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SUBJECT: Responds to NRC 890313 ltr re violations noted in Insp Repts 50-315/89-07 & 50-316/89-07.Corrective actions taken.

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AEP:NRC:1090A

Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
NRC INSPECTION REPORT NOS. 50-315/89007 (DRS) AND
50-316/89007 (DRS); RESPONSE TO VIOLATION

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

Attn: A. B. Davis

April 12, 1989

Dear Mr. Davis:

This letter is in response to G. C. Wright's letter dated March 13, 1989, which forwarded the report on the routine safety inspection conducted by members of your staff. This inspection was conducted from February 9 through February 15, 1989, on activities at the Cook Nuclear Plant associated with leak rate testing performed under the requirements of 10 CFR 50, Appendix J. The Notice of Violation attached to Mr. Wright's letter identified three violations relating to our leak rate test activities. These violations are addressed in the attachment to this letter.

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

Sincerely,

M. P. Alexich
Vice President

ldp

cc: D. H. Williams, Jr.
W. G. Smith, Jr. - Bridgman
R. C. Callen
G. Charnoff
NRC Resident Inspector - Bridgman
G. Bruchmann

IE01

ATTACHMENT TO AEP:NRC:1090A

RESPONSE TO VIOLATIONS

NRC Violation - A

"10 CFR 50, Appendix B, Criterion V, requires in part that activities affecting quality shall be prescribed in documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Procedure 2-THP-4030 STP.202, "CILRT," Appendix F provides instructions regarding valve lineup for the containment integrated leak rate tests."

"Contrary to the above, on February 11, 1989, the licensee failed to adhere to Procedure 2-THP-4030 STP.202 as it pertained to control of the test configuration of the weld channel pressurization system. Specifically, four valves were found to be mispositioned during the temperature stabilization period."

Response to Violation

The cited violation resulted from personnel error. The procedure intended to allow valves that had been initially positioned correctly for the Containment Integrated Leak Rate Test (CILRT) to be subsequently operated in conjunction with other outage activities, provided they are returned to their proper test position before commencing the CILRT. Miscommunication resulted in specifying the incorrect final test position for the four valves.

(1) Corrective Actions Taken and Results Achieved

Upon discovery of the four mispositioned valves, proper positioning of all CILRT valves located outside containment was verified, the four mispositioned valves were returned to their proper position and testing continued. Following these actions, the CILRT was completed successfully. After completion of the CILRT the proper positioning of all CILRT valves located inside containment was verified. No deviations from test procedure requirements were found.

(2) Corrective Action Taken to Avoid Further Violation

The plant procedure at the time of the CILRT was to tag CILRT valves after initially positioning them in the required test position. Any subsequent manipulation of these valves was to be communicated to the test engineer so that they could be properly repositioned prior to the CILRT. Due to poor communications between test personnel, the incorrect valve positions were specified for the discrepant valves. The test procedure (for Unit 2) has been modified by

adding an appendix that requires an explicit listing of the status of CILRT valves that have been manipulated after being tagged, the proper test position associated with the valve, and sign-offs indicating verification of the proper test position. This procedure modification will significantly strengthen our ability to ensure that all CILRT valves are repositioned properly prior to test initiation. The Unit 1 CILRT procedure will also be revised in this manner prior to its scheduled use in May 1989 during the current refueling outage. These change will provide the enhancement of the control of CILRT valve position necessary to minimize the potential for this type of occurrence in the future.

(3) Date When Full Compliance Will be Achieved

Full compliance was achieved on Unit 2 on February 11, 1989, when the misaligned valves were correctly positioned and the CILRT was satisfactorily completed. The Unit 1 CILRT procedure will be revised by May 30, 1989, to incorporate improved administrative controls.

NRC Violation - B

"10 CFR 50, Appendix J, Paragraphs III.B.3.(a) and III.C.3 require that the combined leakage rate of all penetrations and valves subject to Type B and C tests shall be less than 0.6 La. The NRC has for many years accepted the use of "the maximum pathway methodology" as embodying sufficient conservatism to satisfy the requirements of Appendix J."

"Contrary to the above, the licensee did not use the maximum pathway methodology to determine if its Type B and C test results met the acceptance criteria of < 0.6 La. The licensee has continued to use the minimum pathway methodology event though it had been informed in 1985 (Inspection Report No. 50-315/85025; 50-316/85025) that its methodology did not meet the requirements of Appendix J."

Response to Violation

(1) Corrective Actions Taken and Results Achieved

On February 21, 1989, the as-found and as-left Type B and C leak rates were recalculated using the "maximum pathway" methodology. The recalculated as-found leak rate was 0.61 La, which exceeded the Technical Specification (T/S) limit of 0.60 La. This finding was reported in LER 050-316/89-005 dated March 23, 1989. As noted in the LER, leakage from only two containment isolation valves, one from the reactor coolant drain tank to the refueling water purification pumps and one for upper containment purge supply air, represented the major contribution to exceeding the T/S leak rate. All valves

exhibiting leakage in excess of acceptance criteria were repaired and retested. The recalculated total as-left B and C leakage was 0.076 La, which is well within the T/S limit.

