INDIANA & MICHIGAN ELECTRIC COMPANY

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November 29, 1984
AEP:NRC:0906

Donald C. Cook Nuclear Plant
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
NRC REPORT NOS. 50-315/84-13 (DRS); 50-316/84-15 (DRS)

Mr. James G. Keppler
U.S. Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Keppler:

This letter responds to Mr. R. L. Spessard's letter dated October 12, 1984 which forwarded the subject Inspection Report of the routine safety inspection conducted by your staff at the Donald C. Cook Nuclear Plant during the period July 9, 1984 through September 19, 1984. As confirmed with Mr. L. Reyes on November 14, 1984, an extension to November 29, 1984 was granted for our response to the inspection report. The notice of violation attached to Mr. Spessard's letter identified three items of noncompliance. Item 2 has been satisfactorily resolved, as indicated in the report. Additionally, four unresolved items requiring a response were identified. Our responses are as follows:

ITEM OF NONCOMPLIANCE - 1

Technical Specification 4.7.1.2 for both Units 1 and 2 requires the turbine driven auxiliary feedwater pumps to develop a discharge pressure of greater than or equal to 1285 psig at 700 gpm or greater.

Contrary to the above, surveillance test procedures for testing the pumps allowed acceptance of the tests at lower discharge pressures than 1285 psig and test results were accepted that did not meet the Technical Specification requirements.

RESPONSE TO THE ITEM - 1

We disagree with the classification of this item as an item of noncompliance. However, to minimize the possibility of misinterpretation, we will pursue a technical specification change, which will clarify that the discharge pressure of 1285 psig is at 60°F. This clarification would indicate that the surveillance test procedures are consistent with the Technical Specification.

The basis of the Technical Specification requirement for the TDAFP (T.S. 4.7.1.2.a.2.b; "The steam turbine driven pump develops a discharge pressure of $\geq$ 1285 psig at a flow of $\geq$ 700 gpm when the secondary steam pressure is greater than 310 psig.") was developed by degrading the manufacturer's pump performance curve by five percent. This degraded differential head, in feet, was used in calculating the discharge pressure, in psi, based on the specific gravity of water at 60°F. The current plant procedure adjusts the Technical Specification discharge pressure requirement of 1285 psig for temperature by establishing a minimum discharge pressure associated with the actual condensate temperature. This density adjustment allows a true comparison of pump performance (discharge pressure) to the baseline/standard that was used to establish the Technical Specification.

A review of past (i.e., last two years) performance data was made. The maximum adjustment, due to temperature, was found to be 6 psi; the actual discharge pressure recorded in this test was 40 psi above the Technical Specification value.

In essence, the plant procedure provides adjustments for the 1285 psig specified in the Technical Specifications. Specifically, pressures, equivalent to water at 1285 psig and 60°F, are provided for various other water temperatures. These equivalent pressures are therefore readily available for comparison to the discharge pressure at the actual temperature that may be realized at the time of the test.

As discussed with Region III staff, a letter (AEP:NRC:0906A, dated November 28, 1984) was sent to NRR. The letter requests an interpretation as to whether or not our plant procedures properly implement the Technical Specification.

The NRC inspector noted that the plant requirements for heat removal were not taken into account in the licensee's justification of lowered pump discharge pressures and that discharge pressures lower than the Technical specification limit had been accepted in previous pump tests. Our response to this concern is summarized below:

The hydraulic analyses for the auxiliary feedwater (AFW) system were performed based on supplying auxiliary feedwater at standard conditions (60°F). We have reviewed the temperatures experienced during the monthly surveillance test for the AFW pumps with respect to the density adjustments. Our review indicates that the adjusted discharge pressure for these tests are within the bounds of the hydraulic analyses and the Technical Specification limit.

In addition, we have reanalyzed the AFW system at a temperature of 120°F (value used in the safety analysis). Using a temperature of 120°F has a minimal effect on the hydraulic analyses resulting in a less than one percent deviation to the required flow rate. These results are well within the calculational accuracy of fluid hydraulic analysis.

Therefore, the effect of a temperature (density) correction has a minimal impact on the hydraulic analyses and is acceptable for use in determination of pump discharge pressure during surveillance testing.

