

ENCLOSURE 1

NOTICE OF VIOLATION

Duke Power Company
Oconee Nuclear Plant
Units 1, 2, and 3

Docket Nos. 50-269, 50-270
and 50-287
License Nos. DPR-38, DPR-47
and DPR-55

During an NRC inspection conducted on November 1 through December 14, 1993, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C, the violations are listed below:

- A. 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," requires, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures established shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management.

Contrary to the above, as of December 14, 1993:

1. Measures had not been established to assure that conditions adverse to quality had been corrected in that the evaluation of Condition Adverse to Quality Report, PIP 92-454, for a postulated water hammer within the Low Pressure Service Water piping downstream of the reactor building cooling units, did not address the water hammer effects on the structural integrity of the piping.
2. Measures had not been established to assure that conditions adverse to quality had been corrected in that the evaluation to determine corrective actions for design study ONDS 327 and Problem Investigation Report 92-084 concerning the postulated response of the High Pressure Service Water system to the maximum hypothetical earthquake did not include the consequences of spurious fire protection component activations.

This is a Severity Level IV violation (Supplement I).

- B. 10 CFR 50, Appendix B, Criterion III, "Design Control," states in part "Measures shall be established to assure that applicable regulatory requirements and design basis...are correctly translated into specifications, drawings, procedures, and instructions...Measures shall also be established for the selection and review for suitability of

application of materials...and equipment that are essential to the safety-related functions....Design control measures shall be applied to items such as...stress, thermal, hydraulic and accident analysis..."

Duke Power Company Topical Report 1-A, Table 17.0-1, states that the Duke Power Company's quality assurance program meets the requirements of ANSI 45.2.11-1974, Quality Assurance Requirements for the Design of Nuclear Power Plants.

ANSI 45.2.11-1974, Quality Assurance Requirements for the Design of Nuclear Power Plants, requires Net Positive Suction Head (NPSH) be considered as a design input in Section 3.2.11.

Contrary to the above, as of December 14, 1993:

1. The NPSH of the Low Pressure Service Water pumps was not adequately considered as a design input in that calculation OSC-5019 was accepted by the license's engineering personnel with inadequate NPSH.
2. Measures established to assure design basis are correctly translated into procedures were inadequate in that no procedural controls existed to assure the Low Pressure Service Water's pump flows inputted into the hydraulic computer model for the Low Pressure Service Water system remained valid during quarterly testing of the Low Pressure Service Water pumps.
3. The measures applied to the selection of Belzona as a suitable material for application to the Unit 2 Reactor Building Cooling Unit tubes were inadequate in that the commercial grade evaluation, CGD 2021.01-01-0001, did not consider the thermal (temperature) and hydraulic (pressure) changes Belzona would experience due to accident conditions.
4. The design basis of the Emergency Circulating Cooling Water system was not adequately translated into design documents in that the calculations supporting Emergency Circulating Cooling Water decay heat removal capability did not include numerous aspects of the design that would reduce that system's decay heat removal capability.
5. The design basis of the Circulating Cooling Water system's capability to withstand loss of Lake Keowee was not translated into any design document.
6. The design basis of the Low Pressure Service Water system's capability to function as described in Case B of Abnormal Procedure AP/1/A/1700/13, "Loss of Condenser Circulating Water Intake Canal/Dam Failure," Step 5.5.1, was not translated into any design document.

7. The design basis of the Safe Shutdown Facility Auxiliary Service Water system's capability to remove decay heat was not adequately translated into design documents in that a minimum flow less than required by 23 gpm per steam generator pair was established in calculation OSC-4171.

This is a Severity Level IV violation (Supplement I).

- C. 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Oconee Nuclear Site Directive 1.4.1, "Cleanliness in Safety Related Areas," Section 3.1, states that the highest level zone designation allowed for safety related equipment is 3.

Nuclear Generation Department Directive 2.8.1, "Problem Investigation Process," Section 3.4 provides that adverse conditions requiring engineering assistance be processed as an upper tier adverse quality report which receives a written operability evaluation.

