Docket Nos.: 50-413, 50-414

CATSEV-V

~~18 NOV. '93~~
03 MAY 94

MEMORANDUM FOR: David B. Mathews, Project Director
Project Directorate II-3
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

FROM: Carl H. Berlinger, Chief
Electrical Engineering Branch
Division of Engineering
Office of Nuclear Reactor Regulation

Plant Name: Catawba Nuclear Station Units 1 and 2
Utility: Duke Power Company
Licensing Status: OR
Resp. Directorate: PD II-3
Project Manager: R.E. Martin
Review Status: Complete
TAC Nos.: M-86367 and M-86368

In a letter of May 12, 1993, E. Merschoff, Director, Division of Reactor Projects, Region II office, to G. Lainas, Assistant Director for Region II Reactors, Division of Reactor Projects I/II, NRR, requested review of a Duke Power Company (DPC) response to an electrical distribution system functional inspection (EDSFI) finding of February 14, 1992. The EDSFI finding and the DPC response to it were forwarded to EELB for staff review.

The EDSFI performed at Catawba Nuclear Station Units 1 and 2 from January 13 to February 14, 1992, identified a safety significant deviation from the following FSAR commitment:

"NUREG-0800, Standard Review Plan, states on page 8.3.2-5 that acceptance [of a design] is based on meeting the specific guidelines in Regulatory Guide 1.32, which endorses the Institute of Electrical and Electronics Engineers (IEEE) Standard 308."

IEEE Standard 308 Section 5.3.1 states that protective devices should be provided to limit the degradation of Class 1E power systems. The licensee's final safety analysis report (FSAR) states on page 8-75 that the system meets the requirements of this standard. FSAR Section 8.3.1.1.2.2 states that protective devices on the 600-V ac essential power system (EPS) are set to achieve a selective tripping scheme so that a minimal amount of equipment is isolated by an adverse condition such as a fault.

Contrary to these commitments, the incoming breakers to all the essential 600-V ac MCCs are not coordinated with the outgoing breakers from the MCCs. Further, 125-V dc vital instrumentation and control power (EPL) molded-case breakers in the distribution centers are not coordinated for all faults.

In an attempt to determine, more accurately, than was possible on the basis of the licensee's original submittal of May 12, 1993, the impact on plant risk of those breakers that both the staff and the licensee agreed were miscoordinated, and to get further assurance that the consequences of the lack of coordination were not significant, the staff, on December 6, 1993, sent a request for additional information to DPC asking for the locations of faults of any kind that could lead to miscoordinated breakers in the 125-V dc vital instrumentation and control power system and in the 600-V ac essential auxiliary power system, the identity of the breakers, the loads served, and the consequences of losing the safety loads affected.

The licensee responded by meeting with the staff on February 7, 1994 and, on 02 March 1994, submitting copies of breaker coordination curves and system one-line drawings showing the most probable worst-case fault locations, the associated fault currents, and the breakers which would not coordinate in case of dc double-line or three-phase faults. The calculations on which the fault currents were based and a list of loads which could not be powered if some breakers were not coordinated were included.

The staff proposes to accept the licensee's proposal to change the FSAR and to allow the subject breakers to remain with the present potential for limited miscoordination. The miscoordination is limited because not all faults, but only 3-phase faults, only, in the 600-V ac EPE system, and only double-line faults on the 125-V dc vital I&C power system, and not everywhere in the system, but only at some locations, may cause upstream breakers to trip before immediately adjacent breakers and so cause more loads to be lost than would otherwise have been necessary.

Specifically, 3-phase faults on incoming cables to battery chargers 1ECA, 1ECB, 1ECC, and 1ECD could trip the incoming breaker to the corresponding upstream 600-V ac MCC, either 1EMXA, -B, -C, or -D, respectively.

The staff is prepared to accept this miscoordination because both the staff and the licensee believe that the frequency of the 3-phase fault initiating events is small as well as the consequences because of the presence of redundant, operable equipment within the division for all the safety loads shed by a fault on a battery charger incoming cable.

Because induced failures count as single failures and because fully redundant safety equipment is present at Catawba, the plant will still meet its design basis with respect to the single

failure criterion, despite the presence of the identified breaker miscoordinations.

Further, the staff's position on the subject breaker miscoordination is in accord with NRC's position on cost beneficial licensing actions (CBLAs). Although the present Catawba proposal was not submitted as a CBLA, the reasons for doing so are present; that is, both the licensee and the staff would have to apply substantial resources to issues thought to be of low safety significance, if the breakers were modified rather than the FSAR.

For these reasons, the staff accepts the licensee's proposal to revise the FSAR rather than change the subject uncoordinated circuit breakers, both 600-V ac and the [illegible]-V dc.

Enclosure 1 is the staff's safety evaluation. Enclosure 2 is the SALP input.

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Enclosures:
1. Safety Evaluation
2. SALP Input

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EELB:DE:NRR	RPB:ADM	SC:EELB:DE:NRR	C/EELB:DE:NRR
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