



February 28, 2000

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

LaSalle County Station, Unit 2
Facility Operating License No. NPF-18
NRC Docket No. 50-374

Subject: Application for Amendment to Appendix A, Technical Specifications,
Minimum Critical Power Ratio

Pursuant to 10 CFR 50.90, Commonwealth Edison (ComEd) Company proposes to amend Appendix A, Technical Specifications (TS) of Facility Operating License No. NPF-18. The proposed changes are to the LaSalle County Station, Unit 2 TS Safety Limit for Thermal Power, High Pressure and High Flow, Section 2.1.2, "Minimum Critical Power Ratio (MCPR)," and its associated Bases Section.

The current MCPR Safety Limit for LaSalle County Station, Unit 2 was approved by the NRC in Amendment Number 116 to License No. NPF-18. The current MCPR Safety Limit for two loop operation is 1.08 and 1.09 for single loop operation. The proposed changes increase the two loop operation MCPR Safety Limit to 1.11 and the single loop operation MCPR Safety Limit to 1.12. This request is being made in anticipation that these revised limits will conservatively bound the current LaSalle County Station Unit 2 operating cycle for an anticipated 5% power uprate. This revised MCPR Safety Limit for Unit 2 is consistent with the current Unit 1 MCPR Safety Limit that was also based upon an anticipated 5% power uprate and was approved in Amendment No. 137 to License No. NPF-11. Additionally, TS Section 2.1.2 Bases is revised.

ComEd is requesting that these proposed changes be approved by the NRC prior to May 15, 2000 to support LaSalle County Station, Unit 2 operation in the uprated condition. LaSalle County Station will implement the approved amendment prior to start of power uprate operation on LaSalle County Station, Unit 2 Cycle 8. However, if LaSalle County Station, Unit 2 Cycle 8 does not operate at uprated conditions, this amendment will be implemented prior to startup of LaSalle County Station, Unit 2 Cycle 9.

This amendment request is subdivided as follows.

1. Attachment A gives a description and safety analysis of the proposed changes in this request.
2. Attachment B includes the marked up TS pages with the requested changes indicated
3. Attachment C describes ComEd's evaluation performed in accordance with 10 CFR 50.92(C), which provides information supporting a finding of no significant hazards consideration.
4. Attachment D provides information supporting an Environmental Assessment.

The proposed changes have been reviewed by the LaSalle County Station Plant Operations Review Committee (PORC) and approved by the Nuclear Safety Review Board (NSRB) in accordance with the Quality Assurance Program.

ComEd is notifying the State of Illinois of this application for amendment by transmitting a copy of this letter and its attachments to the designated state official.

If there are any questions concerning this letter, please refer them to Mr. R. R. Brady, Jr., Director, LaSalle Licensing and Compliance, at 630-663-7205.

Respectfully,



R. M. Krich
Vice President – Regulatory Services

Attachments

Affidavit

Attachment A: Description and Safety Analysis for Proposed Changes

Attachment B: Marked Up TS Pages for Proposed Changes

Attachment C: Information Supporting No Significant Hazards Consideration

Attachment D: Information Supporting An Environmental Assessment

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector - LaSalle County Station
Office of Nuclear Facility Safety – Illinois Department of Nuclear Safety

STATE OF ILLINOIS)
IN THE MATTER OF:)
COMMONWEALTH EDISON (COMED) COMPANY) Docket Number
LASALLE COUNTY STATION - UNIT 2) 50-374

SUBJECT: Application for Amendment to Appendix A, Technical Specifications,
Minimum Critical Power Ratio

AFFIDAVIT

I affirm that the content of this transmittal is true and correct to the best of my knowledge, information and belief.