ITEM OF NONCOMPLIANCE - 3

Appendix B of 10 CFR 50, Criterion XVI, and Subsection IWV of the ASME Boiler and Pressure Vessel Code, Section XI require the identification of conditions adverse to quality and appropriate corrective action.

Contrary to this:

a. Limiting values for valve stroke times were selected that would not meet the intent of the Code in identifying serious valve degradation or in requiring corrective action to assure valve operational readiness.

b. Documentation, analysis and evaluation of surveillance test results and corrective action was inadequate to determine if conditions adverse to quality existed other than for individual valve failures.

c. Specific corrective action requirements for increased power operated valve stroke times or for increased valve leak rates according to IWV of the code were not followed.

RESPONSE TO ITEM 3.a

We disagree with the classification of this item as an example of a noncompliance.

We believe that the demonstration of valve stroke time based on both the system response time and valve performance capability would be an enhancement. Therefore, the allowable stroke times for each valve will be evaluated on the basis of both system response times and valve performance capability. The IST Valve Program for the second ten-year interval will be revised to incorporate this enhancement. The Valve Program for the second ten-year inspection interval is currently scheduled for submission in January, 1986 and implementation in July, 1986.

The NRC inspection report, section 6 stated, in part, "Subsection IWV-2130 [IWV-2140] of Section XI defines exercising as 'the demonstration based on direct or indirect visual or other positive indication that moving parts of a valve function satisfactorily;' IWV-3410 states that the 'limiting value of full stroke time' is one of the criteria for test acceptance. Consequently, stroke time limits for a given valve must be chosen such that achieving this value would indicate the satisfactory physical condition of the valve. System response times used by the licensee are not adequate for this purpose. Test records show that both motor and air-operated valves with observed stroke times of less than ten seconds and two seconds, respectively, have been assigned maximum stroke times of 120 seconds. These stroke times are well beyond those representative of satisfactory valve condition and hence, fail to meet the code requirement noted above."

The above scenario appears to be properly concerned with the "demonstration ... that ... a valve function[s] satisfactorily". We believe the NRC Region III position, that system response times are not adequate for this satisfactory valve demonstration is not supported by ASME Section XI. Section XI does not provide specific criteria and/or guidance for the selection of the limiting value of the full stroke time. Since the Code states that the limiting value of the full stroke time shall be specified by the owner, we have delineated criteria for each power operated valve. The delineated criteria are the system response times. Demonstration that valves meet the system response times assures that the valves will perform their safety function. Given no further specific criteria and/or guidance by Section XI, we have met the requirement of the Code.

Furthermore, since the ability of valves to perform their safety function is adequately demonstrated with system response times, a condition adverse to quality does not exist. Therefore, we believe a violation of 10 CFR 50, Appendix B, Criterion XVI was not committed.

RESPONSE TO ITEM 3.b

1. CORRECTIVE ACTION TAKEN AND RESULTS ACHIEVED

As an interim measure, effective November 19, 1984, identified valve failures are being documented in accordance with the Plant condition report procedure. The condition reports will be evaluated to determine the cause of the failure. Similar valves, which would be susceptible to the cause, will then be assessed to assure that a similar valve failure is not pending.

Tentatively, "valve failure" has been defined as any valve which (1) will not meet the requirements of the maximum allowable stroke times as specified in the IST valve program or (2) will not perform any other required safety function (such as maintaining the reactor coolant boundary). This definition is currently under review. We currently have not identified any valves that would be described as valve failures by this definition.

2. CORRECTIVE ACTION TO BE TAKEN TO AVOID FURTHER NONCOMPLIANCE

A procedure will be written to address how valve failures will be documented and evaluated. An assessment of our valve program will be completed by February 15, 1985 to determine what modifications are necessary to adequately address failure rate and trending activities.

3. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance will be achieved on February 15, 1985 when the interim measure described above are proceduralized and the valve program assessment is complete.

RESPONSE TO ITEM 3.C

1. CORRECTIVE ACTION TAKEN AND RESULTS ACHIEVED

The bases for this item were identified in the Inspection Report (84-13; 84-15), section 8.b (pages 7 and 8) as three issues related to the plant corrective action program for valves: The program (1) would allow valve degradation to continue without increased surveillance or corrective action; (2) does not address corrective action for infrequently operated valves with increased stroke times; and (3) does not provide for analyzing increased leakage of tested valves or for corrective action which would restore the valves.

