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October 4, 1989
LIC-89-888

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station PJ-137
Washington, DC 20555

Reference: Docket No. 50-285

Gentlemen:

SUBJECT: Evaluation of Delta-T Power Anomaly

On September 13, 1989, an event occurred at the Fort Calhoun Station during which the Reactor Protective System (RPS) exhibited an unusual condition. This condition was characterized by abnormal delta-T power indications in which channels A and B were indicating approximately two to five percent lower than expected values, and channels C and D were indicating approximately one to three percent higher than expected values. Immediate investigation concluded that the reactor core was stable based in part on review of excore nuclear instrumentation, computer generated secondary calorimetric data and core power distribution as indicated by incore detectors. The cause of the anomalous readings was not immediately apparent.

After investigation and discussion, a decision was made to take conservative action, including declaring two RPS high power trip channels inoperable and reducing power to less than 70%. The two channels which were declared inoperable were the A and B channels which were indicating lower than expected power level. The delta-T power indication returned to normal prior to achieving less than 70% power. Subsequent surveillance testing of these channels at less than 70% power resulted in a determination that they were operable. This terminated the 48-hour Limiting Condition for Operation (LCO) entered under Technical Specification 2.15(2); however, power was maintained below 70%, as a conservative action while further investigation was conducted.

The Safety Audit and Review Committee (SARC) met and recommended to the Senior Vice President that an investigation be conducted. The Senior Vice President initiated an internal investigation of the sequence of events with special assistance provided by INPO and Combustion Engineering (CE). This investigation has concluded the following:

- Throughout the event the plant remained in an analyzed condition within the bounds of the Cycle 12 operating design and license.

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- The observed delta-T power anomaly apparently resulted from a change in hot leg flow stratification.
- Insufficient data is available from the event to reach a conclusion regarding the root cause of the probable change in reactor vessel hot leg flow stratification.

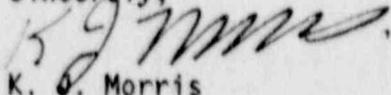
This investigation has also identified the potential for improvement regarding prompt determination of operability, prompt notification of Senior Plant Management and internal dissemination of operating experience information. As a preliminary corrective action the following points have been communicated to Licensed Operators, Shift Supervisors and Plant Review Committee members:

- the importance of promptly and conservatively making and logging equipment operability determinations;
- the authority of the Shift Supervisor or Licensed Senior Operator to reduce power or perform any other actions deemed necessary if plant conditions indicate the need to do so;
- the need to use all available means to notify the Plant Manager and Supervisor - Operations or their designated alternates of significant plant transients or anomalies;
- the need to initiate immediate action when entering a Technical Specification action statement with no explicit time limit.

In addition, a memorandum regarding Shift Supervisor responsibilities and authority has been issued. Shift Supervisors and Licensed Operators have been briefed on the event and on their responsibilities and authority should a similar situation present itself. Distribution of CE Infobulletins has been expanded and review of these documents will be factored into the Operating Experience Review Program.

Fort Calhoun Station has remained below 70% power since September 13, 1989. Based on the conclusions reached and actions taken, OPPD expects to proceed with plans to return the plant to full power operation. Additional corrective action is being considered and will be initiated as necessary following review of the results and recommendations of the investigation and review of experience gained from the return to full power operation. A follow-up letter will be provided describing the results of this review. If you should have any questions, please contact me.

Sincerely,



K. O. Morris
Division Manager
Nuclear Operations

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c: LeBoeuf, Lamb, Leiby & MacRae
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