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Docket No. 50-461

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Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Revised Response to Notice of Violation 50-461/95003-02 (DRS)

Dear Madam or Sir:

The attachment to this letter contains Illinois Power's revised response to Notice of Violation 50-461/95003-02. This revision is being submitted because additional information relevant to the violation was identified subsequent to the original submittal. The changes are indicated by revision bars and consist of added information and current status of corrective actions.

If you have any questions, please do not hesitate to call me.

Sincerely yours,

Walter G. MacFarland, IV
Senior Vice President
and Chief Nuclear Officer

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Attachment

cc: NRC Clinton Licensing Project Manager
NRC Resident Office, V-690
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety

Revised Response to Notice of Violation 50-461/95003-02(DRS)

The Notice of Violation states in part:

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

Procedure CPS 2602.01, "Heat Exchanger Performance of Shutdown Service Water Coolers covered by NRC Generic Letter 89-13," Revision 8, a written test procedure required to demonstrate that structures, systems, and components would perform satisfactorily in service, specified that functional testing be performed for the diesel generator (DG) shutdown service water (SX) heat exchangers to demonstrate that the heat exchangers would perform satisfactorily in service by verifying their adequacy to transfer design basis heat loads to the ultimate heat sink.

Contrary to the above, the licensee failed to evaluate the test results for DG SX heat exchanger functional tests performed on January 5, 1994, April 28, 1994, and May 3, 1994, to assure test requirements were satisfied in that the test results did not meet the acceptance limits specified by procedure CPS 2602.01 and the evaluations of the test results did not demonstrate the adequacy of the heat exchangers to transfer design basis heat loads to the ultimate heat sink.

Background and Reason for Violation

During a routine inspection of the engineering and technical support program (reference NRC inspection report 50-461/95003(DRS)) conducted from March 27 through May 19, 1995, an NRC inspector reviewed the results of heat exchanger performance tests required by NRC Generic Letter 89-13. The tests were conducted in accordance with CPS No. 2602.01, "Heat Exchanger Performance of Shutdown Service Water Coolers Covered by NRC Generic Letter 89-13." The inspector identified that the results of heat exchanger performance testing conducted on four different emergency diesel generator heat exchangers in 1994 were not properly evaluated. The test results of the diesel generator heat exchangers showed that the performance of the heat exchangers was in the alarm range provided in the procedure. The test engineer did provide an evaluation of the test results in the test results review section of the procedure. However, the evaluation focused on why the test conditions caused the test results to show performance in the alarm range, not on the ability of the heat exchanger to transfer design basis heat loads to the ultimate heat sink. The test engineer believed the test results did not accurately reflect the true heat transfer capability of the heat exchanger. This belief was based on previous engineering evaluations performed on these heat exchangers under similar conditions.

Illinois Power believes that the failure to adequately evaluate test results was due to the lack of procedural guidance on what constitutes an adequate evaluation of a heat exchangers performance test.

Corrective Steps Taken and Results Achieved

In response to the inspector's concerns regarding the adequacy of the evaluation of the four diesel generator heat exchanger tests, engineering performed a computer analysis of the results of these tests. This analysis determined that the heat exchangers would have been able to adequately transfer design basis heat loads to the ultimate heat sink.

In response to this condition, Illinois Power conducted a review of all heat exchanger performance tests conducted using CPS No. 2602.01. This review identified that tests performed on the Division II and Division III switchgear heat removal system (VX) chillers had results that showed the heat exchanger performance was in the alarm condition. These test results were approved as acceptable. An evaluation of the test results was performed at the time the test results were approved. However, this review was not adequate to justify that heat exchanger performance was not in an alarm condition. The results did indicate that the heat exchangers could transfer the design basis heat loads to the ultimate heat sink. The test evaluations performed on the results of the VX chiller tests did identify that the flow through the heat exchanger was too low to provide meaningful test results. The flow through the heat exchangers was less than 10% of the design flow for the system. The low flow was created by the temperature regulating valve throttling flow during chiller operation. By design, the regulating valve is only 10%-20% open during normal chiller operation. To establish the required design flow to the chiller the temperature regulating valve must be full open. This action causes the chiller to be inoperable. Prior to January 1, 1995, the VX heat exchanger test could only be performed with the regulating valve full open during an outage. This was because of a two hour Technical Specification requirement to restore the system to an operable status during plant operation. However, Amendment 95 to the CPS Technical Specifications, effective January 1, 1995, allows the system to be out of service for up to 72 hours. This allows the proper test conditions for performance testing to be established during plant operation. The heat exchanger performance tests for the Division II and III VX heat exchangers with the regulating valve full open have been performed.

Subsequent to this response, in November 1997, a review of past test methods and test results relating to the station's Generic Letter 89-123, "Service Water System Problems Affecting Safety Related Equipment," program was initiated. This review indicated that the program did not provide sufficient confidence that heat exchangers serviced by the Shutdown Service Water (SX) system were in an acceptable condition. Condition Report 1-97-11-368, "GL 89-13 Heat Exchanger Test Program Deficiency," was written to document and correct this situation.

As part of the corrective action for this condition report, Calculation 0-65-017-PCC-02, "Evaluation of Diesel Generator Heat Exchanger Performance Data from 1990 to 1997," was developed. The results of this calculation differed from those originally obtained from the previously performed computer analysis. Specific to the diesel generator heat exchanger tests referred to in the Notice of Violation, it showed that the heat transfer capability of heat exchanger 1DG12AA during the January 5, 1994, test was less than the minimum acceptable design basis heat removal requirement. The remaining three tests of the Division 1 and Division 2 diesel generator heat exchangers had acceptable recorded results. However, the calculation showed that when test uncertainties were applied, it could not be conclusively shown that the heat transfer capabilities of these heat exchangers would have met minimum acceptable design basis heat removal requirements.

Most recent test data on these four heat exchangers indicates that performance remains acceptable, but marginal. Actions to address performance issues with these and other safety-related heat exchangers are continuing and being tracking by Condition Report 1-98-11-368.

Corrective Steps to Avoid Further Violations

CPS No. 2602.01 has been revised to provide clear guidance on what must be considered when performing an evaluation of heat exchanger performance test results. Also, test engineers that conduct heat exchanger performance testing using CPS No. 2602.01 have been briefed on this violation and what constitutes an adequate evaluation of test results.

Date When Full Compliance Will Be Achieved

Illinois Power is currently in full compliance with 10 CFR Part 50, Appendix B, Criterion XI regarding this issue.