R. M. Krich
Vice President – Regulatory Services

Subscribed and sworn to before me, a Notary Public in and

for the State above named, this 28 day of

February, 2000



Notary Public

ATTACHMENT A
Proposed Changes to Technical Specifications for
LaSalle County Station, Unit 2
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DESCRIPTION AND SUMMARY SAFETY ANALYSIS
FOR PROPOSED CHANGES

A. SUMMARY OF PROPOSED CHANGES

Pursuant to 10 CFR 50.90, Commonwealth Edison (ComEd) Company proposes to amend Appendix A, Technical Specifications (TS) of Facility Operating License No. NPF-18. The proposed changes are to the LaSalle County Station, Unit 2 TS Safety Limit for Thermal Power, High Pressure and High Flow, Section 2.1.2, "Minimum Critical Power Ratio (MCPR)." The proposed changes increase the two loop operation MCPR Safety Limit to from 1.08 to 1.11 and the single loop operation MCPR Safety Limit from 1.09 to 1.12.

B. DESCRIPTION OF THE CURRENT REQUIREMENTS

TS Safety Limit for Thermal Power, High Pressure and High Flow, Section 2.1.2, "Minimum Critical Power Ratio (MCPR)," requires that the MCPR shall not be less than 1.08 with two recirculation loop operation and not be less than 1.09 with single recirculation loop operation with the reactor vessel steam dome pressure greater than 785 psig and core flow greater than 10 percent of rated flow. This requirement is applicable in Operational Conditions 1 and 2, "Power Operation" and Startup."

If the MCPR is determined to be less than 1.08 with two recirculation loop operation or less than 1.09 with single recirculation loop operation with the reactor vessel steam dome pressure greater than 785 psig and core flow greater than 10 percent of rated flow, then be in at least hot shutdown within two (2) hours and comply with TS Section 6.4, "Action to be Taken in the Event a Safety Limit is Exceeded."

C. BASES FOR THE CURRENT REQUIREMENTS

This safety limit is provided to ensure that no fuel damage is predicted to occur if the limit is not violated. The current MCPR for LaSalle County Station, Unit 2 was approved by the NRC in Amendment Number 116. The NRC approval was based on the MCPR Safety Limits providing assurance that 99.9 percent of the fuel rods will avoid transition boiling considering the power distribution within the core and all uncertainties.

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D. NEED FOR THE REVISION OF THE REQUIREMENTS

In the Amendment Number 116 approval letter, the NRC noted that the MCPR Safety Limits of 1.08 for two loop operation and 1.09 for single loop operation bound Unit 2 Cycle 8 operation and that the applicability of MCPR Safety Limits would be confirmed on a cycle-specific basis. The current MCPR Safety Limits continue to bound Unit 2 Cycle 8 operation at the currently approved power level.

Unit 2 is currently scheduled to begin power uprate operation pending NRC approval, prior to the summer of 2000. We are proposing to increase the two loop MCPR Safety Limit from 1.08 to 1.11 and the single loop MCPR Safety Limit from 1.09 to 1.12 to support the Cycle 8 power uprate. The proposed changes are being submitted prior to completion of the detailed calculations for Cycle 8 power uprate; however, based on preliminary calculations these revised limits are anticipated to bound Unit 2 uprated operation.

E. DESCRIPTION OF THE PROPOSED CHANGES

The proposed changes are to increase the LaSalle County Station, Unit 2 MCPR Safety Limit from 1.08 to 1.11 for two loop operation and from 1.09 to 1.12 for single loop operation. A change to the following wording for TS Section 2.1.2 is proposed.

The MINIMUM CRITICAL POWER RATIO (MCPR) shall not be less than 1.11 with two recirculation loop operation and shall not be less than 1.12 with single recirculation loop operation with the reactor vessel steam dome pressure greater than 785 psig and core flow greater than 10% of rated flow.

Similarly, the TS Section 2.1.2 Action statement and the Section 2.0 Bases are proposed to be revised to reflect the increased MCPR Safety Limit.

F. SAFETY ANALYSIS OF THE PROPOSED CHANGES

The MCPR Safety Limit is set such that no fuel damage is predicted to occur if the limit is not violated. Since the parameters which result in fuel damage are not directly observable during reactor operation, the thermal and hydraulic conditions resulting in a departure from nucleate boiling have been used to mark the beginning of the region where fuel damage could occur. Although it is recognized that a departure from nucleate boiling would not necessarily result in damage to Boiling Water Reactor (BWR) fuel rods, the critical power at which boiling transition is calculated to occur has been adopted as a convenient limit. However, the uncertainties in monitoring the core operating state and in the procedures used to calculate the critical power result in an uncertainty in the value of the critical power. Therefore, the MCPR Safety Limit is defined as the critical power ratio in the limiting fuel assembly for which more than 99.9% of the fuel rods in the core are expected to avoid boiling transition considering the power distribution within the core and all uncertainties.

