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 FACIL: 50-315 Donald C. Cook Nuclear Power Plant, Unit 1, Indiana & 05000315
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 ALEXICH, M. P. American Electric Power Service Corp.
 RECIP. NAME RECIPIENT AFFILIATION
 MURLEY, T. E. Document Control Branch (Document Control Desk)

SUBJECT: Forwards results of analysis of effect that closing RHR cross-tie valves has on containment long-term pressure if accident occurs, in support of request to perform inservice testing of RHR valves. Concurrence requested by 880129.

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AEP:NRC:0969M

Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
PLANNED ACTIONS TO SUPPORT INSERVICE
TESTING OF RHR VALVES

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

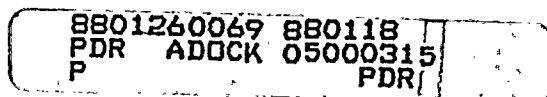
Attn: T. E. Murley

January 18, 1988

Dear Dr. Murley:

The attachment to this letter provides the actions we are planning in support of our request to perform inservice testing of the residual heat removal (RHR) valves. In Mr. D. L. Wigginton's letter to Mr. John E. Dolan dated December 11, 1987, we were requested to complete and submit the results of an analysis to support our request. The analysis pertains to the effect that closing the RHR cross-tie valves has on containment long-term pressure if an accident occurs. As discussed in the attachment, we are requesting NRC concurrence with our proposed course of action by January 29, 1988.

Pursuant to the requirements of 10 CFR 170.12(c), a check in the amount of \$150.00 for NRC review of our proposed course of action is required. Please use check number 295-0221 dated October 22, 1987, which was previously mailed to your offices.



*Adm
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Dr. T. E. Murley

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AEP:NRC:0969M

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

Sincerely,



M. P. Alexich
Vice President

cm

Attachment

cc: John E. Dolan
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Bruchmann
G. Charnoff
NRC Resident Inspector - Bridgman
A. B. Davis - Region III

Attachment to AEP:NRC:0969M

PLANNED ACTIONS FOR COMPLETING AND SUBMITTING
CONTAINMENT ANALYSIS RELATED TO RESIDUAL HEAT
REMOVAL (RHR) CROSS-TIE VALVE CLOSURE

Background

In our letter AEP:NRC:0969B, dated October 31, 1986, we requested permanent relief from the quarterly testing requirements of the ASME code for four valves in the residual heat removal (RHR) system. The valves affected by this request were:

IMO-330 and IMO-331: Discharge lines from the outlet of the RHR heat exchangers for both the East and West RHR pumps going to the containment spray headers.

IMO-340: Discharge from the East RHR pump (downstream of the heat exchanger) to the suction of the centrifugal charging pumps.

IMO-350: Discharge from the West RHR pump (downstream of the heat exchanger) to the suction of the safety injection pumps.

The relief was requested because of a change in the interpretation of the operability requirements of Technical Specification 3.5.2. Past testing methodology required closing the RHR cross-tie valves (IMO-314 and/or IMO-324), and thus limited RHR injection from a single pump to 2 loops. Under our present interpretation of operability, a single RHR pump must be able to deliver flow to all reactor coolant loops. As detailed in Attachment 1 to AEP:NRC:0969B, testing of the subject valves is not considered prudent with the RHR cross-tie valves open. Since it is unlikely that testing of the valves can be completed in one hour, testing with the cross-tie valves closed would result in commencement of a plant shutdown to fulfill the requirements of T/S 3.0.3.

In a safety evaluation report (SER) dated December 19, 1986 (letter from B. J. Youngblood to John E. Dolan), the NRC granted relief from the quarterly testing requirements, but only until the next scheduled refueling outages. The relief was only granted temporarily because we were revising the accident analyses such that operation of the Cook Nuclear Plant units with the RHR cross-tie valves closed would be supported. These analyses were submitted in our letters AEP:NRC:1024, dated March 23, 1987, and AEP:NRC:1024A, dated May 13, 1987. However, as indicated in our letter AEP:NRC:1024C, dated October 13, 1987, we were informed by our analyst, Westinghouse Electric Corporation, that the analyses may be inadequate in that the effect that closing the cross-tie valves has on containment long-term calculated pressure was not included in the review.

