON TECHNICAL SPECIFICATION CHANGE REQUEST
SUBMITTED IN LETTER NO. AEP:NRC:0420A, DATED AUGUST 14, 1981

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

Dear Mr. Denton:

In the above-referenced application, under Technical Specification (T/S) No. 4.9.8.1, we proposed a 24-hour interval as the appropriate frequency to determine that a residual heat removal (RHR) loop is in operation and circulating reactor coolant at a flow rate of 3,000 gpm. This surveillance requirement applies in Mode 6. This letter provides additional information in support of our 24-hour request.

All four RHR pumps at the Cook Plant are provided with low flow alarms set at 2,000 gpm. The RHR flow dissipates the core's decay heat to the component cooling water (CCW) in the RHR heat exchangers. We have estimated that one RHR train with degraded flow of 2,000 gpm and maximum CCW inlet temperature of 95°F could remove heat at a rate of 33 MBTU/hr from the reactor coolant system. More realistic assumptions for the CCW inlet temperature (65°F) would permit a heat removal rate of 55 MBTU/hr.

We have also estimated on the basis of the data presented in Reference (1), that the decay heat rate would become less than 33.10 MBTU/hr approximately 204 hours after shutdown, and less than 39.43 MBTU/hr approximately 110 hours after shutdown. The time at which the decay heat rate reaches 33 MBTU/hr is estimated to be 206.2 hrs. These calculations correspond to the decay heat rate of a 3,411 MW(t) reactor with all 193 assemblies inserted in the reactor vessel.

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During the actual refueling experience at the Donald C. Cook Nuclear Plant, the shortest time recorded from shutdown to entry into Mode 6 is approximately 214 hours (8 days and 22 hours) which corresponds to a decay heat rate of 32.66 MBTU/hr. We feel, therefore, justified in our Technical Specification change request, mentioned at the beginning of this letter, in that a frequency of surveillance higher than 24 hours does not seem justified because of the existence of the low flow alarm. We also feel that this alarm is set at a sufficiently high flow level that the RHR system could be capable of removing the decay heat generated by the core if one makes reasonable assumptions both about the time needed to reach Mode 6 and the CCW inlet temperature. Furthermore, the reactor coolant temperature/RHR temperature is monitored and logged during each shift while the plant is in Mode 6 and the vessel head is unbolted or lifted. Any abnormal increase in reactor coolant temperature would be detected and remedial actions taken. Such actions are discussed in Section 9.3.3 of the updated FSAR.

This letter has been prepared following Corporate Procedures which incorporate a reasonable set of controls to insure its accuracy and completeness prior to signature by the undersigned.

Very truly yours,

M. P. Alexich
Vice President

Reference (1): ANS-5.1. - "Proposed ANS Standard Decay Energy Release Rates Following Shutdown of Uranium Fueled Thermal Reactors." October, 1971.

MPA:cam

cc: John E. Dolan
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