(2) Corrective Action Taken to Avoid Further Violation

The Type B and C leak rate test procedures for Units 1 and 2 (1 THP 4030 STP.203 and 2 THP 4030 STP.203 respectively) have been revised to require the use of the "maximum pathway" methodology in future leak rate tests.

(3) Date When Full Compliance Will be Achieved

Full compliance was achieved for Units 1 and 2 on March 24, 1989, and March 31, 1989, respectively when the revisions described in (2) above to the applicable Type B and C leak rate test procedures were completed.

NRC Violation - C

"10 CFR 50, Appendix J, Paragraphs III.B.2 and III.C.2 require that all Type B and C tests be performed at a pressure of Pa. For this plant, Pa is 12 psig."

"Contrary to the above, neither the licensee's Type B and C Test Procedure 1 THP 4030 STP.203, Rev. 10, nor the licensee's testing practices, ensure that the penetration or valves being leak rate tested is at Pa since the pressure being monitored at the test rig does not account for the pressure drop due to the makeup flow (leakage) between the test implementation and the penetration/valve under test. For example, the test performed on November 15, 1989, on Penetration CPN-74 (a small volume penetration) showed a recorded test pressure of 12 psig at the test rig while the penetration leaked at a rate of 34,000 sccm. This had been shown earlier to be physically impossible."

Response to Violation

The pressure drop referred to in the above violation occurs as a result of the use of polyflow tubing as a connection between the leak rate monitor (LRM) and the test volume during the performance of Type B and C leak tests and then measuring the test volume pressure at the LRM (vs. at the test volume itself). This test configuration was found to be deficient in that the pressure measured at the LRM was not reflective of the actual test volume pressure for small test volumes with significant leak rates (as was the case cited in the violation). The length of tubing between the LRM and the test volume was also found to affect the pressure drop, with longer tubing lengths causing a greater pressure drop. It should be

noted that the identified deficiency in the test configuration had an insignificant effect on the as-left leak rate data. The total as-left B and C leak rate was, as stated previously in the response to violation B, 0.076 La, which is well within the T/S limit.

(1) Corrective Actions Taken and Results Achieved

In an attempt to assess the extent to which the test method for Type B and C leak rate testing was deficient, a bench test was used to determine the effects of various lengths (to a maximum of 175 feet) of polyflow tubing in obtaining accurate leak rate test data. The LRM used in the plant B and C leak rate testing was connected to a test volume with an additional pressure gauge located at the test volume itself to measure static test pressure. A valve was opened on the test volume to simulate a leak which confirmed that the actual test volume pressure was not 12 psig as indicated on the LRM. (NOTE: The in-place test method required a test pressure of 12.0 to 12.5 psig at the LRM to perform the test. 12.0 psig was used to obtain this test configuration data.) This bench test confirmed that when substantial leaks existed in the volume being tested, the pressure measured at the flow meter was not always identical to the pressure sensed at the test volume. The test results showed that the in-place test method was adequate for testing larger volumes, but was inadequate for testing small volumes with substantial leaks (the case cited in the violation was a small test volume with a relatively large leak rate).

A review of the Unit 2 test data has been performed to identify the "worst case" test volumes on the basis of the bench test results. The review showed only one test volume where, because of its size and relatively large leak rate, use of the original test method would have potentially affected the B and C leak rate results. It should be noted that this test configuration has also been used for personnel air lock leak rate testing. However, the test configuration had no impact on the air lock test data due to the large test volume, extremely low leak rates and small lengths of polyflow tubing used for the test.

The results of the above evaluations have led to a change in the test configuration for B and C leak rate testing as described in (2) below.

(2) Corrective Action Taken to Avoid Further Violation

The investigation conducted has confirmed that the test LRM pressure gauge must be set up to sense the static pressure at the test volume itself. Test methods have been changed for conducting the Type B and C leak rate testing so that the LRM now monitors the actual volume test pressure. The technicians

performing Type B and C leak rate testing have received training on the new test method and correct use of polyflow tubing. The new test configuration is presently in use for the Type B and C leak rate testing in progress in Unit 1.

(3) Date When Full Compliance Will be Achieved

Full compliance was achieved on March 17, 1989, when the training was completed for the new test configuration. Modifications to the LRMs had previously been made, as necessary, to accommodate use of the new test configuration.

Close Out of Inspection Open Item

In conjunction with violation B discussed above, the NRC inspector requested that a recalculation of leak rate results from previous leak rate testing (i.e., prior to the Unit 2 1988-1989 CILRT) be performed using the "maximum pathway" method. The following summary table provides the requested information (this information was also verbally communicated to the inspector on March 17, 1989).

Recalculation of Type B & C
Leak Rate Test Data

	Original (Minimum pathway) As-found	Recalcualted (Maximum pathway) As-found	As-left (Maximum pathway)
Unit 2 (1986 outage)	0.139 La with 1 unquantifiable test volume	0.69 La with 1 unquantifiable test volume	0.07 La
Unit 1 (1987 outage)	0.12 La with 1 unquantifiable test volume	0.58 La with 1 unquantifiable test volume	0.09 La
Unit 2 (1988-1989 outage)	-	0.61 La	0.076 La