UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 185 TO FACILITY OPERATING LICENSE NO. DPR-49

IOWA ELECTRIC LIGHT AND POWER COMPANY
CENTRAL IOWA POWER COOPERATIVE
CORN BELT POWER COOPERATIVE

DUANE ARNOLD ENERGY CENTER

DOCKET NO. 50-331

## 1.0 INTRODUCTION

By letter dated March 13, 1992, Iowa Electric Light and Power Company (the licensee) requested an amendment to the Technical Specifications for Facility Operating License No. DPR-49 for the Duane Arnold Energy Center (DAEC). The proposed amendment would delete the Reactor Protection System (RPS) Electrical Protection Assembly (EPA) time delay requirements from the Technical Specifications (TS). Revised EPA time delay requirements would be incorporated into the DAEC Updated Final Safety Analysis Report (UFSAR) for over-voltage, under-voltage, and under-frequency. Instead of the present TS value of 115 +/- 15 milliseconds, the UFSAR value would be no greater than 3.8 seconds.

## 2.0 EVALUATION

The licensee has proposed the deletion of the Reactor Protection System (RPS) Electrical Protection Assembly (EPA) time delay requirements from Technical Specifications (TS) Section 4.1.B.2. The licensee's position is that removal of these requirements from the TS and the incorporation of revised EPA time delay requirements into the DAEC UFSAR would enhance operational safety by minimizing the possibility of spurious EPA trips and facilitating the implementation of equipment modifications designed to enhance EPA performance and testing capabilities.

The RPS EPAs were originally installed to provide Class 1E electrical protection for RPS components powered from non-Class 1E power supplies. Specifically, the EPAs are designed to disconnect RPS bus loads from the primary or alternate power sources in the event of a sustained over-voltage, under-voltage or under-frequency condition. When the Limiting Conditions for Operation (LCOs), surveillance requirements and trip settings for this equipment were incorporated into the DAEC TS in Amendment 79, the licensee elected to include a 115 +/- 15 millisecond time delay for each of the three types of protective trips. This value was consistent with the original installation specifications and represented the minimum time delay permitted by the design of the EPAs. Subsequently, performance problems were acknowledged by General Electric Nuclear Energy (the manufacturer), and

several recommendations were made, including the use of longer time delay settings. Longer time delays would decrease the frequency of premature and spurious trips during routine switching operations when the RPS bus is being fed from the alternate power supply and are supported by the manufacturer's study of the ability of the RPS bus components to tolerate abnormal voltages and frequencies. The study concluded that over-voltage, under-voltage and under-frequency conditions can exist for up to four (4) seconds without damaging components. The manufacturer performed an additional evaluation with respect to specific RPS components at the DAEC that are powered by or have contacts in circuits powered by the RPS 120 Vac buses, to ensure that they were encompassed by the original study or to evaluate them as to acceptability under the same abnormal voltage or frequency transient conditions. The RPS components fell into three categories: 1) those that are encompassed by a previous study, 2) those for which evaluation is needed, and 3) those to which the transients do not apply. The components in category 2) are the only ones that were of concern in this evaluation. The manufacturer first determined the transients for which the components must be evaluated. Since the amplitude and duration of a transient are a function of the source from which the RPS is being powered, this evaluation was broken down according to the source of power to the RPS buses. The manufacturer concluded that there was a class of transients that could result in steady state voltages outside the required limits of the RPS power buses. However, because of the rare occurrence of this type failure, a 4-second time delay on the EPA trips would not result in any component damage. Based on their evaluation, the manufacturer concluded that the assumed transients coupled with EPA trip time delays of 4 seconds or less will not cause damage to any of the components powered by the RPS 120 Vac buses. The licensee has reviewed these results and found them to be an acceptable basis for increasing the time delay requirements.

Several recommendations for modifications to the EPAs have been made to improve equipment performance and testing capabilities. The licensee has determined that EPA performance would be improved and maintenance concerns mitigated by installing a modification kit from the manufacturer. However, this modification kit requires a time delay that is longer than that currently allowed by the Technical Specifications and, hence, cannot be installed until the time delay requirements currently in effect are changed. In addition, the modification kit provides improvements in testing methodology which would improve the accuracy of the test results and decrease the likelihood of personnel error.

The staff has evaluated the licensee's proposal and the supporting information and concurs that removal of the time delay requirements from the TS and their incorporation into the UFSAR would enhance operational safety by minimizing the possibility of spurious EPA trips and facilitating the implementation of equipment modifications designed to improve EPA performance and testing. Based on this evaluation, the staff has concluded that the proposed Technical Specifications amendment is acceptable.

## 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Iowa State official was notified of the proposed issuance of the amendment. The State official had no comments.

## 4.0 ENVIRONMENTAL CONSIDERATIONS

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or a change to a surveillance requirement. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding (57 FR 18174). Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

## 5.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Date: August 4, 1992