July 26, 1988

Docket No. 50-289

Mr. Henry D. Hukill, Vice President
and Director - TMI-1
GPU Nuclear Corporation
P. O. Box 480
Middletown, Pennsylvania 17057

Dear Mr. Hukill:

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. 67903)

The Commission has issued the enclosed Amendment No.143 to Facility Operating License No. DPR-50 for the Three Mile Island Nuclear Station, Unit No. 1, in response to your letter dated April 18, 1988.

The amendment raises the authorized TMI-1 power level to 2568 MWt.

A copy of the related Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

Orginal signed by

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

Enclosures:
1. Amendment No. 143 to DPR-50
2. Safety Evaluation
3. Notice

cc w/enclosures:
See next page

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

METROPOLITAN EDISON COMPANY

JERSEY CENTRAL POWER & LIGHT COMPANY

PENNSYLVANIA ELECTRIC COMPANY

GPU NUCLEAR CORPORATION

DOCKET NO. 50-289

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 143
License No. DPR-50

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

   A. The application for amendment by GPU Nuclear Corporation, et al. (the licensee) dated April 18, 1988 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 by amending paragraphs 2.c(1) and 2.c.(2) of Facility Operating License No. DPR-50 to read as follows:*

(1) Maximum Power Level

GPU Nuclear Corporation is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 143 , 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 its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Thomas E Murley

Thomas E. Murley, Director
Office of Nuclear Reactor Regulation

Attachments:
1. Page 3 of License
2. Changes to the Technical Specifications

Date of Issuance: July 26, 1988

*Page 3 is attached, for convenience, for the composite license to reflect this change.

(3) GPU Nuclear Corporation, pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis, testing, instrument calibration, or associated with radioactive apparatus or components;

(4) GPU Nuclear Corporation, pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

c. This license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Section 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

GPU Nuclear Corporation is authorized to operate the facility at steady state reactor core power levels not in excess of 2568 megawatts thermal.

(2) Technical Specifications

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

ATTACHMENT TO LICENSE AMENDMENT NO. 143

FACILITY OPERATING LICENSE NO. DPR-50

DOCKET NO. 50-289

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by amendment number and contains vertical lines indicating the area of change.

Remove	Insert
1-1	1-1

1. DEFINITIONS

The following terms are defined for uniform interpretation of these specifications.

1.1 RATED POWER

Rated power is a steady state reactor core output of 2568 MWt.

1.2 REACTOR OPERATING CONDITIONS

1.2.1 COLD SHUTDOWN

The reactor is in the cold shutdown condition when it is subcritical by at least one percent Δk/k and Tavg is no more than 200°F. Pressure is defined by Specification 3.1.2.

1.2.2 HOT SHUTDOWN

The reactor is in the hot shutdown condition when it is subcritical by at least one percent Δk/k and Tavg is at or greater than 525°F.

1.2.3 REACTOR CRITICAL

The reactor is critical when the neutron chain reaction is self-sustaining and Keff = 1.0.

1.2.4 HOT STANDBY

The reactor is in the hot standby condition when all of the following conditions exist:

a. Tavg is greater than 525°F

b. The reactor is critical

c. Indicated neutron power on the power range channels is less than two percent of rated power

1.2.5 POWER OPERATION

The reactor is in a power operating condition when the indicated neutron power is above two percent of rated power as indicated on the power range channels.

1.2.6 REFUELING SHUTDOWN

The reactor is in the refueling shutdown condition when, even with all rods removed, the reactor would be subcritical by at least one percent Δk/k and the coolant temperature at the decay heat removal pump suction is no more than

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 143 TO FACILITY OPERATING LICENSE NO. DPR-50

METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER & LIGHT COMPANY
PENNSYLVANIA ELECTRIC COMPANY
GPU NUCLEAR CORPORATION

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

DOCKET NO. 50-289

1.0 INTRODUCTION

By letter dated April 18, 1988, GPU Nuclear Corporation (GPUN) requested an amendment to Facility Operating License No. DPR-50 to raise the authorized power level for Three Mile Island Unit 1 (TMI-1) from 2535 megawatts-thermal (MWt) to 2568 MWt. In support of their request, GPUN submitted the results of their assessment of the safety implications of operation at the higher power level. In a previous license amendment application to revise the TMI-1 Technical Specifications for Cycle 7 of operation, dated April 5, 1988, GPUN also submitted the results of a Babcock & Wilcox reload report which addressed operation at the higher power level. The staff has addressed most of the safety concerns associated with operation at 2568 MWt in its Cycle 7 reload safety evaluation dated July 18, 1988. That Safety Evaluation will be referenced herein as appropriate.

