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

May 28, 1992

Docket No. 50-286

Mr. Ralph E. Beedle
Executive Vice President - Nuclear Generation
Power Authority of the State of New York
123 Main Street
White Plains, New York 10601

Dear Mr. Beedle:

SUBJECT: ISSUANCE OF EMERGENCY AMENDMENT FOR INDIAN POINT NUCLEAR GENERATING UNIT NO. 3 (TAC NO. M83401)

The Commission has issued the enclosed Amendment No. 118 to Facility Operating License No. DPR-64 for the Indian Point Nuclear Generating Unit No. 3. The amendment was processed under an emergency basis per 10 CFR 50.91(a)(5). The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated May 22, 1992. The letter dated May 22, 1992, superseded your initial application transmitted by letter dated May 19, 1992.

The amendment revises Technical Specifications Section 5.3 (Reactor) to allow substitution of a stainless steel filler rod in place of a fuel rod in fuel assemblies W51 and W06. The amendment is applicable for fuel cycles 9 and 10 only. The amendment also deletes the fuel cycle 8 specific fuel assembly description of Section 5.3 since cycle 8 has ended and this description is no longer applicable.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance and Final Determination of No Significant Hazards Consideration and Opportunity For Hearing will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,

N. F. Conicella

Nicola F. Conicella, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 118 to DPR-64
2. Safety Evaluation

cc w/enclosures:
See next page

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1/1

Mr. Ralph E. Beedle
Power Authority of the State
of New York

Indian Point Nuclear Generating
Station Unit No. 3

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DATED: May 28, 1992

AMENDMENT NO. 118 TO FACILITY OPERATING LICENSE NO. DPR-64-INDIAN POINT UNIT 3

Docket File
NRC & Local PDRs
PDI-1 Reading
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J. Calvo, 14/A/4
R. Capra
C. Vogan
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OGC-WF
D. Hagan, 3302 MNBB
G. Hill (4), P-137
Wanda Jones, P-130A
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C. Cowgill, Region I
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C. Hehl, RGN-I

cc: Plant Service list

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

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. 118
License No. DPR-64

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Power Authority of the State of New York (the licensee) dated May 22, 1992, 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:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 118, 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 prior to loading reconstituted fuel assemblies W51 or W06 into the reactor.

FOR THE NUCLEAR REGULATORY COMMISSION

Jose A. Calvo

Jose A. Calvo, Assistant Director
for Region I Reactors
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 28, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 118

FACILITY OPERATING LICENSE NO. DPR-64

DOCKET NO. 50-286

Revise Appendix A as follows:

Remove Pages	Insert Pages
5.3-1	5.3-1
5.3-2	5.3-2

5.3 REACTOR

Applicability

Applies to the reactor core, and reactor coolant system.

Objective

To define those design features which are essential in providing for safe system operations.

A. Reactor Core

1. The reactor core contains approximately 87 metric tons of uranium in the form of slightly enriched uranium dioxide pellets. The pellets are encapsulated in Zircaloy-4 or ZIRLO™ tubing to form fuel rods. The reactor core is made up of 193 fuel assemblies. Each fuel assembly contains 204 fuel rods,(1) except during Cycle 9 and Cycle 10 operation. For Cycle 9 and Cycle 10 operation only, fuel assemblies W51 and W06 will each contain one stainless steel filler rod in place of a fuel rod.

2. The average enrichment of the initial core was a nominal 2.8 weight percent of U-235. Three fuel enrichments were used in the initial core. The highest enrichment was a nominal 3.3 weight percent of U-235. (2)

3. Reload fuel will be similar in design to the initial core. The enrichment of reload fuel will be no more than 4.5 weight percent of U-235.

4. Burnable poison rods were incorporated in the initial core. There were 1434 poison rods in the form of 8, 9, 12, 16, and 20-rod clusters, which are located in vacant rod cluster control guide tubes. (3) The burnable poison rods consist of borosilicate glass clad with stainless steel. (4) Burnable poison rods of an approved design may be used in reload cores for reactivity and/or power distribution control.

5. There are 53 control rods in the reactor core. The control rods contain 142 inch lengths of silver-indium-cadmium alloy clad with the stainless steel. (5)

B. Reactor Coolant System

1. The design of the reactor coolant system complies with the code requirements. (6)

2. All piping, components and supporting structures of the reactor coolant system are designed to Class I requirements, and have been designed to withstand the maximum potential seismic ground acceleration, 0.15g, acting in the horizontal and 0.10g acting in the vertical planes simultaneously with no loss of function.

3. The nominal liquid volume of the reactor coolant system, at rated operating conditions and with 0% equivalent steam generator tube plugging, is 11,522 cubic feet.

