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 AUTH.NAME AUTHOR AFFILIATION
 FITZPATRICK, E.E Indiana Michigan Power Co.
 RECIP.NAME RECIPIENT AFFILIATION
 Document Control Branch (Document Control Desk)

SUBJECT: Responds to NRC 960927 ltr re violations noted in insp repts
 50-315/96-10 & 50-316/96-10. Testing was performed, for both
 Cook Nuclear Plant units, to measure flows to CEQ fans.
 Evaluation was completed on 961106.

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Indiana Michigan
Power Company
500 Circle Drive
Buchanan, MI 49107 1395



November 8, 1996

AEP:NRC:1238D
10 CFR 2.201

Docket Nos.: 50-315
50-316

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

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
NRC INSPECTION REPORTS NO. 50-315/96010 (DRS)
AND 50-316/96010 (DRS) REPLY TO NOTICE OF VIOLATION

This letter is in response to a letter from G. E. Grant dated September 27, 1996, that forwarded a notice of violation to Indiana Michigan Power Company. The notice of violation contained one violation of NRC requirements identified during an inspection conducted by D. Butler and R. Lerch on August 5 through 29, 1996. The violation is associated with test controls that failed to verify component cooling water system performance requirements described in the updated final safety analysis report (UFSAR).

Our response was due to you on October 28, 1996; however, we requested a brief extension, which was granted by Mark Ring of Region III, on October 25, 1996.

We understand the significance of the violation, and the importance of adequate testing to demonstrate systems and components will perform satisfactorily.

Your letter requested we evaluate the failure of our staff to perform safety evaluations to disposition the cited disparity between test results and the UFSAR. Review of test results versus the requirements in the UFSAR is specifically addressed in the attached response to the violation. We have issued direction to appropriate personnel to ensure test results that differ from requirements noted in the UFSAR be promptly reviewed and dispositioned by a 10 CFR 50.59 evaluation.

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U. S. Nuclear Regulatory Commission
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AEP:NRC:1238D

Our reply to the violation is provided in the attachment to this letter.

Sincerely,

A. Alan Blind for

E. E. Fitzpatrick
Vice President

jmb

Attachment

cc: A. A. Blind
A. B. Beach
MDEQ - DW & RPD
NRC Resident Inspector
J. R. Padgett

ATTACHMENT TO AEP:NRC:1238D

REPLY TO NOTICE OF VIOLATION:
NRC INSPECTION REPORT NOS. 50-315/96010 (DRS) AND
50-316/96010 (DRS)

On August 29, 1996, the NRC completed an inspection of Cook Nuclear Plant units 1 and 2 reactor facilities. A violation of NRC requirements was identified during this inspection. In accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions" (60 FR 34381; June 30, 1995), the violation and our response are listed below.

I. NRC VIOLATION

"10 CFR 50, Appendix B, Criterion XI, "Test Control," requires, in part, that a test program shall be established to assure that all testing required to demonstrate that systems and components will perform satisfactorily in service is identified and performed in accordance with written procedures which incorporate the requirements and acceptance limits contained in design documents. Test results shall be documented and evaluated to assure that test requirements have been satisfied.

Contrary to the above:

- a. As of August 28, 1996, there was no periodic surveillance performed or procedure in place to assure that component cooling water system flow to the containment air recirculation fan met the 25 gpm listed in the updated final analysis report (UFSAR), table 9.5-2.
- b. As of August 28, 1996, the test program did not demonstrate that component cooling system performance was satisfactory as listed in the UFSAR, Table 9.5-2. Surveillance procedures 1 EHP 4030 STP.248, "Unit 1 Component Cooling Water Flow Balance," completed on September 28, 1995, and 2 EHP 4030 STP.248, "CCW Flow Balance," completed May 1, 1996, did not have acceptance criteria for sample cooler flows and the flow measurements taken were less than the minimum specified in the UFSAR. Also, no evaluation was done to assure that the resultant sample cooling flows would be adequate under all design conditions.

This is a Severity Level IV violation (Supplement I) (50-315/316-96010-01)."

II. RESPONSE TO VIOLATION Item "a"

1. Admission or Denial of the Alleged Violation

Indiana Michigan Power admits to the violation as cited in the NRC notice of violation with respect to item "a".

2. Reason for the Violation

During the course of our investigation of item "a", two general contributing factors were identified as the root cause, or reason, for the violation. The first is tied to inadequacies in our test program for the component cooling water (CCW) system, and the second stems from an inadequate technical review performed on related program procedures.