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LaSalle County Station, Unit 2 Cycle 8 MCPR Safety Limit calculations showed that at the beginning of the cycle a Safety Limit of 1.08 for two loop operation and 1.09 for single loop operation are supportable with less than 0.1% of the rods predicted to experience transition boiling. Because LaSalle County Station, Unit 2 Cycle 8 is scheduled to uprate power in mid-cycle, the MCPR Safety Limit calculations will need to be reperformed to account for the higher power level. Therefore, this amendment request proposes to increase the MCPR Safety Limit in order to support power uprate analyses.

A larger value for the MCPR Safety Limit is conservative and bounding for the current LaSalle County Station, Unit 2 Cycle 8 core at the current licensed power level, because compliance with an MCPR Safety Limit equal to or greater than what is calculated will ensure that less than 0.1% of the fuel rods experience boiling transition. A 1.11 two loop MCPR Safety Limit and a 1.12 single loop MCPR Safety Limit were chosen for Unit 2 Cycle 8 uprate operation by comparing Unit 2 Cycle 8 to Unit 1 Cycle 9. This comparison is considered conservative as Unit 1 Cycle 9 was analyzed for mid-cycle uprate operation, has a flatter power shape and higher core energy than Unit 2 Cycle 8. Unit 1 Cycle 9 has a 1.11 two loop MCPR Safety Limit and a 1.12 single loop MCPR Safety Limit. Therefore, since these MCPR Safety Limits support Unit 1 Cycle 9 uprate operation they are expected to support Unit 2 Cycle 8 uprate operation. The future calculated MCPR Safety Limit for power uprated conditions will be verified to be less than 1.11 for dual loop operation and less than 1.12 for single loop operation prior to implementation of Unit 2 Cycle 8 uprate power operation.

The LaSalle County Station, Unit 2 Core Operating Limits Report (COLR) will be revised prior to operation at uprate conditions or start of Cycle 9 whichever comes sooner, to reflect the appropriate cycle specific thermal limits.

G. IMPACT ON PREVIOUS SUBMITALS

No other previous submittals are impacted by this change request.

H. SCHEDULE REQUIREMENTS

ComEd requests that the requested TS amendment be effective upon issuance and the approved amendment will be implemented prior to LaSalle County Station, Unit 2 Cycle 8 operation at uprated power conditions or the startup of LaSalle County Station, Unit 2 Cycle 9, whichever comes first. ComEd requests approval of this TS amendment by May 15, 2000. The requested approval date was selected to support the planned implementation of power uprate on LaSalle County Station, Unit 2, during Cycle 8.

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MARKED-UP PAGES FOR PROPOSED CHANGES

REVISED PAGES

NPF-18

2-1

B 2-1

2.0 SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

2.1 SAFETY LIMITS

THERMAL POWER, Low Pressure or Low Flow

2.1.1 THERMAL POWER shall not exceed 25% of RATED THERMAL POWER with the reactor vessel steam dome pressure less than 785 psig or core flow less than 10% of rated flow.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2.

ACTION:

With THERMAL POWER exceeding 25% of RATED THERMAL POWER and the reactor vessel steam dome pressure less than 785 psig or core flow less than 10% of rated flow, be in at least HOT SHUTDOWN within 2 hours and comply with the requirements of Specification 6.4.

THERMAL POWER, High Pressure and High Flow

2.1.2 The MINIMUM CRITICAL POWER RATIO (MCPR) shall not be less than ~~1.08~~ with two recirculation loop operation and shall not be less than ~~1.09~~ with single recirculation loop operation with the reactor vessel steam dome pressure greater than 785 psig and core flow greater than 10% of rated flow.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2.

ACTION:

With MCPR less than ~~1.08~~ with two recirculation loop operation or less than ~~1.09~~ with single recirculation loop operation and the reactor vessel steam dome pressure greater than 785 psig and core flow greater than 10% of rated flow, be in at least HOT SHUTDOWN within 2 hours and comply with the requirements of Specification 6.4.