Basis

The DNBR for Cycles 9 and 10 reconstituted fuel assemblies W51 and W06 will be conservatively determined by assuming the stainless steel replacement rods are operating at the highest power in the reconstituted fuel assemblies.

References

(1) FSAR Section 3.2.2

(2) FSAR Section 3.2.1

(3) FSAR Section 3.2.1

(4) FSAR Section 3.2.3

(5) FSAR Sections 3.2.1 & 3.2.3

(6) FSAR Table 4.1-9

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 118 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 May 22, 1992, the Power Authority of the State of New York (the licensee) submitted a request for changes to the Indian Point Nuclear Generating Unit No. 3, Technical Specifications (TS). The requested changes would revise TS Section 5.3 (Reactor) to allow substitution of a stainless steel filler rod in place of a fuel rod in fuel assemblies W51 and W06 (reconstituted fuel assemblies). The amendment would be applicable for fuel cycles 9 and 10 only. The amendment would also delete the fuel cycle 8 specific fuel assembly description as stated in TS Section 5.3 since cycle 8 has ended and this description is no longer applicable.

The May 22, 1992, letter requested that this amendment be processed on an emergency basis, in accordance with 10 CFR 50.91(a)(5), since core shuffling is scheduled to begin on June 1, 1992. The facility is presently in the cycle 8/9 refueling outage and the core is completely off-loaded with the fuel being stored in the spent fuel pool. The licensee would not be permitted to reload the core with reconstituted fuel assemblies W51 or W06 unless the proposed amendment was issued. Therefore, the licensee requested that the amendment be processed on an emergency basis since the amendment is required to permit the resumption of power operation from the cycle 8/9 refueling outage.

The licensee initially submitted an amendment request by letter dated May 19, 1992. The May 19, 1992, letter referenced only fuel assembly W51. However, on May 22, 1992, the licensee assessed that fuel assembly W06, which was previously thought to be repairable without reconstitution, was damaged to the extent that reconstitution was required. Therefore, the May 22, 1992, letter superseded the May 19, 1992, letter and addressed fuel assemblies W51 and W06.

2.0 EVALUATION

During the current cycle 8/9 refueling outage, the licensee noticed damage (a separation or space) to a corner of the lower grid strap of fuel assembly W51 and damage (a separated brazed joint) to a corner of the upper grid strap of fuel assembly W06. The licensee stated that this damage creates the potential for vibration and fuel clad fretting due to the grid straps rubbing against the corner fuel rods. To prevent possible damage to the corner fuel rods of

assemblies W51 and W06, the licensee intends to remove the corner fuel rods and replace them with stainless steel filler rods (dummy rods).

The dummy rods (Zircaloy-4 or stainless steel rods) were originally used in fuel assemblies to replace those fuel rods damaged by the baffle jetting problem in the Westinghouse reactors. The concept was extended further to replace failed rods during reconstitution of fuel assemblies in other locations. However, in order to satisfy generic fuel design criteria as described in the SRP, the dummy rods require thermal-hydraulic analyses to demonstrate that inclusion of the dummy rods in fuel assemblies with the specific configurations and core locations chosen for a specific fuel cycle is acceptable with respect to the overall fuel performance and safety-significant conclusions.

The licensee indicated that the dummy rods will be analyzed for fuel cycles 9 and 10 by assuming that the dummy rods operate at power levels equal to the highest power in any of the fueled rods in the reconstituted assemblies. This would result in a conservative analysis with less margin than actually exists to the Departure from Nucleate Boiling Ratio (DNBR) acceptance limit in the reconstituted assemblies; however, the predicted DNBR will be shown to clearly satisfy the minimum DNBR acceptance limits. The staff agrees that this analysis procedure should be sufficiently conservative to offset uncertainties associated with application of the approved DNBR correlation to reconstituted fuel assemblies which have fuel rod configurations slightly different than those represented in the DNBR test data base. However, core wide analyses will result in a non-conservative calculation with erroneous redistribution of flow from the reconstituted fuel assemblies to other assemblies in the core. This effect should be small and is probably negligible because only two reconstituted fuel assemblies are involved. Therefore, the staff accepts the licensee's approach of cycle-specific reload analysis for the dummy rods in the reconstituted fuel assemblies.

