ATTACHMENT A

PROPOSED CHANGE TO APPENDIX A

TECHNICAL SPECIFICATIONS OF

FACILITY OPERATING LICENSE NPF-72

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4.2.2.1 The provisions of Specification 4.0.4 are not applicable.

4.2.2.2 F_{xy} shall be evaluated to determine if $F_Q(Z)$ is within its limit by:

a. Using the movable incore detectors to obtain a power distribution map at any THERMAL POWER greater than 5% of RATED THERMAL POWER;

b. * Increasing the measured F_{xy} component of the power distribution map by 3% to account for manufacturing tolerances and further increasing the value by 5% to account for measurement uncertainties;

c. Comparing the F_{xy} computed (F_{xy}^C) obtained in Specification 4.2.2.2b., above, to:

1) The F_{xy} limits for RATED THERMAL POWER (F_{xy}^{RTP}) for the appropriate measured core planes given in Specifications 4.2.2.2e. and f., below, and

2) The relationship:

$$F_{xy}^L = F_{xy}^{RTP} [1+0.2(1-P)]$$

Where F_{xy}^L is the limit for fractional THERMAL POWER operation expressed as a function of F_{xy}^{RTP} and P is the fraction of RATED THERMAL POWER at which F_{xy} was measured.

d. Remeasuring F_{xy} according to the following schedule:

1. When F_{xy}^C is greater than the F_{xy}^{RTP} limit for the appropriate measured core plane but less than the F_{xy}^L relationship, additional power distribution maps shall be taken and F_{xy}^C compared to F_{xy}^{RTP} and F_{xy}^L:

a) Within 24 hours after exceeding by 20% of RATED THERMAL POWER or greater, the THERMAL POWER at which F_{xy}^C was last determined, or

b) At least once per 31 EFPD, whichever occurs first.

* For Unit 1, Cycle 1, when the number of incore thimble tubes is less than 75% but greater than or equal to 65% of the total number of incore thimble tubes, the 5% measurement uncertainties shall initially be increased to 9%. Upon receipt of a detailed plant specific analysis, the 5% measurement uncertainties will then be adjusted per the analysis.

SURVEILLANCE REQUIREMENTS (Continued)

2) When the F_{xy}^{C} is less than or equal to the F_{xy}^{RTP} limit for the appropriate measured core plane, additional power distribution maps shall be taken and F_{xy}^{C} compared to F_{xy}^{RTP} and F_{xy}^{L} at least once per 31 EFPD.

e. The F_{xy} limits for RATED THERMAL POWER (F_{xy}^{RTP}) shall be 1.71 for all core planes containing Bank "D" control rods and 1.55 for all unrodded core planes;

f. The F_{xy} limits of Specification 4.2.2.2e., above, are not applicable in the following core planes regions as measured in percent of core height from the bottom of the fuel:

1) Lower core region from 0 to 15%, inclusive,

2) Upper core region from 85 to 100%, inclusive,

3) Within ± 2% of grid plane regions such that no more than 20% of the total core height in the center core region is affected, and

4) Core plane regions within ± 2% of core height (± 2.88 inches) about the bank demand position of the Bank "D" control rods.

g. With F_{xy}^{C} exceeding F_{xy}^{L}, the effects of F_{xy} on $F_{Q}(Z)$ shall be evaluated to determine if $F_{Q}(Z)$ is within its limits.

4.2.2.3* When $F_{Q}(Z)$ is measured for other than F_{xy} determinations, an overall measured $F_{Q}(Z)$ shall be obtained from a power distribution map and increased by 3% to account for manufacturing tolerances and further increased by 5% to account for measurement uncertainty.

* For Unit 1, Cycle 1, when the number of incore thimble tubes is less than 75%, but greater than or equal to 65% of the total number of incore thimble tubes, the 5% measurement uncertainties shall initially be increased to 9%. Upon receipt of a detailed plant specific analysis, the 5% measurement uncertainties will then be adjusted per the analysis.

POWER DISTRIBUTION LIMITS

3/4.2.3 RCS FLOW RATE AND NUCLEAR ENTHALPY RISE HOT CHANNEL FACTOR

LIMITING CONDITION FOR OPERATION

3.2.3 Indicated Reactor Coolant System (RCS) total flow rate and $F^N_{\Delta H}$ shall be maintained as follows for four loop operation.

a. RCS Total Flowrate $\geq$ 390,400 gpm, and

b. $F^N_{\Delta H} \leq 1.55\ [1.0 + 0.3\ (1.0-P)]$

where:

Measured values of $F^N_{\Delta H}$ are obtained by using the movable incore detectors. An appropriate uncertainty of 4% (nominal) or greater * shall then be applied to the measured value of $F^N_{\Delta H}$ before it is compared to the requirements, and

$$P = \frac{\text{THERMAL POWER}}{\text{RATED THERMAL POWER}}$$

APPLICABILITY: MODE 1.

