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8E.100a  
WC-063-96  
February 22, 1996

Docket No. 50-461

10CFR50.90

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

Subject: Clinton Power Station Proposed Amendment of  
Facility Operating License No. NPF-62 (LS-94-013)

Dear Sir:

Pursuant to 10CFR50.90, Illinois Power (IP) hereby applies for amendment of Facility Operating License No. NPF-62, Appendix A - Technical Specifications, for Clinton Power Station (CPS). This request consists of proposed changes to Technical Specification 3.3.8.1, "Loss of Power Instrumentation," and Technical Specification 3.8.1, "AC Sources-Operating." The proposed changes would delete the Surveillance Requirement (SR) 3.3.8.1.1 which requires a channel check for Loss of Power instrumentation, change Technical Specification Table 3.3.8.1-1 to change the allowable value for the Degraded Voltage Function (items 1.c and 2.c) from " $\geq 3762V$  and  $\leq 3832V$ " to " $\geq 3876V$ ," change Technical Specification Table 3.3.8.1-1 to change the required number of channels for item 2.c from 3 to 2, change SR 3.8.1.2, SR 3.8.1.7, SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.15, SR 3.8.1.19, and SR 3.8.1.20 to change the minimum steady-state voltage identified in these SRs from  $\geq 3740V$  to  $\geq 3870V$ .

A description of the proposed change and the associated justification (including a Basis For No Significant Hazards Consideration) are provided in Attachment 2. A marked-up copy of the affected pages from the current Technical Specifications is provided in Attachment 3. In addition, a marked-up copy of the affected pages from the current CPS TS Bases is provided in Attachment 4. After approval of this request by the NRC, IP will revise the CPS TS Bases in accordance with CPS TS 5.5.11, "Technical Specifications Bases Control Program," to reflect the changes provided in Attachment 4. Further, an affidavit supporting the facts set forth in this letter and its attachments is provided in Attachment 1.

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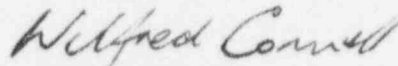
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IP has reviewed the proposed change against the criteria of 10CFR51.22 for categorical exclusion from environmental impact considerations. The proposed change does not involve a significant hazards consideration, or significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, IP concludes that the proposed change meets the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement.

Due to the refueling outage safety improvement and significant resource savings that can be realized by implementation of this proposed change, IP is requesting that this application be reviewed on a schedule sufficient to support the sixth refueling outage currently scheduled to begin September 13, 1996.

Sincerely yours,



Wilfred Connell  
Vice President

AJP/csm

Attachments

cc: NRC Clinton Licensing Project Manager  
NRC Resident Office, V-690  
Regional Administrator, Region III, USNRC  
Illinois Department of Nuclear Safety

Wilfred Connell, being first duly sworn, deposes and says: That he is Vice President of Illinois Power; that the application for amendment of Facility Operating License NPF-62 has been prepared under his supervision and direction; that he knows the contents thereof, and that to the best of his knowledge and belief said letter and the facts contained therein are true and correct.

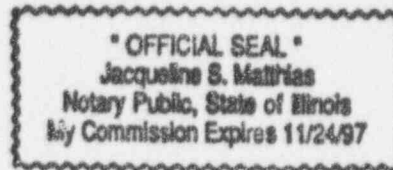
Date: This 22<sup>nd</sup> day of February 1996.

Signed: Wilfred Connell  
Wilfred Connell

STATE OF ILLINOIS

DeWitt COUNTY

} SS.



Subscribed and sworn to before me this 22<sup>nd</sup> day of February 1996.

Jacqueline S. Matthias  
(Notary Public)

## Background

Successful operation of the required safety functions of the Emergency Core Cooling Systems (ECCS) is dependent upon the availability of adequate power sources for energizing the various components such as pump motors, motor operated valves, and the associated control components. The Loss of Power (LOP) instrumentation addressed by Technical Specification (TS) 3.3.8.1, "Loss of Power Instrumentation," monitors the voltage of the safety-related 4.16 kV emergency buses. Offsite power is the preferred source for the 4.16 kV emergency buses. If the LOP instrumentation determines that insufficient voltage is available (for a period of time longer than a predetermined time delay), the buses are disconnected from the offsite power sources and connected to the respective onsite diesel generator (DG) power source. Each 4.16 kV emergency bus has its own independent LOP instrumentation and associated trip logic. The voltage for the Division 1, 2, and 3 buses is monitored at two levels, which are considered as two different undervoltage Functions: loss of voltage and degraded voltage. This request only affects the degraded voltage functions.