As for seismic and Loss of Coolant Accident (LOCA) loading conditions, each dummy rod has an outside diameter identical to the fuel rod diameter and the rod length is also the same. The grid strength for each assembly will remain unchanged since the dummy rod will provide the same support in the grid cell as the fuel rod. For the proposed reconstitution with only one dummy rod in two assemblies, the change in mass and stiffness of each fuel assembly will be insignificant. There will be negligible effects on fuel assembly dynamic properties, such as fuel fundamental frequency. Thus, the load carrying capability of the fuel assembly and grid spacers is not affected under the seismic and LOCA design loading conditions for the reconstituted fuel. The staff concludes that this assessment is reasonable and acceptable.

The licensee stated there is reasonable assurance that this fuel assembly reconstitution can be safely made based on past industry experience with stainless steel filler rods that have performed acceptably. The staff previously issued TS Amendment No. 104 on September 19, 1990, which allowed the cycle 8 core to contain a fuel assembly with two stainless steel filler

rods. Licensee experience with the cycle 8 core indicated that there was no effect on the fuel assembly structural integrity. Fuel assembly dynamic properties, control rod worths, core peaking factors, or peak power levels.

The licensee stated that the cycles 9 and 10 reloads, which will contain the reconstituted assemblies, will be evaluated using approved methods described in WCAP-9273A, "Westinghouse Reload Safety Evaluation Methodology," dated July 1985. The effect of the actual reconstitution on core performance parameters, peaking factors, core average linear heat rate, and LOCA-related analyses will be evaluated to ensure that the existing safety criteria and design limits and the original fuel assembly design criteria are satisfied. The NRC staff finds that this approach is acceptable since the analysis methods have previously been approved except for the DNBR evaluation for the reconstituted assemblies. A method for the latter evaluation, assuming that the dummy rods are operating at the highest power in the reconstituted assemblies, is approved for Indian Point 3 by incorporation in the TS Basis.

The specific TS changes are as follows:

(1) The last two sentences of Section 5.3.A.1 are deleted. These sentences allowed operation during cycle 8 only, with two stainless steel filler rods in fuel assembly T53. Cycle 8 has ended and these sentences are no longer applicable.

(2) The last two sentences of Section 5.3.A.1, deleted above, are replaced with wording that allows operation during cycles 9 and 10 only, with one stainless steel filler rod in fuel assemblies W51 and W06.

(3) The Bases for Section 5.3 are revised to indicate that for cycles 9 and 10, the DNBR for fuel assemblies W51 and W06 will be conservatively determined by assuming each stainless steel filler rod is operating at the highest power in assemblies W51 and W06.

3.0 STATEMENT OF EMERGENCY CIRCUMSTANCES

On May 4, 1992, while off-loading the core, the licensee noted damaged grid straps on two fuel assemblies (including assembly W51). Fuel off-load was completed on May 6, 1992. At that time, the licensee states that the exact nature and extent of the grid strap damage was not known. Ultrasonic testing (UT) of fuel assemblies commenced on May 8, 1992 and was completed on May 11, 1992. The assemblies were then visually inspected and these inspections were completed on May 13, 1992. During these inspections, the licensee states that they had been evaluating alternative courses of action to address the grid strap damage issue. On May 14, 1992, the licensee concluded that the appropriate course of action was to reconstitute only fuel assembly W51. The licensee states that although the fuel rod in question was satisfactorily tested using UT, the possibility of fretting in the area of the damaged grid led to the decision to use a stainless steel filler rod in place of the fuel

rod. The licensee's onsite and offsite review committees approved the proposed TS amendment on May 18, 1992. By letter dated May 19, 1992, the licensee submitted an emergency TS amendment request to allow use of a reconstituted fuel assembly W51.

On May 22, 1992, while attempting repairs to the upper grid strap of fuel assembly W06, the licensee noticed that the brazed joint in the upper grid strap was separated. The licensee stated that prior to May 22, 1992 it was believed that fuel assembly W06 could be repaired and reconstitution would not be necessary. However, once the licensee noticed the separated brazed joint, the licensee decided that a stainless steel filler rod in place of a corner fuel rod would also be required in fuel assembly W06. The licensee's onsite and offsite review committees approved the revised TS amendment (W51 and W06) on May 22, 1992. Therefore, by letter dated May 22, 1992, the licensee submitted a TS amendment request which would allow use of reconstituted fuel assemblies W51 and W06. The May 22, 1992, TS amendment request superseded the May 19, 1992, TS amendment request. The licensee's TS allows only fuel assemblies containing all fuel rods to be loaded in the core, therefore, an amendment to the TS is required to allow using reconstituted fuel assemblies W51 and W06. The licensee intends reloading fuel commencing on June 1, 1992, consequently emergency action is required.

