



Nebraska Public Power District

GENERAL OFFICE
P. O. BOX 499, COLUMBUS, NEBRASKA 68601-0499
TELEPHONE (402) 564-8561

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May 3, 1988

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: Proposed Change No. 58 to Technical Specifications
Undervoltage Relays
Cooper Nuclear Station
NRC Docket No. 50-298, DPR-46

In accordance with the applicable provisions specified in 10CFR50, Nebraska Public Power District requests that the Technical Specifications for Cooper Nuclear Station be revised to reflect changes to the undervoltage relays during the current refueling outage.

A discussion and the applicable revised Technical Specification page are contained in the Attachment. The modifications to the Technical Specifications within this proposed change have been evaluated with respect to the requirements of 10CFR50.92. The results of the evaluations are also included in the attachment.

This proposed change incorporates all amendments to the CNS Facility Operating License through Amendment 117 issued February 23, 1988. By copy of this letter and attachment the appropriate State of Nebraska official is being notified in accordance with 10CFR50.91(b).

This change has been reviewed by the necessary Safety Review Committees and payment of \$150 is submitted in accordance with 10CFR170.12.

In addition to the signed original, 37 copies are also submitted for your use. Copies to the NRC Region IV Office and the CNS

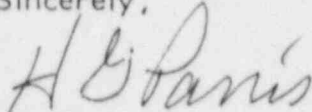
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Resident Inspector are also being sent in accordance with 10CFR50.4(b)(2). Should you have any questions or require additional information, please contact me.

Sincerely,



H. G. Parris
Vice-President - Production

HGP/grs:mh1/2
Attachment

cc: H. R. Borchert
Department of Health
State of Nebraska

NRC Regional Office
Region IV
Arlington, TX

NRC Resident Inspector Office
Cooper Nuclear Station

STATE OF NEBRASKA)
)ss
PLATTE COUNTY)

H. G. Parris, being first duly sworn, deposes and says that he is an authorized representative of the Nebraska Public Power District, a public corporation and political subdivision of the State of Nebraska; that he is duly authorized to submit this request on behalf of Nebraska Public Power District; and that the statements contained herein are true to the best of his knowledge and belief.

H G Parris
H. G. Parris

Subscribed in my presence and sworn to before me this 3rd day of May, 1988.

Colleen M. Kuta
NOTARY PUBLIC



Revised Technical Specifications
for Undervoltage Relays

Revised Page: 55

Background

Cooper Nuclear Station has two levels of undervoltage protection for the two 4160 volt Safety-Related Buses 1F and 1G. The first level was installed during plant construction and has a setpoint of 2900 V $\pm 5\%$. The second level of undervoltage protection was installed in response to a June 3, 1977, NRC staff letter concerning susceptibility of onsite electrical equipment to sustained degraded grid voltage of the offsite power source. This second level protection consists of an undervoltage relay in series with a timer and were both submitted as proposed changes to the Cooper Nuclear Station (CNS) Technical Specifications. These changes were approved in Amendment No. 43 to the CNS Facility Operating License with components of both levels of undervoltage protection being incorporated into the Technical Specifications.

The existing second level undervoltage relays are General Electric IAV54E induction disk type with inverse time operating characteristics. The District is planning to replace these relays with qualified Brown-Boveri ITE-27N solid state relays during the upcoming refueling outage. The new relays will have a different voltage (3880 V) and time delay setpoint (7.5 seconds) and will exhibit a smaller setpoint tolerance band.

The total time delay for the second level of protection consists of the undervoltage relay time delay and the undervoltage relay timers (27X7/1F and 27X7/1G). A review was conducted of this time delay length in conjunction with the improved operating characteristics of the Brown-Boveri relays. With the new relays in place the setting for the timers can be reduced to 5 seconds and still preclude spurious trips due to momentary voltage dips such as large motor starts. The new timer setting will still minimize the effect of short duration disturbances which could reduce the availability of power to safety-related equipment.

In summary, the District requests the following changes:

- 1) On page 55, for the Emergency Buses Undervoltage Relays, change the setting limit from 3600 $\pm 5\%$, and 8 second ± 2 second time delay to 3880 ± 52 volts and 7.5 second $\pm .8$ second time delay.
- 2) On page 55, for the Emergency Buses Undervoltage Relays Timers, change the setting limit from 10 second ± 2 second to 5 second $\pm .5$ second.

