

December 1, 1994

Mr. John J. Barton
Vice President and Director
GPU Nuclear Corporation
Oyster Creek Nuclear Generating Station
Post Office Box 388
Forked River, NJ 08731

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. M89782)

Dear Mr. Barton:

The Commission has issued the enclosed Amendment No. 175 to Facility Operating License No. DPR-16 for the Oyster Creek Nuclear Generating Station, in response to your application dated June 24, 1994 as supplemented September 30, 1994.

The amendment deletes Technical Specification Section 2.3.0 and its associated bases. The amendment removes the limiting safety system setting for a high recirculation flow reactor scram based on a maximum attainable recirculation flow analysis.

A copy of the related Safety Evaluation is also enclosed. Also enclosed is the Notice of Issuance which has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by:

Alexander W. Dromerick, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-219

- Enclosures: 1. Amendment No. 175 to DPR-16
- 2. Safety Evaluation
- 3. Notice

cc w/encls: See next page

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Docket File	SNorris	OC/LFDCB
PUBLIC	OGC	LNicholson, RGI
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DOCUMENT NAME: G:\DROMERIC\M89782.AMD

OFFICE	LA:PDI-4	PM:PDI-4	D:PDI-4	OGC	OGC
NAME	SNorris	ADromerick:bf	PMcKee	Utter	Utter
DATE	10/1/94	10/1/94	10/1/94	10/9/94	10/16/94

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Handwritten notes and signatures:
 "OGC has not been issued until after EA published"
 "legal objection"
 "DFOI"
 "Not to be issued until after EA published"
 "OGC has not been issued until after EA published"

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OFFICE	LA:PDI-4	PM:PDI-4	D:PDI-4	OGC	OGC
NAME	SNorris	ADromerick:bf	PMcKee	Utah	Utah with in SEI
DATE	10/1/94	10/1/94	10/1/94	10/9/94	10/16/94

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Handwritten notes:
 Not to be issued until after EA published
 legal aspect
 Not to be issued until after EA published



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

December 1, 1994

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Vice President and Director
GPU Nuclear Corporation
Oyster Creek Nuclear Generating Station
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A copy of the related Safety Evaluation is also enclosed. Also enclosed is the Notice of Issuance which has been forwarded to the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in cursive script that reads "Alexander W. Dromerick".

Alexander W. Dromerick, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-219

Enclosures: 1. Amendment No. 175 to DPR-16
2. Safety Evaluation
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cc w/encls: See next page

Mr. John J. Barton
Vice President and Director

Oyster Creek Nuclear
Generating Station

cc:

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Licensing Manager
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Kent Tosch, Chief
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Bureau of Nuclear Engineering
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

GPU NUCLEAR CORPORATION

AND

JERSEY CENTRAL POWER & LIGHT COMPANY

DOCKET NO. 50-219

OYSTER CREEK NUCLEAR GENERATING STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 175
License No. DPR-16

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by GPU Nuclear Corporation, et al. (the licensee), dated June 24, 1994, as supplemented September 30, 1994, 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.

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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-16 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 175, are hereby incorporated in the license. GPU Nuclear Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of issuance, to be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Phillip F. McKee, Director
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: December 1, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 175

FACILITY OPERATING LICENSE NO. DPR-16

DOCKET NO. 50-219

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages as indicated. The revised pages are identified by amendment number and contain vertical lines indicating the areas of change.

Remove

2.3-3
2.3-7

Insert

2.3-3
2.3-7

<u>FUNCTION</u>	<u>LIMITING SAFETY SYSTEM SETTINGS</u>
K. Reactor Low-Low Water Level, Core Spray Initiation	≥7'2" above the top of the active fuel
L. Reactor Low-Low Water Level, Isolation Condenser Initiation	≥7'2" above the top of the active Fuel with time delay ≤3 seconds
M. Turbine Trip, Scram	10 percent turbine stop valve(s) closure from full open
N. Generator Load Rejection, Scram	Initiate upon loss of oil pressure from turbine acceleration relay
O. DELETED	
P. Loss of Power	
1) 4.16 KV Emergency Bus Undervoltage (Loss of Voltage)	0 volts with 3 seconds ± 0.5 seconds time delay
2) 4.16 KV Emergency Bus Undervoltage (Degraded Voltage)	3840 (+20V, -40V) volts 10 ± 10% (1.0) second time delay

Bases:

Safety limits have been established in Specifications 2.1 and 2.2 to protect the integrity of the fuel cladding and reactor coolant system barriers, respectively. Automatic protective devices have been provided in the plant design for corrective actions to prevent the safety limits from being exceeded in normal operation or operational transients caused by reasonably expected single operator error or equipment malfunction. This Specification establishes the trip settings for these automatic protection devices.