ACTION:

With RCS total flow rate or $F^N_{\Delta H}$ outside the region of acceptable operation:

a. Within 2 hours either:

1. Restore RCS total flow rate and $F^N_{\Delta H}$ to within the above limits, or

2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER and reduce the Power Range Neutron Flux-High Trip Setpoint to less than or equal to 55% of RATED THERMAL POWER within the next 4 hours.

* For Unit 1, Cycle 1, when the number of incore thimble tubes is less than 75%, but greater than or equal to 65% of the total number of incore thimble tubes, the 4% measurement uncertainties shall initially be increased to 6%. Upon receipt of a detailed plant specific analysis, the 4% uncertainties will then be adjusted per the analysis.

INSTRUMENTATION

MOVABLE INCORE DETECTORS

LIMITING CONDITION FOR OPERATION

3.3.3.2 The Movable Incore Detection System shall be OPERABLE with:

a. * At least 75% of the detector thimbles,

b. A minimum of two detector thimbles per core quadrant, and

c. Sufficient movable detectors, drive, and readout equipment to map these thimbles.

APPLICABILITY: When the Movable Incore Detection System is used for:

a. Recalibration of the excore neutron flux detection system, or

b. Monitoring the QUADRANT POWER TILT RATIO, or

c. Measurement of $F^N_{\Delta H}$, $F_Q(Z)$ and F_{xy}.

ACTION:

With the Movable Incore Detection System inoperable, do not use the system for the above applicable monitoring or calibration functions. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.2 The Movable Incore Detection System shall be demonstrated OPERABLE at least once per 24 hours by normalizing each detector output when required for:

a. Recalibration of the Excore Neutron Flux Detection System, or

b. Monitoring the QUADRANT POWER TILT RATIO, or

c. Measurement of $F^N_{\Delta H}$, $F_Q(Z)$, and F_{xy}.

* The specified percentage of detectors thimbles may be reduced to 65% for Unit 1, Cycle 1, only

ATTACHMENT B

SIGNIFICANT HAZARDS CONSIDERATIONS

Commonwealth Edison has evaluated this proposed amendment and determined that it involves no significant hazards considerations. 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 for Unit 1, Cycle 1, to Technical Specifications 4.2.2.2.b, 4.2.2.3, 3.2.3.b and 3.3.3.2.a for the Movable Incore Detector System. The change proposes to reduce to 65% from 75% the number of incore moveable thimbles required for the system to be operable.

The probability or consequences of accidents involving the incore moveable detector system are not increased because only a conservative increase to the measurement uncertainties is involved in these technical specification changes. The Incore Flux Mapping (IC) system is not considered in the accident analyses. This system is not used in the primary success path for mitigation of a Design Basis Accident (DBA). Core peaking factor measurement uncertainty will be increased but compensated for by NSSS supplied peaking factor adjustments. Also, the IC system is not used for accident mitigation. It is used to monitor core flux distribution during normal operation to confirm core peaking factors are within their design limits, to aid in detecting misaligned rods and to aid in determining proper core loading. As stated in FSAR Section 7.7, the IC system is a control system not required for safety. Therefore, the change does not involve an increase in probability or consequence of an accident previously evaluated.

The possibility of a new or different kind of accident from any accident previously evaluated is not created because thimble deletion to the 65% level does not significantly degrade the ability of the moveable detector system to measure core power distributions. Also, thimble deletion has negligible impact on the quandrant tilt and core average axial power shape measurement. Finally, no new equipment is introduced and no equipment is operated in a new or different manner. The change will allow a reduced overall thimble tube availability.

The margin of safety is not reduced because the NSSS vendor has supplied conservative peaking factor penalties to ensure that pertinent core design parameters are maintained. Based on these penalties, the margin of safety is not reduced and the ability of the Reactor Protection System (RPF) or Engineered Safety Features (ESF) instrumentation to mitigate the consequences of an accident have not be impaired. The IC system is not a process variable that is an initial condition in FSAR Chapter 15 analyses. Sufficient thimbles will be available to ensure that no quadrant will be unmonitored. The plugged tubes that necessitate this change are not concentrated in any quadrant or core region.