We agree our CCW system surveillance procedures do not include adequate provisions to ensure flow to the containment air recirculation (CEQ) fans meets the 25 gpm listed in the UFSAR.

Our CCW system flow testing included verification of flows to components served during emergency core cooling system injection actuation (phase "A" containment isolation), which simulates the most limiting condition, from a CCW system perspective. CCW cooling flow to the CEQ fans is actuated after a containment spray signal (phase "B" containment isolation signal).

CCW flow balance tests performed prior to 1993 measured flows to CCW system phase "A" components, phase "B" components, and some normal non-accident cooling loads simultaneously. This test did include measurement of cooling water flow rates to the CEQ fans. Total CCW system flow demand was higher during this testing than would be expected under true accident conditions. As a result, the system did not always achieve UFSAR required flows to the CEQ fans. While these tests were conservative with respect to total CCW system flow demand, they did not accurately simulate accident conditions for the CCW system or the systems and components being cooled by the CCW system.

A review of the system flow requirements in 1993 determined actual CCW system flow demand is greatest during phase "A" conditions. The CCW flow balance procedure was revised in 1993 to test, on a refueling outage frequency, for the CCW system limiting flow condition of phase "A" operation. From the standpoint of the CCW system, and its capability to supply adequate flow under accident conditions, this was an appropriate change.

However, the technical review of this procedure change did not adequately address the operation and associated testing of the CEQ fans. As a result, testing for cooling flow to the CEQ fans, which are actuated

following a phase "B" signal, was deleted. The CEQ fans themselves are tested quarterly to meet technical specification requirements; however, the short duration run does not warrant alignment of CCW cooling water during the test. Other existing tests do confirm, on a refueling outage frequency, the valves to the CEQ fans from the CCW system automatically reposition to direct water to components served on a phase "B" signal initiation; however, these tests do not measure CCW flow to the CEQ fans.

We no longer consider confirmation of valve repositioning on a phase "B" signal to constitute adequate testing of the capability to supply sufficient CCW cooling flow to the CEQ fans. A test will be performed to periodically verify the CCW system can provide the UFSAR specified cooling flow to the CEQ fans.

3. Corrective Actions Taken and Results Achieved

Following issuance of the notice of violation, testing of the CCW system was performed, for both Cook Nuclear Plant units, to measure flows to the CEQ fans. Because both units 1 and 2 are currently at power operation, CCW system conditions similar to those during which the CEQ fans are required to operate could not be duplicated. The CCW flow demand during this testing was more conservative than would be experienced under accident conditions.

The test results indicated flow less than the UFSAR specified value of 25 gpm to one CEQ fan on unit 1 and to one CEQ fan on unit 2. Operability determinations were performed and documented for the two fans with flows less than UFSAR values, and these determinations concluded the CEQ fans remain operable. A safety evaluation pursuant to 10 CFR 50.59 was documented to disposition the disparity between the test results and the flows required by the UFSAR for this testing, and for the results obtained during testing prior to 1993. The deviation from the UFSAR was judged to be acceptable. This safety evaluation was completed on November 6, 1996.

4. Corrective Actions Taken to Avoid Further Violations

Tests will be performed during the next refueling outage on each unit. These tests will be designed with CCW system conditions more closely matched to those under which the CEQ fans are required to operate. With a more realistic flow demand on the CCW system, it is



expected the 25 gpm to the CEQ fans can be achieved. This testing will be completed in conjunction with the refueling outage schedule: by May 31, 1997 (unit 1), and December 31, 1997 (unit 2). Thereafter, the testing will be performed on a refueling outage frequency.

An overall review of the test program for the CCW system will be performed to ensure it is comprehensive and effectively meets 10 CFR 50, Appendix B, Criterion XI. This review will be completed and any required test program changes identified by January 31, 1997.

In 1993, the engineering review of the CCW flow balance test procedure changes did not adequately address the operation and associated testing of the CEQ fans. Since then, actions have been taken to promote more in-depth technical reviews and highlight the need to determine all systems and equipment impacted by a set of conditions or events. We believe our engineers and reviewers are now more sensitive to these expectations and, as such, no additional actions are planned at this time.

5. Date When Full Compliance Will Be Achieved

Full compliance was achieved on October 27, 1996, when we completed testing and documented operability determinations for CCW flows to the CEQ fans.