The Average Power Range Monitor, APRM⁽¹⁾, trip setting has been established to assure never reaching the fuel cladding integrity safety limit. The APRM system responds to changes in neutron flux. However, near the rated thermal power, the APRM is calibrated using a plant heat balance, so that the neutron flux that is sensed is read out as percent of the rated thermal power. For slow maneuvers, such as those where core thermal power, surface heat flux, and the power transferred to the water follow the neutron flux, the APRM will read reactor thermal power. For fast transients, the neutron flux will lead the power transferred from the cladding to the water due to the effect of the fuel time constant. Therefore, when the neutron flux increases to the scram setting, the percent increase in heat flux and power transferred to the water will be less than the percent increase in neutron flux.

The APRM trip setting will be varied automatically with recirculation flow, with the trip setting at the rated flow of 61.0×10^6 lb/hr of greater being 115.7% of rated neutron flux. Based on a complete evaluation of the reactor dynamic performance during normal operation as well as expected maneuvers and the various mechanical failures, it was concluded that sufficient protection

valves to a load rejection and failure of the turbine bypass system. This scram is initiated by the loss of turbine acceleration relay oil pressure. The timing for this scram is almost identical to the turbine trip.

The undervoltage protection system is a 2 out of 3 coincident logic relay system designated to shift emergency buses C and D to on site power should normal power be lost or degraded to an unacceptable level. The trip points and time delay settings have been selected to assure an adequate power source to emergency safeguards systems in the event of a total loss of normal power or degraded conditions which would adversely affect the functioning of engineered safety features connected to the plant emergency power distribution system.

References

- (1) FDSAR, Volume I, Section VII-4.2.4.2
- (2) FDSAR, Amendment 28, Item III. A-12
- (3) FDSAR, Amendment 32, Question 13
- (4) Letters, Peter A. Morris, Director, Division of Reaction Licensing, USAEC to John E. Logan, Vice President, Jersey Central Power and Light Company,
Dated November 22, 1967 and January 9, 1968
- (5) FDSAR, Amendment 65, Section B.XI.
- (6) FDSAR, Amendment 65, Section B.IX



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 175

TO FACILITY OPERATING LICENSE NO. DPR-16

GPU NUCLEAR CORPORATION AND

JERSEY CENTRAL POWER & LIGHT COMPANY

OYSTER CREEK NUCLEAR GENERATING STATION

DOCKET NO. 50-219

1.0 INTRODUCTION

By letter dated June 24, 1994, as supplemented September 30, 1994, GPU Nuclear Corporation (GPUN), the licensee for the Oyster Creek Nuclear Generating Station (OCNGS) submitted a Technical Specification Change Request (TSCR). This TSCR involves removing the limiting system safety setting for a high recirculation flow reactor scram based on a maximum attainable recirculation flow analysis performed by GPUN. This high recirculation flow scram was added to the OCNGS Technical Specification (TS) by Amendment No. 75 for Cycle 10 operation along with the introduction of the k_f factor. The k_f factor is a Critical Power Ratio (CPR) limit multiplier which changes the limit to become more restrictive at core flows that are lower than 90% of rated flow. The k_f factor is based on a maximum recirculation flow at 117% of rated flow. The k_f curve provides protection against a flow increase transient to prevent the Safety Limit Minimum Critical Power Ratio (SLMCPR) from being violated. This SLMCPR is defined such that 99.9% of the fuel rods in the core are expected to avoid boiling transition if the Operating Limit Minimum Critical Power Ratio (OLMCPR) is reduced because of a reactor transient.

2.0 EVALUATION

The maximum recirculation flow is normally set by mechanical stops on the recirculation motor-generator (MG) set scoop tube positioner arm. OCNGS does not use these mechanical stops on any of the five MG sets. It was decided to use a recirculation high flow scram in lieu of the mechanical stops to limit a flow increase transient by setting the scram value at a flow corresponding to the k_f curve. This is presently in the TS of the OCNGS.

GPUN performed an analysis and it was determined that the maximum attainable recirculation flow with all five pumps running is 114.8% of rated flow. This is the maximum recirculation flow under the worst case failure mode of the controls providing the highest possible pump speed. Therefore, the high flow scram may not be necessary to limit flow transients equal to or greater than

117% of rated flow. The k_f curve is used to provide protection for the SLMCPR by increasing the margin to the OLMCPR. OGNCS has shown successful operating experience for the past three operating cycles using the 117% k_f curve. The k_f curve is contained in the Core Operating Limits Report (COLR) and is input into the plant computer system via a thermal limit program of the Power Shape Monitoring System (PSMS).