With the inclusion of the additional peaking factor uncertainties in the plant technical specifications, it is concluded that operation of the moveable detector system with 38 (65%) or more thimbles is acceptable provided that the appropriate uncertainties are applied to the incore measured peaking factors.

Based upon the above, Commonwealth Edison believes this amendment involves no significant hazards consideration.

ATTACHMENT C

DESCRIPTION OF AND
SAFETY EVALUATION FOR CHANGE TO INSTRUMENTATION
MOVABLE INCORE DETECTORS
TECHNICAL SPECIFICATION

I. BACKGROUND

While performing Braidwood 1 Surveillance tests utilizing the Movable Incore Detector System (MIDS), it was determined that less than 75 percent of the detector thimbles were operable. The incore detectors were not able to travel through the entire length of the incore thimbles into the reactor vessel due to mechanical thimble problems. Technical Specification Section 3.3.3.2.a requires that 75 percent of the detector thimbles be OPERABLE when the MIDS is used for the following power distribution monitoring:

1. Recalibration of the excore neutron flux detection system (Technical Specification 4.3.1.1),

2. Monitoring the QUADRANT POWER TILT RATIO (Technical Specification 4.2.4.2), or

3. Measurement of F-Delta-H, FQ(Z), and Fxy (Technical Specification Sections 4.2.3.2, 4.2.2.2.a., 4.2.2.2.d.2).

The incore - excore comparison is required to be performed by June 2, 1988. Currently, the number of functional thimbles for Braidwood Unit 1 is 42 which corresponds to 72 percent of the installed thimbles (58). Upon determination that sufficient thimbles were not available as required by Technical Specifications, efforts were initiated to correct the mechanical problems.

II. REFERENCE

Braidwood Station Units 1 & 2 Technical Specifications sections 3.3.3.2, 4.3.1.1., 4.2.4.2, 4.2.3.1, 4.2.3.2, 4.2.2.2, 4.2.2.3, 4.2.2.2.d.2, and Bases 3/4.2.2 and 3/4.2.3.

III. BASES

A. Introduction

The Movable Incore Detector System (MIDS) consists of 58 incore flux thimbles to permit measurement of the axial neutron flux distribution within the reactor core. Six movable neutron flux detectors are available to scan the length of the 58 selected fuel assemblies to provide remote reading of the axial flux distribution. The MIDS is used for confirmatory information and is not required for the day to day safe operation of the core. Daily core power performance is monitored by the excore detectors.

Westinghouse has performed peaking factor uncertainty evaluations using the INCORE computer code for other domestic plants in support of proposed Technical Specification changes for an OPERABLE MIDS with 50 percent or more of the detector thimbles available. One study was performed on a 4 loop 17 x 17 plant similar to Braidwood Unit 1, and the other three loop 17 x 17 plants. One evaluation started with a normal population of operable thimbles (greater than 75 percent) and randomly deleted additional thimbles until 50 percent of the thimbles remained operable. The second evaluation assumed all thimbles (as designed) were initially operable with random deletions made of 50 percent of the thimbles. Both studies involved the comparison of power distribution surveillance (Fxy, FQ, FDH) obtained with a normal population of thimbles to the power distribution surveillance parameters obtained with a reduced population (50 percent) of thimbles.

Based on these comparisons, additional uncertainties to be applied to measure power distribution surveillance parameters, when less than 75 percent but greater than or equal to 50 percent of the thimbles are OPERABLE were derived. For application to Braidwood Unit 1, these additional uncertainties have been increased, with the resulting total uncertainties appearing below in Table 1 conservatively bounding the results of the aforementioned studies.

TABLE 1

Parameter	Total Additional Uncertainty
FDH	2%
Fxy	4%
FQ	4%

Braidwood Unit 1 Cycle 1 is at approximately 3,100 MWD/MTU of a 16,400 MWD/MTU cycle. All power distribution surveillance parameters (FDH, Fxy, FQ) currently have sufficient margin to their limits after the current uncertainties are applied. These margins will continue to increase for the remainder of cycle 1 based on Braidwood Unit 1 core design predictions. After addition of the new additive uncertainty factors, Braidwood Unit 1 will continue to operate in accordance with the amendment to the facility operating license as stated. The above additive uncertainty factors will continue to be used until completion of the Braidwood Unit 1 specific analysis. After completion of this analysis further operation will be conducted utilizing these site specific uncertainty factors.