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 MURLEY, T. E. Document Control Branch (Document Control Desk)

SUBJECT: Responds to NRC 870309 ltr expressing concerns re util
 860422 response to Items 4.2.3 & 4.2.4 of Generic Ltr 83-28.
 Util believes no periodic replacement program required for
 reactor trip breakers.

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INDIANA & MICHIGAN ELECTRIC COMPANY

P.O. BOX 16631
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August 13, 1987
AEP:NRC:0838X
Generic Letter 83-28

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
ADDITIONAL INFORMATION ON ITEMS 4.2.3 AND 4.2.4
OF GENERIC LETTER 83-28

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

Attn: T. E. Murley

Dear Dr. Murley:

In letter AEP:NRC:0838Q, dated April 22, 1986, we responded to Items 4.2.3 and 4.2.4 of Generic Letter 83-28. These items of the Generic Letter involve life testing and periodic replacement programs for the reactor trip breakers (RTBs) and their attachments. In a letter dated March 9, 1987 from B. J. Youngblood to John Dolan, the NRC took exception to some of the provisions of our letter. The purpose of this letter is to respond to the NRC concerns and to clarify our position by providing further information. We believe that all relevant end-of-life-related failures have been adequately addressed by WCAP-10852 and by our maintenance program. We therefore believe that neither life testing of the RTBs nor an ongoing life testing program is required. In addition, we believe that the WCAP adequately addressed all relevant end-of-life failures for the RTB trip attachments, and therefore a periodic replacement program based on the WCAP should be acceptable. It is our opinion that with proper maintenance the RTBs themselves have a qualified life which greatly exceeds the qualified life of the plant; we therefore believe that no periodic replacement program is required for the RTBs proper.

Our detailed response to these items is contained in Attachment 1 to this letter. Attachment 2 contains a copy of the letters referenced in this submittal.

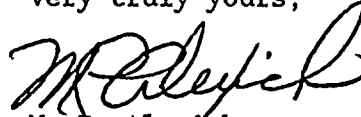
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If your staff agrees with the information contained in this letter, we request that this item be closed.

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

Very truly yours,



M. P. Alexich
Vice President

cm

Attachments

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 1 to AEP:NRC:0838X

Response to NRC Concerns on Life Testing and
Periodic Replacement of RTBs

We have not performed life testing on our RTBs and do not have an ongoing life testing program; however, we believe that our current maintenance program is adequate to ensure reliable RTB operation. We believe that reference to the Westinghouse Owners Group Report (WCAP-10852) is not necessary for the RTBs themselves, since we believe that our maintenance program for the RTBs proper is adequate to address all relevant end-of-life-related failures. We also believe that the WCAP need not address aging for the trip attachments, since we believe that wear is the only relevant end-of-life-related failure for the trip attachments.

The specific NRC concerns and our responses to these concerns are given below.

Item 4.2.3. Life Testing of Breakers

NRC Concern

"The licensee's submittal did not identify the qualified life of the Cook reactor trip breakers. Neither did it specifically identify the results of the Life Cycle Testing Program by Westinghouse report number. The WOG report on type DB-50 breakers (the type used at Cook) is WCAP-10852.

"WCAP-10852 addresses only cyclic testing on RTB trip attachments. It does not address life qualification of the RTBs proper. It does not even address noncyclic life limiting or performance degrading phenomena (i.e., aging) for the trip attachments. Therefore, this WCAP report does not constitute an acceptable response to the concern of the Generic Letter.

"We find that the licensee has not committed to a life testing program. The breaker's qualified life must be established based on actual testing of the breakers on an acceptable sample size. On-going life testing would be an acceptable alternative to formal life testing, provided that the licensee program includes the three requirements mentioned under the Evaluation Criteria in this report."

Response to NRC Concern

We will address the concerns on life testing by using the format describing the ongoing qualification program provided in the SER. It is noted again that we do not have an ongoing qualification program and are using the format provided only as a means of organizing our response. Our response using this format is as follows:

Question 1

"Definition of the number of demands per unit of time, to which [an] RTB must respond, and the basis for the number of demands."

Response 1

During a standard 18-month fuel cycle and refueling, each breaker is cycled approximately 70 times for testing.

Question 2

"Definition of relevant, end-of-life-related failures. (Note that random failures occurring during the constant hazard rate portion of the 'bathtub curve' are not relevant to a life test)."

Response 2

It is our opinion that degradation due to wear is the only relevant end-of-life-related failure for any of the components. We believe that WCAP-10852 and our maintenance program adequately address degradation due to wear therefore, we believe that all relevant end-of-life-related failures have been adequately addressed. Our reasoning for each of the major components is as follows:

Reactor Trip Breakers (RTBs)

The RTBs are located in a mild environment at D. C. Cook Plant. The portions of the RTB mechanism which perform a safety function are composed of metallic parts which have a life that greatly exceeds the expected life of the plant, with mechanical wear being the only limiting factor.

To address mechanical wear, we perform routine maintenance on the breakers. The main thrust of our maintenance program is to minimize mechanical wear by inspecting, cleaning, and lubricating in accordance with approved plant procedures. In addition, the breakers can and have been reconditioned by the manufacturer.

The RTB closing coil and control relay are not wholly metallic; however, these components do not participate in the tripping sequence and therefore serve no safety function.

