

ATTACHMENT A

APPLICATION FOR AMENDMENT  
TO OPERATING LICENSE

Technical Specification  
Page Revision

Consolidated Edison Company of New York, Inc.  
Indian Point Unit No. 2  
Docket No. 50-247  
Facility Operating License No. DPR-26  
November, 1985

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### 3.10 CONTROL ROD AND POWER DISTRIBUTION LIMITS

#### Applicability:

Applies to the limits on core fission power distributions and to the limits on control rod operations.

#### Objectives:

To ensure:

1. Core subcriticality after reactor trip,
2. Acceptable core power distribution during power operation in order to maintain fuel integrity in normal operation and transients associated with faults of moderate frequency, supplemented by automatic protection and by administrative procedures, and to maintain the design basis initial conditions for limiting faults, and
3. Limit potential reactivity insertions caused by hypothetical control rod ejection.

#### Specifications:

##### 3.10.1 Shutdown Reactivity

The shutdown margin shall be at least as great as shown in Figure 3.10-1.

##### 3.10.2 Power Distribution Limits

- 3.10.2.1 At all times, except during low power physics tests, the hot channel factors defined in the basis must meet the following limits:

(a)  $F_{\Delta H}^N \leq 1.55 [1 + 0.3 (1-P)]$

- (b) For  $\leq 6\%$  steam generator tube plugging:

$$F_Q(Z) \leq (2.31/P) \times K(Z) \text{ for } P > .5$$

$$F_Q(Z) \leq (4.62) \times K(Z) \text{ for } P \leq .5$$

- (c) For  $> 6\%$  but  $\leq 12\%$  steam generator tube plugging:

$$F_Q(Z) \leq (2.25/P) \times K(Z) \text{ for } P > .5$$

$$F_Q(Z) \leq (4.50) \times K(Z) \text{ for } P \leq .5$$

where P is the fraction of full power at which the core is operating; K(Z) is the fraction given in Figure 3.10-2a (for  $\leq 6\%$  tube plugging) or Figure 3.10-2b (for  $> 6\%$  but  $\leq 12\%$  tube plugging); and Z is the core height location of F<sub>Q</sub>.

ATTACHMENT B

Safety Assessment

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## Safety Assessment

The proposed revision contained in Attachment A would change the  $F_{\Delta H}^N$  part power multiplier from 0.2 to 0.3 resulting in the following relationship:

$$F_{\Delta H}^N \leq 1.55 [1.0 + 0.3(1-P)]$$

where: P= fraction of rated thermal power

No change is made to the  $F_{\Delta H}^N$  limit at full power. This change is requested in order to allow optimization of future core loading patterns by minimizing restrictions on  $F_{\Delta H}^N$  at low power.

The proposed increase in the part power multiplier has a direct impact on DNBR calculations. The core safety limits for Indian Point Unit 2, indicated in technical specification Figure 2.1.1, represent restrictions of average enthalpy at the vessel exit and minimum DNBR.

The average enthalpy at the vessel exit must be less than the enthalpy of saturated liquid to assure the proportionality between vessel  $\Delta T$  and core power. The exit enthalpy restriction is more limiting than DNBR at low heat fluxes and is independent of radial peaking factor. The proposed change will not impact core safety limits at power levels restricted by vessel exit boiling limits, which typically applies to power levels below 70% Rated Power For Indian Point 2. At power levels greater or equal to 100% Rated Power  $F_{\Delta H}^N$  is not impacted by the part power multiplier since, the (1-P) term equals zero and the peak  $F_{\Delta H}^N$  used to generate the core safety limits at these power levels is unchanged. The core safety limits, though restricted by DNBR, at these power levels will not change.

The core safety limits currently used in IP-2 safety analyses were generated to bound both the High Parasitic (HIPAR) and Low Parasitic (LOPAR) fuel in the core during the transition cycles from a full HIPAR to a full LOPAR core. At power levels below 100% Rated Power, the HIPAR fuel is the limiting fuel type for the DNB analyses. In Cycle 8 and all subsequent cycles, the cores are planned to be all LOPAR fuel. The DNBR conservatism associated with core safety limits based on HIPAR fuel is more than enough to compensate for the DNBR penalty associated with the proposed change to the part power multiplier.

To ensure adequate core protection, the core safety limits were reevaluated due to the increase in the part power multiplier. This evaluation determined that IP-2's current core safety limits are applicable and bounding for full LOPAR cores, including the effects of an increase in the part power multiplier. The core safety limit curves in technical specification Figure 2.1.1 remain unchanged and the current Overpower  $\Delta T$  and Overtemperature  $\Delta T$  technical specification setpoint

equation constants are applicable and will be maintained. Therefore, no reanalysis is required for non-LOCA accident events, since non-LOCA accident analyses are not impacted by the proposed  $F^{N\Delta H}$  part power multiplier change.

The current large and small break LOCA analyses of record remain applicable for an  $F^{N\Delta H}$  increase at partial powers. The LOCA analyses are performed at rated power conditions which bound all partial power conditions. The  $F^{N\Delta H}$  has no increase at rated power and therefore, the proposed partial power  $F^{N\Delta H}$  increase has no impact on the LOCA analyses.

The proposed technical specification change does not impact the other nuclear design bases used to evaluate the reload cores.

Basis For No Significant Hazards Consideration Determination:

The Commission has provided guidance concerning the application of the standards for determining whether a significant hazards consideration exists by providing certain examples (48 FR 14870). Example (vi) of those involving no significant hazards considerations discusses a change which may reduce a safety margin but where the results are clearly within all acceptable criteria with respect to the system or component. The proposed change to the  $F^{N\Delta H}$  part power multiplier is in a less restrictive direction and would appear to reduce a safety margin. However, consistent with the Commission's criteria for determining whether a proposed amendment to an operating license involves no significant hazard considerations, 10 CFR 50.92 (48 FR 871), we have determined that the proposed change to increase the  $F^{N\Delta H}$  part power multiplier from 0.2 to 0.3 will not; increase the probability or the consequences of an accident previously evaluated since, the increase in the  $F^{N\Delta H}$  limit entails no physical changes in plant equipment or operating procedures and the safety analysis shows that the proposed increase in the  $F^{N\Delta H}$  limit does not lead to departure from nucleate boiling (DNB) in the core; create the possibility of a new or different kind of accident from any previously evaluated since, the change in the  $F^{N\Delta H}$  part power multiplier involves no plant equipment or operating procedure changes; involve a significant reduction in a margin of safety since, the fuel is within the bounds of the same fuel failure criteria as before.

Therefore, since this application for amendment involves a proposed change that is similar to example for which no significant hazards consideration exists, we have determined that this application involves no significant hazards consideration.

The proposed change has been reviewed by both the Station Nuclear Safety Committee and the Consolidated Edison Nuclear Facilities Safety Committee. Both committees concur that this change does not represent a significant hazards consideration and will not cause any change in the types or increase in the amounts of effluents or any change in the authorized power level of the facility.