As discussed in the Bases for TS 3.3.8.1, the LOP instrumentation is required for the Engineered Safety Features to function in any accident with a loss of offsite power. The required channels of LOP instrumentation ensure that the ECCS and other assumed systems are supplied power at an acceptable voltage for plant protection in the event of any of the accidents analyzed in the Updated Safety Analysis Report (USAR), including a Loss of Coolant Accident (LOCA), in which a loss of offsite power is assumed. The initiation of the DGs on loss of offsite power, and subsequent initiation of the ECCS, ensure that the fuel peak cladding temperature remains below the limits of 10CFR50.46.

A reduced voltage condition on a 4.16 kV emergency bus indicates that while offsite power may not be completely lost to the respective emergency bus, power may be insufficient for starting large motors without risking damage to the motors that could disable the ECCS function. Therefore, power supply to the bus is transferred from offsite power to onsite DG power when the voltage on the bus remains less than the degraded voltage Allowable Value for a period of time greater than or equal to the associated time delay Allowable Value. This ensures that adequate power will be available to the required equipment in the event of a design basis accident (DBA) in conjunction with a degraded grid voltage condition.

As described in CPS Licensee Event Report (LER) 94-005 dated June 3, 1994, Illinois Power (IP) personnel recognized that the setpoints for the degraded voltage relays were not sufficient to ensure proper operation of all equipment. This was identified as a result of review of calculations developed in response to Electrical Distribution System Functional Inspection (EDSFI) findings at other nuclear plants. As corrective action for this event, IP determined that more accurate relays are required for the LOP degraded voltage instrumentation. CPS is developing a plant modification to provide for the

installation of these more accurate relays and to revise the associated setpoints. The degraded voltage setpoints were selected to be low enough to prevent inadvertent power supply transfer, yet high enough to ensure that sufficient power is available to the required equipment. The time delay settings are not affected by this proposed change and continue to be long enough to provide time for the offsite power supply to recover to normal voltages during momentary voltage perturbations, yet short enough to ensure that sufficient power is available to the required equipment. In addition, IP proposes to modify the Division 3 degraded voltage logic to be the same as Divisions 1 and 2, i.e., two-out-of-two rather than three-out-of-three.

During preparation for the proposed modification, the increased focus on associated TS confirmed a need to delete the Channel Check requirement for this instrumentation and to revise the minimum steady state voltage required by the associated Diesel Generator (DG) testing requirements.

#### Description of Proposed Change

In accordance with 10CFR50.90, the following changes to the CPS TS are being proposed:

- (1) SR 3.3.8.1.1 is proposed to be deleted to eliminate the requirement for performing a channel check of the degraded voltage instrument channels.
- (2) The Allowable Value specified for the degraded voltage Function for Divisions 1 and 2 of the 4.16 kV emergency buses, identified as item 1.c of TS Table 3.3.8.1-1, "Loss of Power Instrumentation," is proposed to be revised to  $\geq 3876$  volts.
- (3) The Allowable Value specified for the degraded voltage Function for Division 3 of the 4.16 kV emergency buses, identified as item 2.c of TS Table 3.3.8.1-1, is proposed to be revised to  $\geq 3876$  volts.
- (4) The Required Channels per Division specified for the degraded voltage Function for Division 3 of the 4.16 kV emergency buses, identified as item 2.c of TS Table 3.3.8.1-1, is proposed to be revised from "3" to "2."
- (5) Since the associated modifications for each Division will be installed in separate refueling outages, footnotes (a) and (b) to Table 3.3.8.1-1 are proposed to make the TS changes effective upon installation of the corresponding plant modification.



- (6) The DG testing requirements contained in the Technical Specifications refer to a required minimum steady state voltage. This required minimum steady state voltage is proposed to be changed from  $\geq 3740$  to  $\geq 3870$  in Surveillance Requirements (SRs) 3.8.1.2, SR 3.8.1.7, SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.15, SR 3.8.1.19, and SR 3.8.1.20.

The proposed TS changes are reflected on a marked-up copy of the affected pages from the CPS TS in Attachment 3. In addition, changes to the CPS TS Bases, consistent with the proposed TS changes, are provided in Attachment 4.

#### Justification for Proposed Change

Justification for each of the proposed changes is provided below, in the order in which the proposed changes are identified above.