4.0 STAFF CONCLUSION

The staff has concluded that the licensee has made a timely amendment application once the full scope of the problem was analyzed. The staff has determined that if the changes are not granted, the facility TS would not allow the reactor core to be reloaded with reconstituted fuel assemblies W51 or W06. This would prevent resumption of power operation from the cycle 8/9 refueling outage. Pursuant to 10 CFR 50.91(a)(5), the staff has concluded that the licensee has justified the need for emergency action; and that the changes are necessary and proper. Therefore, the staff finds the proposed TS changes acceptable.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION

The Commission has provided standards for determining whether a significant hazards consideration exists (10 CFR 50.92(c)). A proposed amendment to an operating license for a facility involves no significant hazards consideration 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 an accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

The following evaluation, by the licensee and with which we agree, demonstrates that the proposed amendment does not involve a significant hazards consideration.

The operation of Indian Point 3, in accordance with the proposed amendment, will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change does not involve a significant increase in the probability or consequences of any accident previously analyzed. The acceptability of replacing fuel rods with a stainless steel filler rods will be justified as part of the cycle specific reload evaluation process using an NRC approved methodology to confirm that all existing safety criteria and design limits are met. The reload evaluation process will address the effect of the actual reconstitution on core performance parameters, peaking factors, and core average linear heat rate effects to ensure that the existing safety criteria and design limits are met, and original fuel assembly design criteria are satisfied.

As part of the cycle specific Reload Safety Evaluation (RSE) process to be performed by Westinghouse Electric Corp. for the licensee, the impact of the reconstituted assemblies on the DNBR will be evaluated. Westinghouse will determine the DNBR for the reconstituted assemblies by assuming the filler rods are operating at the highest power in the reconstituted fuel assemblies. Using this extremely conservative assumption, the predicted DNBR for the reconstituted assemblies will be shown to satisfy the minimum DNBR acceptance limit. This approach is consistent with the methodology Westinghouse uses to evaluate reloads, as described in the NRC approved topical report WCAP-9273A. This approach is identical to that used to evaluate the effect of stainless steel filler rods on DNBR for Indian Point 3 cycle 8, and approved by the NRC by the issuance of Indian Point 3 Technical Specification Amendment No. 104. The results of the DNBR evaluation will be documented in the Indian Point 3 RSE process for cycles 9 and 10.

The operation of Indian Point 3, in accordance with the proposed amendment, will not create the possibility of a new or different kind of accident from any previously evaluated.

The proposed change does not create the possibility of a new or different kind of accident from any previously evaluated. The acceptability of replacing fuel rods with a stainless steel filler rods will be justified by cycle specific reload evaluation process using an NRC approved methodology to ensure that the existing safety criteria and design limits are met. The reload evaluation process will address the effect of the actual reconstitution on core performance parameters, peaking factors, and core average linear heat rate effects to ensure that the existing safety criteria and design limits are met, and original fuel assembly design criteria are satisfied.

The operation of Indian Point 3, in accordance with the proposed amendment, will not involve a significant reduction in a margin of safety.

The proposed change does not involve a significant reduction in a margin of safety. The acceptability of replacing fuel rods with stainless steel filler

rods will be justified by cycle specific reload evaluation process using an NRC approved methodology to ensure that the existing safety criteria and design limits are met. The reload evaluation process will address the effect of the actual reconstitution on core performance parameters, peaking factors, and core average linear heat rate effects to ensure that the existing safety criteria and design limits are met, and original fuel assembly design criteria are satisfied.

6.0 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.

7.0 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 made a final no significant hazards consideration finding with respect to this amendment. 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.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) the amendment does not (a) significantly increase the probability or consequences of an accident previously evaluated, (b) increase the possibility of a new or different kind of accident from any previously evaluated, or (c) significantly reduce a safety margin and, therefore, the amendment does not involve significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and (3) such activities will be conducted in compliance with the Commission's regulations, and 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:
N. Conicella

Date: May 28, 1992

Docket No. 50-286

May 28, 1992

Mr. Ralph E. Beedle
Executive Vice President - Nuclear Generation
Power Authority of the State of New York
123 Main Street
White Plains, New York 10601

Dear Mr. Beedle:

SUBJECT: ISSUANCE OF EMERGENCY AMENDMENT FOR INDIAN POINT NUCLEAR GENERATING UNIT NO. 3 (TAC NO. M83401)

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A copy of the related Safety Evaluation is enclosed. A Notice of Issuance and Final Determination of No Significant Hazards Consideration and Opportunity For Hearing will be included in the Commission's next regular biweekly Federal Register notice.

Sincerely,
Original Signed By
Nicola F. Conicella, Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 118 to DPR-64
2. Safety Evaluation
cc w/enclosures:
See next page
*See previous concurrence

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