Safety Evaluation

This proposed license amendment involves changes to the second level undervoltage protection for Critical Buses 1F and 1G. This protection senses a degraded voltage condition and provides a time delay long enough to preclude spurious trips due to momentary voltage dips and short enough to isolate the buses before damage occurs to safety-related equipment.

The criteria for this second level protection is contained in the Safety Evaluation Report that accompanied the CNS Facility Operating License Amendment No. 43. This evaluation noted several features the second level protection contained and are discussed below.

- A. Coincidence logic configuration. The proposed amendment will not change the inputs, configuration, or function of the coincidence logic for the second level protection.
- B. Load shedding feature. The existing equipment will automatically prevent the load shedding of the emergency buses once the onsite power sources (diesel generators) are supplying power to all sequenced loads on the emergency buses. The load shedding feature is automatically reinstated when the onsite power source supply breakers are tripped. The proposed amendment will not change these features.
- C. The Amendment 43 Safety Evaluation Report stated that the second level of undervoltage protection satisfy the following criteria:
 - (1) The undervoltage setpoint and the allowable time duration for a degraded voltage condition shall not result in failure of safety-related systems and/or equipment;
 - (2) The time delay shall minimize the effect of short duration disturbances which could reduce the availability of power to the safety related systems and equipment;
 - (3) The time delay shall not exceed the maximum time delay considered in the FSAR accident analyses;
 - (4) The undervoltage protection shall include coincidence logic to preclude spurious tripping of the offsite or onsite power source;
 - (5) The time delay shall override voltage dips on emergency buses due to the sequenced pick-up of loads by a diesel generator;
 - (6) The voltage sensor shall be designed to satisfy the applicable requirements of IEEE Std. 279-1971.

The proposed amendment will not invalidate any of the above criteria. The new relays were purchased ESSENTIAL-Nuclear Grade and are Class 1E Qualified as defined in IEEE 344-1975 and IEEE 323-1974. They will be installed to withstand the seismic loads associated with CNS Class 1S structures. Electrical and physical separation criteria will be unaffected and single failure criteria will be maintained.

Evaluation of this Revision with Respect to 10CFR 50.92

The enclosed Technical Specification change is judged to involve no significant hazards based on the following:

- 1. Does the proposed license amendment involve a significant increase in the probability or consequences of any accident previously evaluated?

Evaluation:

The event previously evaluated is a sustained offsite power degraded voltage condition that could result in failure of safety-related

equipment such as ECCS motors. To protect against this event, a second level of undervoltage protection was provided to the two 4160 volt safety-related buses at Cooper Nuclear Station (CNS). This undervoltage protection was previously reviewed and found acceptable by the NRC staff in Amendment 43 to the CNS Facility Operating License.

This proposed amendment will change the voltage and timer setpoints and decrease the tolerance settings for the degraded voltage protection relays for the two 4160 volt safety-related electrical buses. The degraded voltage protection will not be affected by the reduced tolerance settings. The revised timer setpoint is long enough to account for momentary voltage decreases due to starting of large loads but is short enough to protect safety-related equipment from failure brought on by a sustained degraded voltage condition. The proposed amendment will not negate the ability of the second level of undervoltage protection to satisfy the previously evaluated and accepted criteria. The probability of a sustained degraded voltage condition will not be affected by the change to equipment that will sense the condition. The proposed amendment will improve the operating characteristics of the undervoltage protection and therefore will not involve a significant increase in the probability or consequences of any accident previously evaluated.

2. Does the proposed license amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Evaluation:

The proposed amendment will make changes in the setpoint tolerances and settings on the second level of undervoltage protection for the two safety-related 4160 volt buses. The function and operation of this undervoltage protection remains the same and its previously reviewed and accepted criteria remain in effect. The proposed amendment will not create a new mode of plant operation and will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in the margin of safety?

Evaluation:

Amendment No. 43 to the CNS Facility Operating License approved the installation of a second level of undervoltage protection and stated the criteria against which it was reviewed. The license amendment will not invalidate any of these criteria and will improve the operating characteristics of the undervoltage protection. The proposed amendment will not involve a significant reduction in the margin of safety.