- (1) Currently, CPS Technical Specification SR 3.3.8.1.1 requires a channel check to be performed once every 12 hours for the degraded voltage trip channels associated with all three divisions of the 4.16 kV emergency buses. As required by TS Section 1.1, "Definitions," a channel check, a qualitative assessment, by observation, of channel behavior during operation is normally performed with a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. However, in the case of the undervoltage relays, there is no instrument reading to verify against other channels. To comply with the current channel check requirement, the relay status is verified to be tripped or not tripped, depending on the offsite voltage level. This verification is based on bus voltage and circuit breaker alignment, which are also required to be monitored by SR 3.8.9.1 or SR 3.8.10.1, as applicable. Additionally, the channel status is verified during performance of channel functional test per SR 3.3.8.1.2 at a 31-day frequency. Further, the trip setting of these relays is outside the normal operating voltage range. Ineffective information relevant to plant operations or operability of the degraded voltage relays can be gathered from the channel check alone, and therefore, CPS proposes to delete this channel check.
- (2/3) CPS has completed calculations that determine the Loss of Power Instrumentation Degraded Voltage Allowable Value to be  $\geq 3876$  volts. The basis for establishing the setpoints of these relays is to select a voltage high enough at the 4 kV level to ensure proper operation of all Class 1E equipment down to the 120 V level following a DBA. The setpoint proposed to be specified for the Degraded Voltage Function was determined using a setpoint methodology which has been approved by the NRC. The Allowable Value is specified to provide adequate safety margin from the analytical limit. The calibration setpoints are determined considering

calibration errors and anticipated drift. Starting of large AC motors or a block start of ECCS as during a DBA will cause a voltage transient during which voltage will instantaneously be reduced to a low level because of high motor starting currents. These downward voltage spikes that can occur during motor starts are substantial and load dependent, while the voltage that the bus will return to after the motor starts is dependent on the power source. The decreased voltage during the spike corresponds to the drop-out voltage for the LOP degraded voltage trip and also the start of the time delay relay. If the voltage does not return to a level above the reset voltage setpoint before the end of the time delay, then the LOP instrumentation trip will occur. Following such a trip, the emergency bus will disconnect from the inadequate power source, the emergency bus will connect to the onsite power source (diesel generators). Because the capability of the emergency bus to return to a voltage above the LOP degraded voltage relay reset is dependent on the adequacy of the voltage source, the relay reset value is the appropriate value to specify in the Technical Specifications. This is consistent with Supplement 7 to the CPS Safety Evaluation Report which states that if the voltage was higher than the relay reset point, the safety loads would satisfactorily start on the offsite power source. The drop-out voltage that is associated with this trip is more appropriately specified in the Operational Requirements Manual (ORM) and controlled under 10CFR50.59. The value specified is also sufficient to ensure, under non-DBA scenarios, sufficient voltage to continue to operate safety-related loads.

- (4) CPS proposes to modify the Division 3 degraded voltage logic to be the same as Division 1 and 2. This modification will provide for improved maintenance by minimizing spare parts and procedures and will also simplify training. Additionally, operations will be enhanced by all 3 divisions having the same degraded voltage logic. The planned modification for Division 3 is adequate because Division 3 will now be identical to the designs as approved for Divisions 1 and 2.
- (5) The footnotes (a) and (b) to TS Table 3.3.8.1-1 are being proposed to allow these changes to become effective upon installation of the corresponding plant modifications. Addition of these footnotes is considered an administrative change.
- (6) Within TS 3.8.1, the minimum and maximum voltages for surveillances SR 3.8.1.2, SR 3.8.1.7, SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.15, SR 3.8.1.19, and SR 3.8.1.20 are being revised to increase the minimum required voltage. As described in the Bases for LCO 3.8.1, AC Sources - Operating, "the purpose of this voltage value is to ensure adequate voltage for proper equipment operation." As a result of the calculations referenced above, CPS has determined that the required minimum steady state voltage specified for the surveillances within TS 3.8.1 should be increased to 3870 volts. This change will provide that the required minimum

steady state voltage specified for the surveillances within section 3.8.1 of the TS is within the minimum voltage as determined by calculations done at CPS. The minimum voltage is specified so that the voltage at the emergency bus(es) will be sufficient to supply the required loads.

#### Basis for No Significant Hazards Determination

In accordance with 10CFR50.92, a proposed change to the Operating License (Technical Specifications) involves no significant hazards considerations if operation of the facility in accordance with the proposed change would not: (1) involve a significant increase in the probability or consequences of any accident previously evaluated, or (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety. The proposed changes are evaluated against each of these criteria below.

- (1) None of the proposed changes involve a significant increase in the probability or consequences of any accident previously evaluated. Each of the proposed changes is evaluated against this criteria as discussed below.

The deletion of the channel check surveillance will result in discontinuing the recording of information that is not effective in assessing the capability of the degraded voltage relays to perform their intended function. Deletion of the channel check does not change the design or the expected performance of the LOP degraded voltage instrumentation, and therefore, the proposed change does not impact the intended function of this instrumentation to ensure adequate voltage for the ECCS equipment during DBA and other non-accident scenarios. This surveillance provides little added assurance of relay operability since the relay is normally in a "non-tripped" state.

The revision of the Allowable Values for the LOP degraded voltage and increase in the minimum required voltage for testing diesel generators will not result in any increase in the probability or consequences of any accident. The revised Allowable Values will continue to provide assurance that adequate voltage is available to run ECCS equipment during DBAs or any other non accident scenarios. With the emergency bus(es) voltage at or greater than the revised Allowable Values, the operability of required ECCS equipment is assured. The revised setpoints for the degraded voltage instrumentation, as controlled under 10CFR50.59 in the CPS Operational Requirements Manual (ORM), are sufficiently low to assure that the possibility of spurious trips is minimized.

The planned modification for Division 3 LOP degraded voltage sensor/relay logic will make Division 3 logic identical to the present designs for Division 1 and 2. The proposed design for Division 3 will not result in an increase in the probability



of any accident because the proposed LOP Degraded Voltage logic for Division 3 will be identical to the proven design of Division 1 and 2. There will not be an increase in the consequences of an accident because the design of the LOP Degraded Voltage instrumentation will continue to insure adequate voltage for ECCS equipment during any DBA and during non-accident scenarios.

The proposed footnotes merely assure that the proposed changes become effective upon installation of the corresponding plant modifications. Thus, these changes are purely administrative.

Chapter 15 of the Clinton Updated Safety Analysis Report (USAR) discusses the effects of anticipated process disturbances to determine their consequences and the capability of the plant to control or accommodate such events. Subsection 15.2.6 discusses loss of a-c power, including loss of grid voltage. This discussion demonstrates that fuel design limits and reactor coolant pressure boundary design conditions are not exceeded. The proposed changes do not affect the discussion nor the conclusion of this evaluation.

- (2) None of the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated. Each of the proposed changes is evaluated against this criterion as discussed below.

The proposed changes (deletion of the channel check, the revised Allowable Value for the LOP degraded voltage instrumentation, revision of the minimum required voltage for the DG surveillance, and change of the number of required channels for Division 3) do not alter the intent or purpose of the degraded voltage

instrumentation. The instrumentation will continue to function to protect the loads on the emergency bus by switching automatically to the on site power source when the voltage has been at a degraded condition for greater than the Allowable Value of the time delay. The LOP instrumentation provides a responsive actuation (trip) to an accident or scenario where the protection provided by this function prevents damage to ECCS equipment during undervoltage (degraded voltage) conditions on the emergency bus(es). Because the instrumentation will continue to function to insure that the emergency bus voltage for all three divisions is sufficient for the proper operation of all class 1E equipment down to the 120 Volt level, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated. The change in the lower voltage for the DG surveillances will not impact the way the surveillances are conducted because the DGs are run as close to the nominal voltage as possible. The lower voltage is a criterion for evaluating the surveillance and the revised lower voltage is adequate for its intended purpose.

- (3) None of the proposed changes involve a significant reduction in a margin of safety. Each of the proposed changes is evaluated against this criterion as discussed below.

The proposed deletion of the channel check SR 3.3.8.1.1 will not result in any reduction of the margin of safety because the channel check is ineffective and the status of the channel will continue to be apparent to plant personnel because of information provided by other TS required surveillances. The margin of safety is provided by LOP instrumentation insuring the emergency bus(es) have adequate voltage to support ECCS operability. The proposed revision of the Allowable Value for the LOP degraded voltage will provide assurance that emergency bus(es) voltage will be adequate for ECCS loads during DBA and other non accident scenarios. These setpoints were determined based on revised voltage calculations and using an NRC-approved setpoint methodology. Thus, these changes will not involve any reduction of the margin of safety. The proposed revision of the number of required channels for Division 3 will not result in a reduction in a margin of safety because the proposed Division 3 LOP Degraded Voltage instrumentation logic will be the same as the proven design of Division 1 and 2. This modification will improve plant maintenance and training by making Divisions 1, 2 and 3 similar thereby enhancing plant performance and safety.

Similarly, the proposed revision of the lower voltage limit for voltage for the DG surveillances (SR 3.8.1.2, SR 3.8.1.7, SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.15, SR 3.8.1.19, and SR 3.8.1.20) will assure that the DGs will be capable of controlling voltage to a range that will be adequate for the loads on the bus. This value was determined using revised voltage calculations and is consistent with the proposed degraded voltage setpoints. None of the proposed changes will involve a significant reduction in a margin of safety.

Based on the foregoing, IP concludes that this request does not involve a significant hazards consideration.

Attached Marked-Up  
Pages of the Technical Specifications