The relief granted in the December 19, 1986 SER expired for Unit 1 with the Cycle 9-10 refueling outage, which ended in October 1987. The valves were successfully tested during the refueling outage, which meant that the next required quarterly test would have been due by December 13, 1987. Because we were unable to resolve the containment long-term pressure issue by that date, we submitted our letter AEP:NRC:0969I on November 20, 1987 asking that our previous relief for Unit 1 be extended. (No further relief was necessary for Unit 2, since the refueling outage currently scheduled for May 1988 will last for nine months due to replacing all four steam generators.) In an SER dated December 11, 1987 (letter from D. L. Wigginton to John E. Dolan), the NRC extended the Unit 1 relief through June 1988. Also in that SER, we were requested to submit the containment analysis results to the NRC at least three months before the expiration date.

Proposed Course of Action

In order to justify two-loop RHR injection in terms of long-term containment pressure after a loss-of-coolant accident (LOCA), and thus permit us to test the RHR valves as described above, we will be contracting with Westinghouse Electric Corporation to perform a qualitative evaluation to assess the effect of RHR cross-tie closure on long-term containment integrity. The report Westinghouse will prepare will draw upon Westinghouse's experience with other ice condenser plants and the benefits of the NRC-approved 1979 Westinghouse Mass and Energy Release Model. This model incorporates improved thermal-hydraulic models in conjunction with the use of the 1979 ANS Decay Heat Standard. These improvements in the methodology result in significant reduction in calculated mass and energy release rates to the containment after a LOCA, as compared with the 1975 Westinghouse Mass and Energy Release Model. This earlier, overly conservative model was used for the long-term LOCA containment integrity analysis which is described in our current FSAR.

We anticipate that the evaluation will be supplied to you by March 31, 1988, as requested in the December 11, 1987 SER. We believe that the evaluation performed using the 1979 model will result in the conclusion that with the RHR cross-tie valve closed, no jeopardy to the integrity of the containment will result in the event of a LOCA.

Further, a long-term containment analysis will be performed as part of the reduced temperature and pressure (RTP) program for Donald C. Cook Nuclear Plant Unit 1. We have contracted with Westinghouse to perform appropriate analyses which will permit operating the Cook Nuclear Plant Unit 1 at lower temperatures and pressures in order to extend Unit 1 steam generator lifetimes. The long-term containment integrity analyses included in the RTP program will be performed in a manner which will bound both Unit 1 and Unit 2. The results of this effort will be used to provide, at a later date, plant

specific analysis which should confirm the conclusions of the qualitative report. We request that, based on appropriate conclusions of the qualitative report, a Safety Evaluation Report be issued by June 24, 1988 to permit operation with the RHR crosstie closed. Thus, our analysis basis would be injection to two Reactor Coolant System loops instead of four loops. This would allow us time to perform testing of the subject valves without shutting the unit down.

If the qualitative evaluation described above should not conclusively demonstrate adequate margin in containment pressure, or should your staff find the report unacceptable, we may request relief from testing the Unit 1 RHR valves until approximately September 1988 instead of June 1988. The analyses for the RTP program are scheduled to be completed by June 30, 1988. Thus, we would request relief to allow time for proper reviews and approvals of the RTP program analyses.

As previously committed, we will perform the required testing of the four RHR valves during intervening outages of sufficient duration when the plant is in a condition which would accommodate the tests. (In the event of frequent outages, testing will not be performed more often than once per 92 days.) Unit 1 is scheduled for an outage in April 1988 for ice condenser surveillances.

Date by Which Concurrence is Needed

Development of the qualitative evaluation will require approximately 8 weeks to complete, including time for our review of the Westinghouse report and transmittal to the NRC. Therefore, NRC concurrence with our approach is necessary by January 29, 1988 to support the submission date of March 31, 1988 requested in the December 11, 1987 SER.