Contrary to the above:

1. As of December 14, 1993, a prescribed procedural activity affecting quality did not contain appropriate acceptance criteria for determining that the activity had been satisfactorily accomplished. Procedure EDM-101, Engineering Calculations/Analysis, Section 2.4.4 did not establish a definitive length of time for revising calculations following design changes; thus, allowing calculation OSC-3233, Safe Shutdown Facility's Service Water Hydraulic Model, and OSC-2030, Standby Shutdown Facility Heating Ventilation and Air Conditioning Load Calculations, to not be updated for years after design changes affecting those calculations were implemented.
2. As of December 14, 1993, a prescribed procedure did not contain appropriate acceptance criteria for determining that an important activity affecting quality had been satisfactorily accomplished in that no flow instruments existed to confirm 200 gpm was being provided to each steam generator or 400 gpm to an un-isolated steam generator by the Auxiliary Service Water pump as directed by Emergency Procedure EP/1,2,3/A/1800/01, Section 502.

3. As of December 14, 1993, drawings affecting quality were not adequately prescribed in that the Keowee Turbine Generator Cooling Water system drawings, KFD-100A-1.1 and KFD-100A-2.1, did not indicate the existence of an additional valve downstream of valve 2WL-3 for Unit 2; the supply line to the air compressor coolers was interconnected to the 13 inch main piping for Unit 1; the piping downstream of valve WL-76 was copper for both Units; or a consistent piping class break in the supply line to the generator thrust bearing coolers for both Units.
4. In November 1993, an activity affecting quality was not performed in accordance with prescribed procedures in that a condition adverse to quality report associated with a broken coupling on the Keowee hydroelectric station's Unit 2 turbine guide bearing oil cooler was neither processed as an upper tier adverse quality report nor did it receive a written operability evaluation.
5. In November, 1993, an activity affecting quality was not performed in accordance with prescribed procedures in that a safety related work order, 93077640, for performing the triennial inspection of Keowee hydroelectric station's Unit 2 turbine guide bearings oil cooler per MP/2/A/2000/25 specified a housekeeping zone higher than 3.

This is a Severity Level IV violation (Supplement I).

- D. 10 CFR 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. The test program shall include...preoperational tests, and operational tests during nuclear power plant...operation, of structures, systems, and components. Test procedures shall include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and that the test is performed under suitable environmental conditions...."

Duke Power Company Topical Report 1-A, Table 17.0-1, states that the Duke Power Company's quality assurance program meets the requirements of ANSI N45.2.8-1975, "Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants," and ANSI N45.2.1-1973, "Cleaning of Fluid Systems and Associated Components During Construction Phase of Nuclear Power Plants."

The preoperational testing portion of ANSI N45.2.8-1975, Section 5.2, stated in part "This testing involves the operation of all items in a system...to assure that operation is in accordance with the design

criteria and functional requirements. The testing shall include, but not be limited to, ...service requirements for initial operation such as flow alignments...."

The installation check portion of ANSI N45.2.8-1975, section 4.5, required in part that flushing procedures contain velocities and acceptance criteria.

The pre-operational cleaning portion of ANSI N45.2.1-1973, section 7.2, stated in part, "The system shall be filled with water of the quality specified and flushed in accordance with approved procedures. Completion of flushing shall be determined by filter, turbidimetric or chemical analyses...."

Contrary to the above, as of December 14, 1993:

1. A test procedure did not include adequate provisions for test instrumentation in that in procedure PT/1/A/0261/07, Change 8, August 8, 1991, Emergency CCW System Flow Test, a 2,000 gpm deviation in the test instrumentation used was not accounted for in the acceptance criteria.
2. The post-construction flushing procedure for the Safe Shutdown Facility's discharge lines to all the steam generators did not contain flush velocities or acceptance criteria based upon filter, turbidimetric or chemical analyses.
3. Periodic Safe Shutdown Facility Auxiliary Service Water pump operability test, PT/O/A/0400/05, was not performed under suitable environmental conditions in that the pump was preconditioned in step 12.2 by venting the pump just prior to its being started masking any air entrapment that would affect pump performance.
4. The preoperational test program to demonstrate that systems and components would perform satisfactorily in service and meet the requirements contained in applicable design documents for the Safe Shutdown Facility's service water system was inadequate in that the flow control capabilities to the steam generators and the flow distributions among the three service water pumps (Auxiliary Service Water; Heating, Air Conditioning and Ventilation; Emergency Diesel Generator Cooling Water) when operating simultaneously as assumed in numerous design calculations was not performed.

This is a Severity Level IV violation (Supplement I).

Pursuant to the provisions of 10 CFR 2.201, Duke Power Company is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, Region II, and a copy to the NRC

Resident Inspector, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved.

If an adequate reply is not received within the time specified in this Notice, an order or Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

Dated at Atlanta, Georgia
this 11th day of February 1994