REACTOR COOLANT SYSTEM PRESSURE

2.1.3 The reactor coolant system pressure, as measured in the reactor vessel steam dome, shall not exceed 1325 psig.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, and 4.

ACTION:

With the reactor coolant system pressure, as measured in the reactor vessel steam dome, above 1325 psig, be in at least HOT SHUTDOWN with reactor coolant system pressure less than or equal to 1325 psig within 2 hours and comply with the requirements of Specification 6.4.

2.1 SAFETY LIMITS

BASES

1.11

1.12

1.12

The fuel cladding, reactor pressure vessel, and primary system piping are the principal barriers to the release of radioactive materials to the environs. Safety Limits are established to protect the integrity of these barriers during normal plant operations and anticipated transients. The fuel cladding integrity Safety Limit is set such that no fuel damage is calculated to occur if the limit is not violated. Because fuel damage is not directly observable, a step-back approach is used to establish a Safety Limit such that the MCPR is not less than 1.07 for two recirculation loop operation and 1.08 for single recirculation loop operation. MCPR greater than 1.07 for two recirculation loop operation and 1.08 for single recirculation loop operation represents a conservative margin relative to the conditions required to maintain fuel cladding integrity. The fuel cladding is one of the physical barriers which separate the radioactive materials from the environs. The integrity of this cladding barrier is related to its relative freedom from perforations or cracking. Although some corrosion or use related cracking may occur during the life of the cladding, fission product migration from this source is incrementally cumulative and continuously measurable. Fuel cladding perforations, however, can result from thermal stresses which occur from reactor operation significantly above design conditions and the Limiting Safety System Settings. While fission product migration from cladding perforation is just as measurable as that from use related cracking, the thermally caused cladding perforations signal a threshold beyond which still greater thermal stresses may cause gross rather than incremental cladding deterioration. Therefore, the fuel cladding Safety Limit is defined with a margin to the conditions which would produce onset of transition boiling, MCPR of 1.0. These conditions represent a significant departure from the condition intended by design for planned operation.

2.1.1 THERMAL POWER, Low Pressure or Low Flow

For certain conditions of pressure and flow, the ANFB correlation is not valid for all critical power calculations. The ANFB correlation is not valid for bundle mass velocities less than 0.10×10^6 lbs/hr-ft² (equivalent to a core flow of less than 10%) or pressures less than 590 psia. Therefore, the fuel cladding integrity Safety Limit is established by other means. This is done by establishing a limiting condition on core THERMAL POWER with the following basis. Since the pressure drop in the bypass region is essentially all elevation head, the core pressure drop at low power and flows will always be greater than 4.5 psi. Analyses show that with a bundle flow of 28×10^3 lbs/hr (approximately a mass velocity of 0.25×10^6 lbs/hr-ft²), bundle pressure drop is nearly independent of bundle power and has a value of 3.5 psi. Thus, the bundle flow with a 4.5 psi driving head will be greater than 28×10^3 lbs/hr. Full-scale ATLAS test data taken at pressures from 14.7 to 800 psia indicate that the fuel assembly critical power at this flow is approximately 3.35 Mwt. With the design peaking factors, this corresponds to a THERMAL POWER of more than 50% of RATED THERMAL POWER. Thus, a THERMAL POWER limit of 25% of RATED THERMAL POWER for reactor pressure below 785 psig is conservative.

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INFORMATION SUPPORTING A FINDING OF NO SIGNIFICANT HAZARDS
CONSIDERATION

ComEd has evaluated the proposed changes and has determined that the proposed changes do not involve a significant hazards consideration and is providing the following information to support a finding of no significant hazards consideration. According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not:

Involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated;

Create the possibility of a new or different kind of accident from any previously analyzed; or

Involve a significant reduction in a margin of safety.

The proposed changes increase the two loop operation Minimum Critical Power Ratio (MCPR) Safety Limit to 1.11 and the single loop operation MCPR Safety Limit to 1.12. These changes are being proposed in anticipation that these revised MCPR Safety Limits will conservatively bound the current LaSalle County Station, Unit 2 operating cycle for an anticipated 5% power uprate. Additionally, associated changes to Bases Section 2.1.2 are also proposed.

