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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATING TO THE NUMBER OF INCORE THIMBLE OPERABLE FOR

COMMONWEALTH EDISON

BRAIDWOOD NUCLEAR POWER STATION UNIT 1

DOCKET NO. 50-456

1.0 BACKGROUND

By letter dated June 2, 1988, Commonwealth Edison has proposed a temporary change to the Braidwood Nuclear Power Station Unit No. 1, Technical Specification to extend an additional ten (10) days, the monthly surveillance interval for the Power Range Neutron Flux High Setpoint. Presently, 16 of the 58 incore thimbles are plugged. This change would be in effect for only ten days. This will give the licensee time to prepare for an orderly shutdown to repair the plugged thimbles. The licensee has proposed increased uncertainty factors to be applied to the measure peaking factors when flux maps are taken with fewer than 75% of the thimbles. A similar change has been approved for other licensees when similar problems occurred for those plants.

2.0 EVALUATION

Essentially, all PWR Technical Specifications contain a requirement for operability of 75% of the incore detector locations for periodic mapping of the core power distribution. On a number of occasions, for various reasons, thimble failures in operating PWRs have approached or exceeded 25% and relaxation of the 75% requirement has been permitted for the duration of the affected reactor operating cycles.

The licensee's proposed change increases the moveable incore map measurement uncertainty from the normal 5% to 9% for F_Q^N and F_{xy}^N. The normal uncertainty in the measurement of F^N is 4% and is proposed to be increased to 6%.

The stuck thimbles are spread fairly evenly across the core, thus eliminating concern that an entire region might not be measured.

The licensee has provided results of core maps which show sufficient margins in total core peaking factor and F^N to the Technical Specification limits for steady-state operating conditions. Both the total core peaking factor and F^N normally tend to decrease with burnup. Peaking factors increase with lower power levels, but the peaking factor limits increase even faster. Thus, the margin to limits is greater at part power than at full power. An incore flux map was

taken on May 28, 1988 at 74% power with 42 detectors (72% of detectors). With the increased uncertainty (as proposed by the licensee for the technical specification change), the measured peaking factors had apparently 14% margin to the limit for the total peaking factor and 7% margin for $F_N^{\Delta H}$. Since the

unit will not exceed 75% power, we conclude that these margins, along with the proposed increases in measurement uncertainty are sufficient to preclude concern that required monitoring of the limits could fail to detect a problem during this period of time and that extending the surveillance interval for ten (10) days will have little or no effect on this system to operate normally and perform its intended function.

Our review of the suitability of operation of the Braidwood Unit 1 reactor for an additional 10 days with a reduced number of movable incore thimble locations to as few as 65%, indicates that adequate margin exists at this time in Cycle 1 and sufficiently increased uncertainty allowance has been made to ensure that Technical Specification peaking factor limits will be met. We, therefore, conclude that the proposed Technical Specification change is acceptable for the 10 days requested.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes to the installation or use of the facility components located within the restricted area as defined in 10 CFR Part 20. 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 exposure. The Commission has made a final no significant hazards consideration finding with respect to this amendment. Accordingly, the 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.

4.0 FINDINGS OF EMERGENCY WARRANTING AN AMENDMENT WITHOUT NOTICE

The proposed amendment is a one-time only change for Technical Specification 4.3.1.1 for the Reactor Trip System Instrumentation. The change proposes, on a one-time basis, to extend for an additional ten (10) days, the monthly surveillance interval for the Power Range Neutron Flux High Setpoint. The Surveillance Requirements are such that entry into an operational mode or state or other specified condition shall not be made unless the Surveillance Requirements associated with the Limiting Condition for Operation have been performed within the stated surveillance interval or as otherwise specified.

The licensee's application for the Technical Specification change was necessitated due to the discovery of (16) blocked thimble tubes in the Braidwood Unit 1 Moveable Incore Detector System (MIDS) on May 10, 1988. CECo took immediate action to try to repair the blocked thimble tubes in order to complete their Technical Specification surveillance requirements. After a substantial effort had been made to clear the blocked thimble tubes, it became clear that the system would not have the minimum number of detectors available to meet the requirements. As of June 2, 1988, Unit 1 was below the minimum

Technical Specification limit of 75% of the moveable incore thimble locations. Efforts to clear the remaining thimble tubes have not been successful. It became evident at this point that inspite of all their efforts the time interval for completing the surveillance had elapsed and only an emergency change to their Technical Specifications would prevent them from being in violation.

The proposed Technical Specification change will allow Unit 1 to operate an additional ten (10) days during which preparations will be made for an orderly shutdown to allow for the clearing of the thimble tubes.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

Commonwealth Edison Company (the licensee) has completed, as part of their review, an evaluation and determination that the proposed amendment involves no significant hazards consideration. According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards considerations if operation of the facility in accordance with the proposed amendment would not:

(1) Involve a significant increase in the probability or consequences of an 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.

This proposed amendment requests a one-time only change (effective until June 15, 1988) for Unit 1, to Technical Specification 4.3.1.1 for the Reactor Trip System Instrumentation. The change proposes, on a one-time basis, to extend the monthly surveillance periodicity for the Power Range Neutron Flux High Setpoint from 31 days to 41 days.

The licensee has addressed the three criteria, stated above, in connection with this proposed amendment and has presented the following evaluation:

(1) The probability or consequences of accidents while the incore moveable detector system is degraded are not increased because extension of a surveillance interval does not significantly affect the probability for the occurrence of an accident. Both shiftly and 18-month surveillances are performed on the equipment to demonstrate operability. Since there remain sufficient instruments which function to adequately monitor the core, the consequences of an accident remain unaffected.

(2) The possibility of a new or different kind of accident from any accident previously evaluated is not created because the ability of the moveable detector system to measure core power distributions is not significantly degraded. Also, the impact on the ability to measure quadrant tilt and core average axial power shape is negligible. Finally, no new equipment is introduced and no equipment is operated in a new or different manner.

(3) The margin of safety is not reduced because sufficient thimbles will be available to ensure that no quadrant will be unmonitored. The limitation of power level to 75% further assures that the margin of safety is not reduced. The plugged tubes that necessitate this change are not concentrated in any quadrant or core region. A full core flux map completed on May 27, 1988, utilized 42 thimbles, indicated acceptable comparison of incore Axial Flux Difference.

The staff has reviewed the licensee's evaluation and determined that it involves no significant hazards considerations and found it acceptable. Additionally, the staff, in reviewing the licensee's request for the above amendment, determined that should this request be implemented, it would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety; the amendment does not involve a significant hazards consideration, (2) t ere is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

The State of Illinois was informed by telephone on June 2, 1988, of the staff's no significant hazards consideration determination. The State contact had no comments on the determination.

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Dated: June 10, 1988