II. RESPONSE TO VIOLATION Item "b"

1. Admission or Denial of the Alleged Violation

Indiana Michigan Power admits to the violation as cited in the NRC notice of violation with respect to item "b".

2. Reason for the Violation

The same contributing factors discussed in item "a," relating to our test program and technical reviews, were also determined to contribute to item "b." The review of item "b" also indicated the information specific to sample cooling in UFSAR Table 9.5-2 could be interpreted to define minimum acceptance criteria, but actually does not reflect a requirement for safety system performance.

The objective of the CCW flow balance procedure is to verify sufficient flow to the safety system loads under the conditions of a safety injection signal (phase "A"). To ensure adequate accident condition simulation during the test, additional CCW system flow loads from the miscellaneous header, of sufficient flow, are required to be aligned. The CCW sample cooling flows are not considered to be safety system loads, but are recorded as an additional load during the test.

The CCW flow balance test was performed with all of the sample cooler valves open. The test does instruct the performer to measure the total flow to the sample coolers, but does not specifically require an "acceptance criteria" for CCW flow to the sample coolers.

There are no sample cooling CCW flow requirements during or after a loss of coolant accident except for the post accident sampling system. For post-accident sampling, in response to NUREG-0737, we committed to sampling lower containment air, containment fluids (residual heat removal, reactor coolant system (RCS), and containment sump), and the RCS hot legs, utilizing four sample coolers. CCW flow to the non-essential sample coolers can be isolated. Based on the CCW flow for each sample cooler, an acceptable total flow rate for the post-accident sampling coolers can be defined as 44 gpm. Therefore, both the current UFSAR and the CCW flow balance procedure contain nominal flow requirements far in excess of the acceptable post-accident CCW sample cooler flow rate.

If all of the plants' twenty-nine sample coolers are in service, the required CCW cooling flow would be 183 gpm for unit 1 and 213 gpm for unit 2. In an attempt to simplify UFSAR table 9.5-2, a nominal CCW flow of 240 gpm was listed in the UFSAR that encompassed both units' sample cooler CCW flow rates.

Although our review indicates the test results obtained are acceptable, no evaluation was performed when we failed to meet the flow values listed in the procedure and the UFSAR. A safety evaluation pursuant to 10 CFR 50.59 has since been performed and documented, and the deviation from the UFSAR was judged to be acceptable.

3. Corrective Actions Taken and Results Achieved

A safety evaluation pursuant to 10 CFR 50.59 was documented to disposition the disparity between our past flow test results for the sample coolers and the flows noted in the UFSAR. This safety evaluation was completed on November 6, 1996.

Flow balance tests have yielded measured total CCW flow to the sample coolers less than that listed in the UFSAR or the flow balance procedure. However, the measured flow has been far in excess of the 44 gpm acceptable total post-accident CCW sample cooler flow rate. The 1995 unit 1 flow balance test recorded a total sample cooler CCW flow of 142 gpm, and the 1996 unit 2 flow balance test recorded a total sample cooler CCW flow of 166 gpm.

4. Corrective Actions Taken to Avoid Further Violations

By December 31, 1996, the flow balance test procedures 1 EHP 4030 STP.248, "Unit 1 Component Cooling Water Flow Balance," and 2 EHP 4030 STP.248, "CCW Flow Balance," will be revised to clearly reflect the acceptable total post-accident CCW flow rate of 44 gpm for the sample coolers.

The UFSAR and the CCW design basis document will be revised by July 22, 1997, to reflect the CCW flow rate of 44 gpm to the sample coolers desired for post-accident sampling.

Prior to implementing the procedure changes, and the UFSAR change, safety evaluations pursuant to 10 CFR 50.59 will be performed as required.

With regard to our failure to perform an evaluation to disposition the disparity between test results, the test procedure, and the UFSAR, we have issued written reinforcement of management expectations to appropriate personnel to ensure any test results that differ from references noted in the UFSAR be promptly dispositioned. Issuance of this direction was completed on October 24, 1996.

5. Date When Full Compliance Will Be Achieved

As noted above, CCW flow balance tests have demonstrated that CCW flow to the sample coolers is in excess of the 44 gpm acceptable for post-accident sampling as demonstrated by the 1995 unit 1 and 1996 unit 2 flow balance tests recorded for the CCW system. The CCW flow balance test procedures will be revised by December 31, 1996, and the UFSAR will be updated on or before July 22, 1997.