UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 176 TO FACILITY OPERATING LICENSE NO. DPR-39

AND AMENDMENT NO. 163 TO FACILITY OPERATING LICENSE NO. DPR-48

COMMONWEALTH EDISON COMPANY

ZION NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-295 AND 50-304

1.0 INTRODUCTION

In its letter dated October 4, 1996, as supplemented on November 6, 1996, Commonwealth Edison Company (ComEd or the licensee) proposed a change to the Technical Specifications (TS) of Zion Nuclear Power Station, Units 1 and 2, that would require the Rod Position Indicator Channels to be operable during MODES 1 and 2. This change is necessary to correct an ambiguous applicability associated with Limiting Condition for Operation (LCO) 3.2.3.D.1, Inoperable Rod Position Indication Channels. The change will allow operations required to consider the rod position indicator channels operable, such as calibration.

The licensee's supplemental submittal of November 6, 1996, clarified and provided additional information in support of the initial application for amendment. It did not affect the Commission's proposed finding of no significant hazards consideration determination.

2.0 EVALUATION

The current TS do not explicitly state a Mode of Applicability for Specification 3.2.3.D or any of its subsections. Specification 3.2.3.D.1 states that not more than one rod position indicator channel per control rod group nor two rod position indicator channels per control rod bank shall be permitted to be inoperable at any time, except during hot rod drop timing measurements. Specification 3.2.3.D.2 states that if the conditions of Section 3.2.3.D.1 can not be met, the reactor shall be brought to at least a Hot Shutdown condition within four hours and the reactor trip breakers shall remain open. In addition, with a single Rod Position Indicator Channel out of service, continued operation is permitted, and with power greater than 50 percent, control rod positions are required to be checked indirectly at least once per shift by excore detectors, thermocouple or moveable incore detectors. During operation with power less than 50 percent, no special monitoring is required. Modes of applicability of MODES 1 and 2 for Specification 3.2.3.D.2 can be implied by observing that it requires the unit to be placed in at least hot shutdown with the reactor trip breakers open, within 4 hours if the conditions of Specification 3.2.3.D.1 can not be met.

Since placing the reactor in at least hot shutdown implies its initial condition was MODE 1 or 2, these modes of applicability are implied. However, these modes of applicability are not explicitly stated in the specifications and this change will correct this deficiency.

The purpose of the TS requirements for control rod position indication is to ensure that the control rod positions are known accurately enough to verify that the core is operating within the parameters used for accident and operating analyses. If plant operation takes place with control rods outside their assumed positions, certain accident analysis limits may be violated. In addition, control rod position must be known to verify adherence to the rod alignment limits while operating.

However, for various reasons, such as modifications or maintenance, testing may be necessary to ensure that a rod position indicator channel is operable. This testing requires the closing of the reactor trip breakers and withdrawal of control rods to verify that rod position indication is consistent with the actual rod position. Since as currently written, Specification 3.2.3.D.2 states that if the rod position indicator channel operability requirements of Specification 3.2.3.D.1 can not be met, the reactor trip breakers shall remain open, there is currently no way to test an inoperable rod position indicator channel to verify its operability or calibrate it to make it operable. To allow the performance of rod position indicator channel calibration, which requires the reactor trip breakers to be closed, specific modes of applicability for Specification 3.2.3.D.1 have been proposed. In the past, Zion Station personnel used the specification Bases to justify shutting the reactor trip breakers while in a mode other than MODE 1 or MODE 2 to calibrate the rod position indication channels. The justification for this use was that the Bases discuss the importance of individual rod position relative to group position in terms of normal power operation. Nowhere in the Bases is a statement made that individual rod position relative to group position is important when the reactor is subcritical. Therefore, as long as the reactor was not in MODE 1 or MODE 2, Zion considered it was permissible to shut the reactor trip breakers to perform rod position indication channel alignments.

With the proposed change, Specification 3.2.3.D.1 will continue to require that not more than one rod position indicator channel per control rod group nor two rod position indicator channels per control rod bank shall be permitted to be inoperable at any time, except during hot rod drop timing measurements. Specification 3.2.3.D.2 will be modified by changing it into a Required Action statement, with a Mode of Applicability added for the modes in which the Rod Position Indication Channels must be operable, namely, MODES 1 and 2. The Required Action will be that, if the conditions of Specification 3.2.3.D.1 can not be met, the reactor shall be brought to at least the hot shutdown condition within 4 hours. The requirement that the reactor trip breakers shall remain open has been deleted since hot shutdown can only be achieved with the reactor trip breakers open. This change will allow calibration of the Rod Position Indicator Channels in any mode other than MODES 1 and 2. The calibration requires the reactor trip breakers to be shut and the control rods to be individually cycled their full length. As long as

this testing is done while the reactor is shut down, the concerns of operating outside the parameters used for accident and operating analyses, with the possibility of violating certain accident analysis limits, are not raised.

The Rod Position Indicator Channels are only required to be operable in MODES 1 and 2 because these are the only modes in which power peaking factors are a concern. In this case, operability of the Rod Position Indicator Channels has a potential to affect the safety of the plant. Control rod alignment limits ensure that power distribution and reactivity limits defined by the design power peaking and shutdown margin limits are preserved. As such, it is appropriate to require control rod position indication for verification of control rod alignment limitations in MODES 1 and 2.

Control bank and shutdown bank control rod position accuracy is required during power operation. Rod Position Indicator Channels are not required in shutdown modes since shutdown margin limits can be ensured by chemical shim if indication is not available.

NUREG-1431, Revision 1, "Improved Standard Technical Specifications," also has a mode of applicability of MODES 1 and 2 for the Rod Position Indication System. The proposed change, adding a Mode of Applicability for the Rod Position Indication System, is consistent with the manner in which this issue is addressed by the Improved Technical Specifications and is consistent with the Zion submittals to adopt the Improved Technical Specifications.

During its review, the staff noticed that there is a discrepancy between the TS pages submitted by the licensee. The version that shows the requested changes by manual markup does not delete the requirement that the reactor trip breakers remain open. However, the page with the requested changes shown "shaded" does delete this requirement. The licensee's submittal clearly indicates that its desire is that this requirement be deleted and conversations with the licensee confirmed this. In addition, if the requirement were not deleted, the purpose of the amendment would not be served. Therefore, the amendment the staff is issuing deletes the requirement that the reactor trip breakers remain open.

The staff has reviewed and evaluated the information and data presented by the licensee in its application for amendment. The proposed addition of modes of applicability to the requirement for the rod position indicator channels to be operable would allow the licensee to shut reactor trip breakers in modes other than MODES 1 and 2 even if the rod position indicator channel(s) is(are) inoperable. The staff has determined that this is a reasonable change that will permit the licensee to cycle individual control rods to calibrate or ensure the operability of rod position indicator channels. During the period that the rod position indication channel(s) is(are) inoperable, shutdown margin limits can be ensured by chemical shim. Therefore, the proposed TS change is acceptable.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change 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. The NRC staff has determined that the amendments involve 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 the amendments involve no significant hazards consideration, and there has been no public comment on such finding (61 FR 54240). Accordingly, the amendments meet 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 the amendments.

5.0 CONCLUSION

The Commission 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Date: November 25, 1996