We conclude that there are no relevant end-of-life-related failures that are not adequately addressed which would prevent this equipment from performing its intended safety function.

Undervoltage Trip Attachment (UVTA)

Only the holding coil of the undervoltage trip attachment (UVTA) is susceptible to thermal aging effects; however, this device is inherently fail-safe in that failure of the coil results in a reactor trip.

Our own inspection on a sample of ten-year-old UVTAs indicated that any mechanical wear was in places and of a type that would ultimately render the UVTA unable to latch. Failure to latch would result in a reactor trip.

No UVTA failures were noted in WCAP-10852 after 2500 operations. Plant procedures require replacement of the UVTA after 1250 operations. In addition, our maintenance program described below addresses the effects of mechanical wear.

We again conclude that there are no relevant end-of-life-related failures that have not been adequately addressed which would prevent the UVTA from performing its intended safety function.

Shunt Trip Attachment (STA)

The shunt trip attachment (STA) coil is also located in a mild environment and is normally de-energized. Therefore, the STA is not prone to accelerated degradation due to thermal aging effects. The materials used in the device are not subject to rapid degradation at normal room ambient temperature, and can be expected to serve reliably throughout the replacement interval.

The STA was tested by Westinghouse (WCAP-10852) to 2500 trip operations with no failures to trip or significant performance degradation. The subject plant procedure will be changed to require replacement of the STA after 1250 operations during its next scheduled revision (June 25, 1989) or prior to replacement of the UVTAs, whichever comes first.

It is our opinion that degradation due to wear is the only relevant end-of-life-related failure associated with the STA. We believe that the Westinghouse testing (WCAP-10852) and our commitment to replace the STA on a conservative replacement interval adequately address degradation due to wear. In addition, our maintenance program described below addresses the effects of mechanical wear.

Therefore, we conclude that there are no relevant end-of-life-related failures that have not been adequately addressed which would prevent the STA from performing its intended safety function.

Maintenance Program

The trip attachments receive routine maintenance in accordance with approved plant procedures.

We measure breaker insulation resistance, trip bar force, UVTA minimum trip voltage, and breaker response time from both the UVTA and auto shunt trip feature. We also trend these parameters to alert us to any degraded condition.

We believe that our maintenance program, through inspection, lubrication, etc., adequately addresses mechanical wear. Our trending and surveillance programs confirm the adequacy of our maintenance program and serve to alert us to any degraded condition.

To summarize, we believe that for the trip attachments the Westinghouse testing and our conservative replacement schedule, along with our maintenance program, adequately address degradation due to wear, which we believe to be the only relevant end-of-life-related failure for the trip attachments. For the RTBs themselves, we believe that the inspecting, cleaning, and lubricating done as part of our maintenance program adequately address degradation due to wear, which we believe to be the only relevant end-of-life-related failure for the RTBs themselves.

Question 3

"Definition of the action to be taken upon any failure."

Response 3

In 1985 one of the Unit 2 RTBs failed shortly after being installed. We believe that actions taken following this event are typical of actions which would be taken should any future failure occur. Immediately following this event, representatives from American Electric Power Service Corporation, NRC Region III, NRR (Washington), and Westinghouse traveled to the plant site. A post-trip review was conducted and the failed breaker was inspected and tested to determine the cause of failure. In addition, a full inspection and functional tests using the plant's 18-month surveillance procedure were initiated for all eight of the D. C. Cook RTBs. For additional information regarding this event, please see our letter AEP:NRC:0962, which is included in Attachment 2 to this letter.

Based on the information given above, we believe that we have adequately addressed the life testing concerns of the Generic Letter.

Item 4.2.4, Periodic Replacement ProgramNRC Concern

"We find the licensee position on this item unacceptable. As discussed in Section 3.1 of this SER, the WOG Life Cycle Testing Program does not constitute a life test of the RTBs or the components thereof. The licensee should identify a replacement program for the breaker and breaker components consistent with demonstrated life cycles. The program should consider data derived from the on-going life testing as well as the design life. If data from on-going qualification is used, the licensee should consider in-service failures, malfunctions during the periodic maintenance program and indication of degradation or failures from the measurements made for the trending of parameters. In addition, the licensee should specifically define how the on-going qualification results will be used to establish replacement cycles and times."

Response to NRC Concern

As stated previously, we believe that the only relevant end-of-life failure is wear. We therefore believe that WCAP-10852 did address all relevant end-of-life-related failures for the RTB trip attachments and that a replacement program based on the WCAP should be acceptable. Our replacement program for the RTB attachments based on the WCAP is as follows:

1. The STA was tested by Westinghouse (WCAP-10852) to 2500 trip operations with no failures to trip or significant performance degradation. Based on this, plant procedures will be changed to conservatively require a replacement interval for the STA of 1250 operations.
2. No UVTA failures were noted in WCAP-10852 after 2500 operations. As with the STA, plant procedures also conservatively require replacement of the UVTA after 1250 operations.

As stated previously, we believe that with proper maintenance, the RTBs themselves have a qualified life which greatly exceeds the expected life of

the plant. We therefore believe that no periodic replacement program is required for the RTBs proper. It is therefore our opinion that we have adequately addressed the periodic replacement concerns of the Generic Letter.

Attachment 2 to AEP:NRC:0838X

Letters Referenced In This Submittal