

Mr. James Knubel
 Chief Nuclear Officer
 Power Authority of the State
 of New York
 123 Main Street
 White Plains, NY 10601

September 2, 1999

SUBJECT: INDIAN POINT NUCLEAR GENERATING UNIT NO. 3 - ISSUANCE OF
 AMENDMENT RE: REMOVAL OF FOOTNOTE FROM TECHNICAL
 SPECIFICATIONS (TAC NO. MA5193)

Dear Mr. Knubel:

The Commission has issued the enclosed Amendment No.191 to Facility Operating License No. DPR-64 for the Indian Point Nuclear Generating Unit No. 3. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated April 12, 1999. The amendment removes a footnote from page 3.1-36 that states that the departure from nucleate boiling analysis contains adequate margin for Cycle 10, but needs to be reviewed and approved before Cycle 11.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

ORIGINAL SIGNED BY:

George F. Wunder, Project Manager, Section 1
 Project Directorate 1
 Division of Licensing Project Management
 Office of Nuclear Reactor Regulation

Docket No. 50-286

Enclosures: 1. Amendment No. 191 to DPR-64
 2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

September 2, 1999

Mr. James Knubel
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Power Authority of the State
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123 Main Street
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AMENDMENT RE: REMOVAL OF FOOTNOTE FROM TECHNICAL
SPECIFICATIONS (TAC NO. MA5193)

Dear Mr. Knubel:

The Commission has issued the enclosed Amendment No. 19 to Facility Operating License No. DPR-64 for the Indian Point Nuclear Generating Unit No. 3. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated April 12, 1999. The amendment removes a footnote from page 3.1-36 that states that the departure from nucleate boiling analysis contains adequate margin for Cycle 10, but needs to be reviewed and approved before Cycle 11.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

A handwritten signature in black ink, appearing to read "George F. Wunder".

George F. Wunder, Project Manager, Section 1
Project Directorate 1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-286

Enclosures: 1. Amendment No. 19 to DPR-64
2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-286

INDIAN POINT NUCLEAR GENERATING UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No.191
License No. DPR-64

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Power Authority of the State of New York (the licensee) dated April 12, 1999, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-64 is hereby amended to read as follows:

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(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 191 are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



S. Singh Bajwa, Section Chief, Section 1
Project Directorate 1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical Specifications

Date of Issuance: September 2, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 191

FACILITY OPERATING LICENSE NO. DPR-64

DOCKET NO. 50-286

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contain marginal lines indicating the areas of change.

Remove Page
3.1-36

Insert Page
3.1-36

3.1 Reactor Coolant System (RCS)

H. RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits

Specification

1. During the POWER OPERATION CONDITION, RCS DNB parameters for pressurizer pressure and RCS average temperature shall be within the limits specified below:
 - a. Pressurizer pressure ≥ 2205 psig;
 - b. Maximum indicated $T_{avg} \leq 571.5^{\circ}\text{F}$; and
2. At the POWER OPERATION CONDITION with four reactor coolant pumps running, the RCS DNB parameter for RCS total flow rate shall be within the following limit:

RCS total flow rate $\geq 375,600$ gpm.
3. The pressurizer pressure limit of Specification 3.1.H.1 does not apply during:
 - a. THERMAL POWER ramp $> 5\%$ RTP per minute; or
 - b. THERMAL POWER step $> 10\%$ RTP.
4. If pressurizer pressure, RCS average temperature, or RCS total flow rate are not in accordance with Specifications 3.1.H.1, 3.1.H.2, or 3.1.H.3, then, immediately verify that the safety limits of Specification 2.1 have not been exceeded and, within 2 hours, restore the RCS DNB parameter(s) to within limits.
5. If pressurizer pressure and/or RCS average temperature are not restored to within limits within 2 hours, be in the HOT SHUTDOWN CONDITION within 6 hours.
6. If RCS total flow rate is not restored to within the limits of Specification 3.1.H.2 within 2 hours, bring THERMAL POWER to $< 10\%$ RTP within 6 hours and ensure operation is in accordance with Specification 3.1.A.1.e.

Surveillance Requirements

Reference Technical Specification Table 4.1-1, Items 4, 5, and 7, and Section 4.3.B.

Bases

Background

These Bases address requirements for maintaining RCS pressure, temperature, and flow rate within limits assumed in the safety analyses. The safety analyses (Ref. 1) of normal operating conditions and anticipated operational occurrences assume initial conditions within the normal steady state envelope. The limits placed on RCS



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 191 TO FACILITY OPERATING LICENSE NO. DPR-64

POWER AUTHORITY OF THE STATE OF NEW YORK

INDIAN POINT NUCLEAR GENERATING UNIT NO. 3

DOCKET NO. 50-286

1.0 INTRODUCTION

By letter dated April 12, 1999, the Power Authority of the State of New York (the licensee) submitted a request for a license amendment to remove a footnote from the Indian Point Nuclear Generating Unit No. 3 (IP3) Technical Specifications (TSs). The footnote states that the current departure from nucleate boiling (DNB) analysis contains adequate margin for Cycle 10 but must be reviewed and approved by the staff before achieving criticality for Cycle 11.

2.0 SAFETY EVALUATION

2.1 Background

In an amendment request dated December 23, 1996, the licensee requested that the IP3 TSs be revised to accommodate the transition from VANTAGE 5 fuel (without intermediate flow mixing grids (IFM)) to VANTAGE+ (V+) with PERFORMANCE+ Westinghouse fuel features. The NRC staff questioned the applicability of the scaling method for the 15X15 V+ fuel design. The fuel vendor had used a NRC-approved scaling technique, but the method was not validated for the 15X15 V+ fuel design. Thus, the licensee could not use the scaling technique to establish the applicability of the WRB-1 correlation to the 15X15 V+ fuel design. WRB-1 is a critical heat flux correlation that uses local subchannel fluid conditions and fuel bundle geometry characteristics to predict the occurrence of critical heat flux. Since there was adequate DNB margin for cycle 10, the NRC staff approved the Cycle 10 DNB analysis but placed a restriction on the analysis for future cycles; specifically, a footnote stating that the staff must review and approve the DNB analysis before criticality is achieved in Cycle 11 was placed in the TSs.

2.2 Evaluation

The licensee proposes the removal of the page 3.1-36 footnote, which states:

"Current DNB analysis contains adequate margin for Cycle 10. Prior to achieving criticality in Cycle 11, the DNB analysis must be reviewed and approved by the NRC staff."

In the safety evaluation for Amendment No.175, the NRC staff stated that

"[T]he Westinghouse rod bundle critical heat flux (CHF) correlation, WRB-1, predicts critical heat flux in rod bundles based on subchannel local fluid conditions. This correlation was initially approved for the standard 14X14, 15X15 and the 17X17 standard Westinghouse fuel. Evolution of the standard 17X17 and 15X15 fuel has been developed by Westinghouse and their behavior simulated by using NRC approved "scaling technique." This scaling technique was validated for all four of the different 17X17 fuel types, but not for the 15X15 (OFA) and the VANTAGE+ (w/IFMs) fuel. No testing was conducted to verify that the scaling technique applied to the 15X15 standard fuel; however, cycle 10 analysis has shown that there is substantial departure from nucleate boiling ratio DNBR margin. Consequently, until such time as fuel tests are conducted on the 15X15 VANTAGE+ (w/IFMs) to [validate] the scaling technique and the applicability of the WRB-1 correlation, is acceptable for the upcoming cycle 10 only. Also, DNB analyses must be submitted to the staff for review and approval prior to Cycle 11."

DNBR is the ratio of the heat flux that would yield departure from nucleate boiling to the maximum operating heat flux. Over many years, Westinghouse conducted DNB testing on a variety of fuel geometries including 17X17 and 15X15, but not on 15X15 VANTAGE+ fuel. These tests resulted in the establishment of a DNBR limit of 1.17.

When Westinghouse conducts reload analyses, they use a local subchannel thermal-hydraulic program to determine local fluid channel properties. The WRB-1 correlation uses local fluid channel properties to determine the DNBR. The resulting DNBRs must be greater than the limit of 1.17.

Because DNB testing had not been performed on 15X15 VANTAGE+ fuel there was no way of knowing whether or not the data of such a test would be conservative relative to the limit of 1.17. This is why the staff required the licensee to conduct such testing before entering Cycle 11.

On March 17, 1999, a meeting was held between the staff, the licensee, and Westinghouse. In the meeting, Westinghouse presented an overview of confirmatory DNB tests conducted in December 1998 and January 1999. The measured and the predicted critical heat flux for the range of the experimental data were used to statistically determine the 95/95% DNBR limit for the 15X15 VANTAGE+ fuel design. The 15X15 VANTAGE+ test data yielded a limiting DNBR value of 1.114 for the 15X15 VANTAGE + fuel. The licensee therefore concluded that the DNB tests verified that application of the WRB-1 correlation to the 15X15 VANTAGE+ fuel was appropriate.

The NRC staff reviewed the conditions of Amendment 175 safety evaluation and the presentation of the DNB test results documented in a letter from Westinghouse dated March 29, 1999. The restriction in the footnote of TS Section 3.1 was intended to ensure that adequate DNB margin would exist on cycle-specific basis until the fuel vendor demonstrated the applicability of the WRB-1 correlation to the 15X15 VANTAGE + fuel design. The staff

reviewed the licensee's amendment request and the documentation of the DNB tests performed by Westinghouse and determined that, because the new test data yielded a DNBR lower than the bounding limit of 1.17, the WRB-1 correlation is applicable to the 15X15 VANTAGE+ fuel; therefore, use of the WRB-1 correlation is acceptable for 15X15 VANTAGE+ fuel beyond Cycle 10 and removal of the footnote is acceptable. The DNB testing obviates the need for using the scaling technique; therefore, any question as to the acceptability of this technique is no longer relevant.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New York State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC 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 radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (64 FR 27324). 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 the amendment.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Z. Abdullahi

Date: September 2, 1999

DATED: September 2, 1999

AMENDMENT NO. 191 TO FACILITY OPERATING LICENSE NO. DPR-64-INDIAN POINT
UNIT 3

Docket File

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