In response to issue (1) we have revised our method of documenting increased frequency. A Valve Increased Frequency Log has been generated to keep track of all valves on increased frequency along with the test dates, times and surveillance procedures (STPs). Also, all valves which are placed on this log are included in the QC Weekly Report which is distributed for review to the appropriate people. This new method of recording and reporting increased frequency will be incorporated in the revision of the ISI procedure.

In response to issue (2), the current procedure for increased frequency will be modified to address infrequently stroked valves. Each failure of a valve in this category will be evaluated on an individual basis, for the appropriate course of action.

In response to issue (3) it is the D. C. Cook Plant's policy to take corrective actions on recurring problems. This requirement is set forth both in PMI-7030, "Condition Reports", and the D. C. Cook Policy Statement.

Appendix J valves are not reviewed to criteria contained in IWV-3420(G) of the ASME Code. We have, accordingly, requested an exemption in our ISI program to exclude valves which are in the Appendix J program from the review requirements of ASME Section XI. Periodic reports are generated as a result of complying with 10 CFR 50 Appendix J. We believe that although we do not review Appendix J valves to ASME Section XI criteria, we nonetheless have an effective program to correct deficiencies through existing Plant Manager Instructions and 10 CFR 50 Appendix J requirements.

2. CORRECTIVE ACTION TO BE TAKEN TO AVOID FURTHER NONCOMPLIANCE

An audit of PMI-5070 (Inservice Inspection) is presently scheduled for April, 1985. The scope of the audit will be expanded to encompass the commitments contained in the response to this item of noncompliance.

3. DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance will be achieved by February 15, 1985, when our procedure is revised to address infrequently stroked valves.

UNRESOLVED ITEM - 315/84-13-03(DRS); 316/84-15-03(DRS)

Discussions with the licensee indicated that currently there is no test procedure which adequately demonstrates the capability of the TDAFP to respond at a given flow within the response time stated in Technical Specification 4.3.2.1.3, Table 3.3-5, upon receipt of an ESF actuation signal. The licensee is reviewing the surveillance procedures and will revise the procedure as necessary to provide assurance that the TDAFP can perform its safety function.

RESPONSE TO THE UNRESOLVED ITEM

A review of Procedure THP-4030.STP.205, for both Units 1 and 2 and Trains A and B, was completed and found that time response from sensor actuation to component actuation only included those times up to the opening of the turbine trip and throttle valve (TDTV). Because the Technical Specifications, as written, do not specify a minimum pump discharge pressure and corresponding flow for pump response timing (as is the case with the SI, RHR and CC pumps, reference Table 3.3-5, Table Notation), this additional item for the turbine driven auxiliary feedwater pump to come to pressure was not added into the overall time response. Because it is agreed the discharge pressure and flow are highly dependent on speed, which in the case of the turbine driven auxiliary feedwater pump is highly dependent on the performance of the TDTV valve, this requirement for timing will be added as an enhancement to plant procedure(s). This enhancement will be completed prior to the next scheduled use of the procedure(s).

UNRESOLVED ITEM - 315/84-13-07(DRS); 316/84-15-07(DRS)

Subsection IWV-3300 states that "All valves with remote position indicators, which during plant operation are inaccessible for direct observation, shall be visually observed. . . to confirm that remote valve indications accurately reflect valve operation." In addition, ASME Code interpretation XI-1-79-18 states "It is the intent of Section XI. . . to require that all valves, accessible and inaccessible, that have remote valve indicators be visually checked. . . to verify that remote valve indications accurately reflect valve operation." The licensee stated that remote valve indications are checked for inaccessible valves only, and that they were unaware of the code interpretation. The inspector also noted that stroke timing of valves is generally performed by observing the light indicators in the control room which may not indicate actual valve stem movement. The licensee agreed to review the valve stroke test procedures and revise them as necessary.

The inspector also reviewed Surveillance Test Procedure 1-OHP-4030.STP.034, "Local Valve Position Verification Test," Revision 4, and questioned its suitability for the purpose intended. It does not require timing the valve stroke, measuring stroke distance, verifying proper limit switch setting, relating actual stroke time to timing by position lights, etc. The licensee agreed to re-evaluate the adequacy of the procedure.

