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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 108 TO PROVISIONAL OPERATING LICENSE NO. DPR-19

AND AMENDMENT NO. 103 TO FACILITY OPERATING LICENSE NO. DPR-25

COMMONWEALTH EDISON COMPANY

DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3

DOCKET NOS. 50-237 AND 50-249

1.0 INTRODUCTION

By letter dated March 28, 1988, the licensee for Dresden Nuclear Power Station, Units 2 and 3, requested various changes to the plant's Technical Specifications related to the 4KV loss of voltage and degraded voltage relays. The staff has reviewed the requested changes and finds five acceptable and two unacceptable as discussed below.

2.0 EVALUATION

The licensee proposed the following editorial type changes to the plants Technical Specifications:

Change 1 - On page 3/4.2-10 under the column "Trip Function" delete "Undervoltage on 4KV Emergency Buses" and substitute "4KV Emergency Buses Loss of Voltage" for the second to last entry in Table 3.2.2.

Change 2 - On page 3/4.2-10 under the column "Remarks" add "Trips emergency bus normal feed breakers" for the second to last entree in Table 2.3.3.

Change 3 - On page 3/4.2-10 under the column "Trip Level Setting" delete "3748 volts" and substitute "3784 volts" for the last entry in Table 3.2.2 to correct a typographical error.

Change 4 - On page B3/4.2-33 add the following two new paragraphs which provide a discussion of the bases for functions of the 4KV undervoltage relays:

"The relay setting for 4KV emergency bus loss of voltage is chosen to give positive indication of the need to start the diesel generator, without being affected by normal voltage fluctuations due to pumps starting. Reset of the relay, approximately 11% above the trip point, indicates that the

diesel generator has restored bus voltage and will accept ECCS loads. The reset signal provides a permissive for starting ECCS pumps.

The setting for 4KV emergency bus degraded voltage is chosen to detect sustained degraded voltage which may cause equipment damage, while preventing trips caused by voltage fluctuations. The reset point for degraded voltage indicates restoration of normal bus voltage."

These changes add clarity and conciseness to this section of the Technical Specification and are acceptable. The licensee also proposed to delete "Permissive for Starting ECCS Pumps" from Table 3.2.2 (page 3/4.2-10) under the column "Remarks" for the 4KV loss of voltage relays. We find this change unacceptable since these relays do provide this function and it too should be encompassed by the Technical Specifications.

The licensee also proposed to add a new note 6 to Table 3.2i2 to encompass new limiting conditions for operation (LCO) for the 4KV loss of voltage and degraded voltage instrumentation channels (relays). If one of the two relays per bus in either trip function was determined to be inoperable, the new note states that the associated emergency power source is therefore considered inoperable and the LCO of Section 3.9.B applies. This is in lieu of the old LCO which states that with one of the two relays per bus inoperable, the trip system shall be tripped. In a letter dated June 29, 1988, the staff expressed concern about the inadequacy and lack of clarity of the new proposed LCO. Our concern was that if either of the two relays in the 2-out-of-2 loss of voltage and 2-out-of-2 degraded voltage trip logic is found inoperable, the new LCO would allow plant operation to continue for 7 days with no clear indication as to the status (tripped/non-tripped) into which the logic or relays would be placed. The status (tripped/non-tripped) of the loss of voltage/degraded voltage relays and logic not only potentially effects (loss of function or spurious operation) the automatic initiation of the associated diesel generators but also can prevent the automatic loading of ECCS pumps on the emergency buses by the loss of permissive signals. Additionally, loss of equipment undervoltage protection is also possible. We believe these design problems have not and cannot be adequately addressed by a Technical Specification change such as the new proposed LCO.

In response to our concern, the licensee in a letter dated July 19, 1988, stated that the tripped condition for an undervoltage relay does not represent a "fail-safe" mode since it also must provide a permissive and that the new LCO "is not intended to direct the operator to disable circuitry, it is an acknowledgement of the overall effect of an inoperable undervoltage relay." The staff believes this response does not adequately address our concern. Therefore, we find the licensee's proposed new LCO for the 4KV loss of voltage and degraded voltage instrumentation to be unacceptable. We recommend that either the licensee propose a change to the existing LCO which, in the event of an undervoltage relay failure, requires the associated diesel generator to be declared inoperable and requires the associated 4KV emergency bus to be declared inoperable

and maintained de-energized to protect equipment powered by this bus from undervoltage conditions or the licensee modify the existing relay configuration to ensure all functions performed by the undervoltage relays/logic are maintained given a relay failure.

The licensee has also proposed to reduce the trip setpoint for the 4KV emergency bus loss of voltage relays from greater than or equal to 3092 volts (3255 - 5% tolerance) to 2930 volts plus or minus 5% to be consistent with the manufacturer's specification and the actual asset value. In a letter dated June 29, 1988, the staff expressed concern that the new Technical Specification setpoint, when taking into account the negative tolerance, can result in a trip occurring at 2784 volts (approximately 67% of bus voltage) and may result in 4KV (and smaller) motors operating at voltages lower than the one minute rating (75% of rated voltage) recommended in Section 14.3 of ANSI C50.41-1977, "American National Standard Polyphase Induction Motors for Power Generating Stations" since the degraded voltage relays have 5 minute time delays.

In response to this concern, the licensee in a July 19, 1988 letter stated that the staff historical position has been to accept loss of voltage setpoints in the range of 70% or less. As a result of further discussion, the licensee provided in an October 27, 1988 letter, analyses which evaluated the effects of operation at 67% of rated voltage on 4KV and 480V AC motor qualified life and which concluded that the effects were negligible on motor thermal qualification. In response to continuing discussion, the licensee's letter dated December 23, 1988, stated that the proposed new setpoints are consistent with those currently applied in the field and that if 4KV motors were ever subjected to voltages of 67% of rated voltage, they would be tripped on overcurrent especially during starting when the motors would stall. The staff concluded that these responses by the licensee did not adequately alleviate our concerns.

On March 20, 1989, a meeting was held with the licensee to discuss the adequacy of the Dresden 4KV undervoltage protection scheme. As a result of the discussions of that meeting, the staff concluded that the proposed reduction in the 4KV emergency bus loss of voltage relay setpoints is acceptable conditioned by the following licensee actions:

1. A procedure must be developed and implemented which requires the operator to immediately disconnect an emergency 4KV bus from its offsite power if the bus voltage drops below 75% of the nominal bus voltage for longer than a minute if automatic action has not occurred.

2. A list of safety-related Class 1E equipment (down to 120Vac) which are normally energized or may be energized under transient conditions or for safe shutdown and which may experience the degraded voltage condition must be provided.

In a letter dated April 21, 1989, the licensee stated that procedure changes were developed, approved and in the process of being implemented. These actions taken satisfy the requirements stated under Item 1.

In a letter dated August 17, 1989, the licensee provi ed a list of safety-related Class IE equipment which satisfies the .equirements stated under Item 2.

3.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding no significant impact has been prepared and published (53 FR 26515) in the Federal Register on July 13, 1988. Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

4.0 CONCLUSION

The Commission has issued a Notice of Consideration of Issuance of Amendment to Facility Operating License and Opportunity for Hearing which was published in the Federal Register (53 FR 15755) on May 3, 1988. No petition to intervene or request hearing has been filed on this action.

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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of these amendments will not be inimical to the common defense and security nor to the health and safety of the public.

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Dated: November 21, 1989