The determination that the criteria set forth in 10 CFR 50.92 (c) is met for this amendment request is indicated below.

Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

The proposed changes increase the two loop operation Minimum Critical Power Ratio (MCPR) Safety Limit from 1.08 to 1.11 and the single loop operation MCPR Safety Limit from 1.09 to 1.12. MCPR Safety Limits have been established consistent with NRC-approved methods to ensure that fuel performance is acceptable. These changes do not affect the operability of plant systems, nor do they compromise any fuel performance limits. Therefore the probability of an accident will not be changed based on these proposed changes.

The MCPR Safety Limit is set such that no fuel damage is calculated to occur

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if the limit is not violated. A larger value for the MCPR Safety Limit is conservative and bounding for the current LaSalle County Station, Unit 2 Cycle 8 core at the current licensed power level, because compliance with an MCPR Safety Limit equal to or greater than the calculated value will ensure that less than 0.1% of the fuel rods experience boiling transition. The MCPR Safety Limit does not impact the source term or pathways assumed in accidents previously evaluated. Therefore, this proposed changes do not increase the consequences of an accident previously evaluated.

Additionally, operational MCPR limits will be applied that will ensure the MCPR Safety Limit is not violated during all modes of operation and anticipated operational occurrences in accordance with the Core Operating Limits Report (COLR), which will be implemented prior to operation at uprated power. The MCPR Safety Limit ensures that less than 0.1% of the fuel rods in the core are expected to experience boiling transition. Therefore the probability or consequences of an accident will not increase.

Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

Creation of the possibility of a new or different kind of accident would require the creation of one or more new precursors of that accident. Changing the MCPR Safety Limit does not alter or add any new equipment or change modes of operation. The MCPR Safety Limit is established to ensure that 99.9% of the fuel rods avoid boiling transition.

The MCPR Safety Limit is changing for LaSalle County Station, Unit 2 to support Cycle 8 operation at uprated power conditions. Changing the MCPR Safety Limit does not introduce any physical changes to the plant, alter the processes used to operate the plant, or change allowable modes of operation. Therefore, no new or different kind of accident is created that is different from any accident previously evaluated.

Do the proposed changes involve a significant reduction in a margin of safety?

The MCPR Safety Limit provides a margin of safety by ensuring that less than 0.1% of the fuel rods are predicted to be in boiling transition. The proposed changes increase the two loop operation MCPR Safety Limit from 1.08 to 1.11 and the single loop operation MCPR Safety Limit from 1.09 to 1.12. A larger value for the MCPR Safety Limit is conservative and bounding for the

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current LaSalle County Station, Unit 2 Cycle 8 core at the current licensed power level, because compliance with a MCPR Safety Limit equal to or greater than what is calculated will ensure that less than 0.1% of the fuel rods experience boiling transition. Additionally, the proposed changes are being submitted prior to completion of the detailed calculations for Cycle 8 power uprate. However, based on preliminary calculations, these revised limits are anticipated to bound Unit 2 Cycle 8 operation at uprate conditions.

Therefore, the margin of safety will not be reduced.

Therefore, based upon the above evaluation, ComEd has concluded that these changes involve no significant hazards consideration finding.

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INFORMATION SUPPORTING AN ENVIRONMENTAL ASSESSMENT

ComEd has evaluated the proposed changes against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. ComEd has determined that the proposed changes meet the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9) and as such, has determined that no irreversible consequences exist in accordance with 10 CFR 50.92(b). This determination is based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10 CFR 50 that changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or that changes an inspection or a surveillance requirement, and the proposed changes meet the following specific criteria.

- (i) The proposed changes involve no significant hazards consideration.

The proposed changes do not involve a significant hazards consideration.

- (ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

There will be no change in the types or significant increase in the amounts of any effluents released offsite.

- (iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed changes will not result in changes in the operation or configuration of the facility. There will be no change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor will the proposal result in any change in the normal radiation levels within the plant. Therefore, there will be no increase in individual or cumulative occupational radiation exposure resulting from the proposed changes.