RESPONSE TO THE UNRESOLVED ITEM

We are in literal compliance with the present Code requirement. We realize that future Code versions will include interpretation X1-01-79-18 and will become requirements. The future Code versions would then require observation of local valve positions. Therefore, we will revise our procedures to be consistent with the future Code by the end of the 1985 Unit 2 refueling outage.

Our assessment of Procedure 1-OHP-4030.STP.034, Revision 4, and other plant procedures concluded that the procedures adequately incorporate the requirements of the Code. Plant procedures, other than STP.034, properly specify the requirements to set up a valve after maintenance activities. The intent of the Code appears to be confirmation of stem movement and physical condition of the valve, not a requirement to reconfirm all valve parameters.

UNRESOLVED ITEM - 315/84-13-10 (DRS); 316/84-15-10(DRS)

Closure testing is required for valves that protect low pressure piping and vessels from reactor coolant system pressure. The licensee agreed to review its valve test program to assure compliance with this requirement.

The inspector also determined that the rotameters, IFI-305 and IFI-306, used in the leak testing of some of the pressure isolation valves are a type that can give a false, zero leakage reading if not used with caution. The licensee agreed to assure that the test flow meter was used in a manner that did not give false readings or to review previous test data and take the necessary action to assure that a high leak rate was not overlooked.

RESPONSE TO THE UNRESOLVED ITEM

Testing of the pressure isolation valves to assure protection of low-pressure piping has been incorporated in our current IST Valve Program as submitted via AEP:NRC:730C dated October 2, 1984. This will be incorporated into the formal IST Program by January 1986.

While on site the inspector discussed with D. C. Cook Plant personnel the possibility that rotameters, used for high to low pressure interface valve leak testing, may at times erroneously indicate zero leakage due to slippage between the metal ring flow indicator and the magnet floating in the fluid stream.

Although not previously apprised of this condition, we will incorporate a precaution into the appropriate test procedures to insure the rotameters are valved into service with proper caution. This precaution will be incorporated into the procedure before its next scheduled use.

In addition, previous high to low pressure interface valve test data were reviewed to identify if any false readings of the nature described above could have occurred. The results of this review showed several

instances of zero indicated leak rates. The previous and subsequent leak rate of the valves showing zero leak rate measurements data preceding and/or following the zero leak rate measurements were well within the allowable leak rates. It was determined that because no adverse trends were noted either before or after the zero indicated leakage, there was evidence to indicate the zero leakage rates were correct.

In summary, precautions will be added to applicable test procedures to insure the proper use of magnetic rotameters before their next scheduled use. A review of the past test data of high to low pressure interface valve testing indicated that no high leak rates were obscured by erroneous, zero leak indications on the rotameters.

UNRESOLVED ITEM - 315/84-13-11(DRS); 316/84-15-11(DRS)

The inspector reviewed testing of the containment recirculation sump suction line isolation valves to assure that the test technique would not allow air in the suction lines. The inspector determined that the lines were inadvertently being filled by the test procedure and that no positive means are presently in use to assure filling. Inadvertent filling of these lines is unacceptable.

RESPONSE TO THE UNRESOLVED ITEM

An analysis was performed which verified that a hypothetical air pocket, located between the recirculation sump isolation valves and the Residual Heat Removal - Containment Spray line tee, would have sufficient time to bleed out during the switchover from the injection phase to the recirculation phase. Therefore, additional means to assure that these lines are filled during inservice testing is not necessary.

This document 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,

R. F. Hering
Vice President

MPA/cm

cc: John E. Dolan
M. P. Alexich
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Charnoff
NRC Resident Inspector - Bridgman
George Bruchmann

7) feel all valves will be done by end of U1 outage.

Kirby
Ken Baker
Moracco
Cubyra
Barrett

8) April 1 - will have final input. Will include commitments below.

Unit 1 ▭ Starts in March 3rd week

Unit 2 ▭ Starts Nov. 1 60 days

I & prob. Sound - will look at Unit 1

Few will not be tested
Hydrotest to be done

Commitments

Will

1) ~~Try~~ have U1/U2 procedures by end of today

2) All U2 valves tested

3) Some U1 will be tested.

4) All U1 valves tested or next cycle after end of U2 outage

5) Will make reasonable effort to get U1 valves.

6) Will look at U1 of probs identified on U2