The OCNCS Updated Final Safety Analysis Report (UFSAR) discusses a flow controller malfunction, increase in core flow to 117% of rated, in the Chapter 15 Accident Analysis Section 15.4.5.

The licensee stated that the operation of the recirculation system remains unchanged and that the analysis of the flow controller malfunction event in this section is not affected by this proposed TSCR. The results show that the high recirculation flow scram setting is not reached and, therefore, was not used to mitigate this transient. This is the limiting transient for which this scram feature would have been used for mitigation. The licensee also stated that this feature is not used to mitigate this or any other event contained in the accident analysis chapter for OCNCS. In response to a staff request for additional information, the licensee provided supplemental information by letter dated September 30, 1994. They presented the latest results for this event using the currently approved transient model, RETRAN. The transient was initiated from 52% recirculation flow and 63.5% power and the initial MCPR was 1.67, based on the k_f multiplier on the OLMCPR when operating at low flow conditions. The flow was allowed to increase to 117% of rated flow. The decrease in CPR is 0.33 when the event is terminated on a high flux scram. With no credit for scram and allowing heat flux to equilibrate at the maximum flow the decrease in CPR is 0.39. The limiting transient event for establishing the rated power and flow OLMCPR, to assure that the SLMCPR is not violated for any transient, is the Turbine Trip Without Bypass (TTWOBP). The OLMCPR based on the TTWOBP is 1.51 for Cycle 14. The k_f multiplier at 52% flow for the 117% maximum flow k_f curve is 1.16 and the reduced flow OLMCPR ($k_f * \text{OLMCPR}$) would be 1.75 based on the current OLMCPR of 1.51. The delta CPR based on the ICPR of 1.75 is 0.41. Then the required OLMCPR for this transient at reduced flow would be $1.0498(1.07 + 0.41) = 1.56$ which is well below the 1.75 reduced flow OLMCPR for this transient and insures no safety limit will be violated. Therefore, the present OLMCPR limit and the k_f curves in the COLR assure that the SLMCPR will not be violated with the high recirculation flow scram removed. The licensee stated that the UFSAR will be revised to use this analysis for the Flow Controller Malfunction transient.

The recirculation loop flow surveillance TS requirement will remain unchanged since recirculation flow is also used by the Average Power Range Monitor (APRM) system.

The staff has performed a review of the licensee's evaluation and has found that the above TSCR is acceptable with respect to safety system setting and thermal safety limit analysis.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

Pursuant to 10 CFR 51.21, 51.32, and 51.35, an environmental assessment and finding of no significant impact have been prepared and published in the Federal Register on November 30, 1994 (59 FR 61350) Accordingly, based upon the environmental assessment, the staff has determined that the issuance of the amendment will not have a significant effect on the quality of the human environment.

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: R. Frahm

Date: December 1, 1994

UNITED STATES NUCLEAR REGULATORY COMMISSIONGPU NUCLEAR CORPORATIONDOCKET NO. 50-219NOTICE OF ISSUANCE OF AMENDMENT TOFACILITY OPERATING LICENSE

The U.S. Nuclear Regulatory Commission (Commission) has issued Amendment No. 175 to Facility Operating License No. NPF-16 issued to GPU Nuclear Corporation (the licensee), which revised the Technical Specifications for operation of the Oyster Creek Nuclear Generating Station located in Ocean County, New Jersey. The amendment is effective as of the date of issuance, to be implemented within 60 days of issuance.

The amendment deletes Technical Specification Section 2.3.0 and its associated bases. The amendment removes the limiting safety system setting for a high recirculation flow reactor scram based on a maximum attainable recirculation flow analysis.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment.

Notice of Consideration of Issuance of Amendment and Opportunity for Hearing in connection with this action was published in the FEDERAL REGISTER on July 13, 1994 (59 FR 35769). No request for a hearing or petition for leave to intervene was filed following this notice.

The Commission has prepared an Environmental Assessment related to the action and has determined not to prepare an environmental impact statement. Based upon the environmental assessment, the Commission has concluded that the issuance of the amendment will not have a significant effect on the quality of the human environment (59 FR 61350).

For further details with respect to the action see (1) the application for amendment dated June 24, 1994, as supplemented September 30, 1994, (2) Amendment No. 175 to License No. NPF-16, (3) the Commission's related Safety Evaluation, and (4) the Commission's Environmental Assessment. All of these items are available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street NW., Washington DC, and at the local public document room located at the Ocean County Library, Reference Department, 101 Washington Street, Toms River, NJ 08753.

Dated at Rockville, Maryland, this 1st day of December 1994.

FOR THE NUCLEAR REGULATORY COMMISSION



Alexander W. Dromerick, Sr. Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation