

ATTACHMENT C

PROPOSED CHANGES TO APPENDIX A,
TECHNICAL SPECIFICATIONS, OF FACILITY OPERATING LICENSE DPR-19

REVISED PAGES

UNIT 2 (DPR-19)

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1.1 SAFETY LIMIT

FUEL CLADDING INTEGRITY

Applicability:

The Safety Limits established to preserve the fuel cladding integrity apply to these variables which monitor the fuel thermal behavior.

Objective:

The objective of the Safety Limits is to establish limits below which the integrity of the fuel cladding is preserved.

Specifications:

- A. Reactor Pressure greater than 800 psig and Core Flow greater than 10% of Rated.

The existence of a minimum critical power ratio (MCPR)

less than 1.06 for GE fuel or less than 1.05 for ANF

fuel, shall constitute violation of the MCPR fuel cladding integrity safety limit.

1.08

When in Single Loop Operation, the MCPR safety limit shall be increased by 0.01.

2.1 LIMITING SAFETY SYSTEM SETTING

FUEL CLADDING INTEGRITY

Applicability:

The Limiting Safety System Settings apply to trip settings of the instruments and devices which are provided to prevent the fuel cladding integrity Safety Limits from being exceeded.

Objective:

The objective of the Limiting Safety System Settings is to define the level of the process variables at which automatic protective action is initiated to prevent the fuel cladding integrity Safety Limits from being exceeded.

Specifications:

- A. Neutron Flux Trip Settings
The limiting safety system trip settings shall be as specified below:

1. APRM Flux Scram Trip Setting (Run Mode)

When the reactor mode switch is in the run position, the APRM flux scram setting shall be:

S less than or equal to $[\ .58W_D + 62]$ during Dual Loop Operation or S less than or equal to $[\ .58W_D + 58.5]$ during Single Loop Operation

with a maximum setpoint of 120% for core flow equal to 98×10^6 lb/hr and greater, where:

s - setting in percent of rated thermal power.

1.1 SAFETY LIMIT BASES (Cont'd.)

power ratio (CPR) which is the ratio of the bundle power which would produce the onset of transition boiling divided by the actual bundle power. The minimum value of this ratio for any bundle in the core is the Minimum Critical Power Ratio (MCPR). It is assumed that the plant operation is controlled to the nominal protective setpoints via the instrumented variables. (Figure 2.1-3).

The MCPR Fuel Cladding Integrity Safety Limit assures sufficient conservatism in the operating MCPR limit that in the event of an anticipated operational occurrence from the limiting condition for operation, at least 99.9% of the fuel rods in the core would be expected to avoid boiling transition. The margin between calculated boiling transition (MCPR=1.00) and the MCPR Fuel Cladding Integrity Safety Limit is based on a detailed statistical procedure which considers the uncertainties in monitoring the core operating state. One specific uncertainty included in the safety limit is the uncertainty inherent in the ANF NRC-approved critical power correlation. Refer to Specification 6.6.A.4 for the methodology used in determining the MCPR Fuel Cladding Integrity Safety Limit.

The ANF NRC-approved critical power correlation is based on a significant body of practical test data, providing a high degree of assurance that the critical power as evaluated by the correlation is within a small percentage of the actual critical power being estimated. The assumed reactor conditions used in defining the safety limit introduce conservatism into the limit because boundingly high radial power peaking factors and boundingly flat local peaking distributions are used to estimate the number of rods in boiling transition. Still further conservatism is induced by the tendency of the ANF NRC-approved correlation to overpredict the number of rods in boiling transition. These conservatisms and the inherent accuracy of the ANF NRC-approved correlation provide a reasonable degree of assurance that during sustained operation at the MCPR Fuel Cladding Integrity Safety Limit there would be no transition boiling in the core. If boiling transition were to occur, however, there is reason to believe that the integrity of the fuel would not necessarily be compromised. Significant test data accumulated by the U.S. Nuclear Regulatory Commission and private organizations indicate that the use of a boiling transition limitation to protect against cladding failure is a very conservative approach; much of the data indicates that LWR fuel can survive for an extended period in an environment of transition boiling.

During Single Loop Operation, the MCPR safety limit is increased by 0.01 to conservatively account for increased uncertainties in the core flow and TIP measurements.

1.1 SAFETY LIMIT BASES (Cont'd.)

If the reactor pressure should ever exceed the limit of applicability of the ANF NRC-approved critical power correlation as defined in the ANF NRC-approved methodology listed in Specification 6.6.A.4, it would be assumed that the MCPR Fuel Cladding Integrity Safety Limit had been violated. This applicability pressure limit is higher than the pressure safety limit specified in Specification 1.2.

Fuel design criteria have been established to provide protection against fuel centerline melting and 1% plastic cladding strain during transient overpower conditions throughout the life of the fuel. To demonstrate compliance with these criteria, fuel rod centerline temperatures are determined at 120% overpower conditions as a check against calculated centerline melt temperatures. FDLRC is incorporated to protect the above criteria at all power levels considering events which cause the reactor power to increase to 120% of rated thermal power.

B. Core Thermal Power Limit (Reactor Pressure less than 800 psia)

At pressures below 800 psia, the core elevation pressure drop (0 power, 0 flow) is greater than 4.56 psi. At low powers and flows this pressure differential is maintained in the bypass region of the core. Since the pressure drop in the bypass region is essentially all elevation head, the core pressure drop at low powers and flows will always be greater than 4.56 psi. Analyses show that with a flow of 28×10^3 lbs/hr. bundle flow, bundle pressure drop is nearly independent of bundle power and has a value of 3.5 psi. Thus, the bundle flow

6.0 ADMINISTRATIVE CONTROLS (Cont'd.)

4. Core Operating Limits Report

a. Core operating limits shall be established and documented in the Core Operating Limits Report before each reload cycle or any remaining part of a reload cycle for the following:

- 1) The Control Rod Withdrawal Block Instrumentation for Table 3.2-3 of Specification 3.2.C.
- 2) The Average Planar Linear Heat Generation Rate (APLHGR) Limit and associated APLHGR multipliers for Specifications 3.5.I, 3.5.D.2, and 3.6.H.3.f.
- 3) The Local Steady State Linear Heat Generation Rate (LHGR) for Specification 3.5.J.
- 4) The Local Transient Linear Heat Generation Rate (LHGR) for Specification 3.5.K.
- 5) The Minimum Critical Power Operating Limit for Specification 3.5.L. This includes rated and off-rated flow conditions.

b. The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC in the latest approved revision or supplement of the topical reports describing the methodology. For Dresden Unit 2, the topical reports are:

INSERT 'A'

1) XN-NF-512(P)(A), "XN-3 Critical Power Correlation."

INSERT 'B'

2) XN-NF-524(P)(A), "Exxon Nuclear Critical Power Methodology for Boiling Water Reactors".

3) XN-NF-79-71(P)(A), "Exxon Nuclear Plant Transient Methodology for Boiling Water Reactors".

4) XN-NF-80-19(P)(A), "Exxon Nuclear Methodology for Boiling Water Reactors".

5) XN-NF-85-67(P)(A), "Generic Mechanical Design for Exxon Nuclear Jet Pump Boiling Water Reactors Reload Fuel".

6) XN-NF-81-22(P)(A), "Generic Statistical Uncertainty Analysis Methodology".

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ANF-1125(P)(A), "Critical Power Correlation - ANFB."

INSERT 'B'

ANF-524(P)(A), "ANF Critical Power Methodology for Boiling Water Reactors."

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7) ANF-913(P)(A), "COTRANSA2: A Computer Program for Boiling Water Reactor Transient Analyses."

ATTACHMENT D

EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

Commonwealth Edison Company (CECo) proposes an amendment to Facility Operating License DPR-19 (Dresden Station Unit 2) to reflect the use of Siemens Nuclear Powers' (SNP) reload licensing methodologies for Dresden Station Unit 2 Cycle 14. As discussed in Attachment 'A', CECo proposes to reference these NRC-approved methodologies, incorporate the resultant increase in the Safety Limit Minimum Critical Power Ratio (SLMCPR) (from 1.05 to 1.08) for SNP fuel, and remove the SLMCPR for GE fuel.

CECo has evaluated the proposed amendment and concluded that it does not involve a significant hazards consideration. In accordance with 10 CFR 50.92(c):

- The proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The NRC-approved methodologies to be referenced in the Technical Specifications are used to evaluate core operating limits and do not introduce physical changes to the plant. SNP will continue to analyze the same spectrum of limiting events for each reload under the new methodology. The increase in the SLMCPR adequately accounts for the effects of the new methods and potential effects of channel bow, and will continue to maintain fuel cladding integrity by ensuring that 99.9% of the fuel rods will avoid transition boiling during limiting anticipated operational occurrences. The removal of the SLMCPR for GE fuel has no effect since the Dresden Station Unit 2 core currently does not contain GE fuel. Therefore, the changes do not effect the probability or consequences of accidents previously evaluated.

- The proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The referenced NRC-approved methodologies will continue to be used to analyze limiting transients, and do not introduce any physical changes to the plant; therefore, the possibility of a new or different kind of accident is not created. Similarly, the basis of the SLMCPR has not been changed and will continue to maintain fuel cladding integrity during limiting anticipated operational occurrences.

- The proposed amendment does not involve a significant reduction in a margin of safety.

The referenced NRC-approved methodologies will continue to ensure fuel design and licensing criteria are met. The increase in the SLMCPR reflects the new methods, bounds the effect of fuel channel bow for Cycle 14, and provides additional conservatism to facilitate future reload licensing reviews under the provisions of 10 CFR 50.59. Therefore, the margin between the safety limit and potential fuel failure after the onset of transition boiling is not decreased.

ATTACHMENT E

ENVIRONMENTAL ASSESSMENT

The proposed amendment to the Unit 2 Technical Specifications reflects the use of NRC-approved reload licensing methodologies for Cycle 14, the resultant increase in the SLMCPR for SNP fuel, and the removal of the Safety Limit MCPR for GE fuel. The new methodologies, SLMCPR increase for SNP fuel, and the removal of the SLMCPR for GE fuel will maintain the current margin of safety and fuel cladding integrity so that no environmental impact will result. Additionally, the proposed amendment does not involve a significant hazards consideration as previously presented in Attachment D.