2.0 EVALUATION

General

The reference design power level for TMI-1 is 2568 MWt, and most of the Final Safety Analysis Report (FSAR) Chapter 14 accident analyses were performed using 2568 MWt. Some small break loss of coolant accidents (LOCAs) have been analyzed at 2772 MWt. Oconee Unit 1, the protoype plant for this design class, was initially licensed to operate at 2568 MWt in 1973. Oconee Units 2 and 3 were subsequently also licensed at that power level. Three Mile Island, Unit 2 (TMI-2) was licensed for a power level of 2772 MWt in 1978. On the basis of main turbine-generator design parameters, GPUN requested a licensed power level of 2535 MWt for TMI-1. To support an increase in licensed power level to the reference design power level, GPUN submitted a reload report prepared by Babcock & Wilcox, the NSSS vendor. This report is designated BAW-2015 and is dated March 1988. In a Safety Evaluation dated July 18, 1988, the staff

evaluated the fuel system design, the nuclear design, thermal hydraulic design, accident and transient analysis and Technical Specification changes for Cycle 7. The staff concluded that the proposed power uprate does not change the original design conditions and that all existing reactor design and safety criteria are preserved at the higher power level of 2568 MWt.

Plant Systems Review

GPUN reviewed all major systems, both safety-related and non-safety-related, for acceptable performance at 2568 MWt. Also, TMI-1 systems were compared against similar systems at B&W reactor plants already licensed at 2568 MWt. Of specific significance was review of the turbine generator, since it was the limiting component at the time of licensing TMI-1. GPUN stated that modifications to the turbine blading had been made during past outages which resulted in significant improvements in turbine efficiency and therefore plant electrical output. As part of the proposed power level increase, GPUN had a detailed design re-evaluation of the turbine performed by General Electric the turbine manufacturer. As a result, General Electric raised the nameplate ratings for the turbine. The staff has performed a sampling review of a number of these systems evaluations performed by or for GPUN to support operation at 2568 MWt. The licensee concluded that all safety-related systems and components will perform within their design conditions at 2568 MWt. As discussed in the staff's July 18, 1988 Safety Evaluation, we also reviewed the 64%/36% high pressure injection (HPI) evaluation supplied by GPUN and concluded that TMI-1 has sufficient HPI capability at a rated power of 2568 MWt. The staff concludes that GPUN has performed a complete and appropriate systems review to support the proposed power upgrade.

Accident and Transient Safety Analyses

All TMI-1 design basis and safety analysis documents were reviewed by GPUN to support a rated power level of 2568 MWt. Of the 32 transients, accidents and bases reviewed, 19 had previously been evaluated at 2568 MWt or higher including loss of coolant flow, all LOCA's, loss of electric power, containment peak pressure response, steamline and steam generator tube breaks, loss of feedwater, ATWS and steam generator tube plugging effects. The FSAR events previously evaluated at 2535 MWt have been re-evaluated by GPUN and B&W for changes due to the higher operating power level. These included startup accidents, rod withdrawal accidents, moderator dilution events, cold water accidents and rod ejection accidents. GPUN concluded that these analyses indicated acceptable results at 2568 MWt. Analyses were also provided in the April 18, 1988 submittal for HPI flow split, condensate storage tank capacity and reactor building/intermediate building flood level. GPUN also provided assessment of the slightly higher radiological dose consequences of the 1.3% increase in power level. The staff found the consequences of transients and accidents at 2568 MWt to be acceptable in its July 18, 1988 Safety Evaluation.

Reactor Vessel Fluence

Reactor vessel fluence will increase by 1.3%, proportional to the increase in power level. The low leakage core design is consistent with the fluence reduction efforts as described in GPUN's response to the Pressurized Thermal Shock Rule (10 CFR 50.61). The small increase in accumulated fluence is not expected to be a significant factor over remaining plant life.

Evaluation Findings

The staff has reviewed the information submitted by GPUN in support of the proposed power increase, has revisited appropriate sections of the TMI-1 FSAR and other licensing basis documents and has reviewed a number of GPUN supporting documents at the TMI site. On the basis of our review, we find that the proposed increase in authorized power level to 2568 MWt is acceptable.

3.0 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 July 18, 1988 (53 FR 27093). Accordingly, based upon the environmental assessment, the Commission has determined that the issuance of this amendment will not have a significant effect on the quality of the human environment.

4.0 CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: July 26, 1988

Principal Contributor: Ronald W. Hernan

UNITED STATES NUCLEAR REGULATORY COMMISSION

GPU NUCLEAR CORPORATION, ET AL.

DOCKET NO. 50-289

NOTICE OF ISSUANCE OF AMENDMENT TO

FACILITY OPERATING LICENSE

The U.S. Nuclear Regulatory Commission (Commission) has issued Amendment No. 143 to Facility Operating License No. DPR-50, issued to GPU Nuclear Corporation (the licensee), which revised the License and Technical Specifications for operation of the Three Mile Island Nuclear Station Unit 1 located in Dauphin County, Pennsylvania.

The amendment revises the License and the Technical Specifications to allow an increase in the rated power level from 2535 MWt to 2568 MWt, a 1.3% increase.

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 May 24, 1988 (53 FR 18629). 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 this amendment will not have a significant effect on the quality of the human environment.

For further details with respect to the action see (1) the application for amendment dated April 18, 1988, (2) Amendment No. to License No. DPR-50, (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, 1717 H Street NW, and at the Local Public Document Room, Government Publications Section, State Library of Pennsylvania, Walnut Street and Commonwealth Avenue, Box 1601, Harrisburg, Pennsylvania 17105. A copy of items (2), (3) and (4) may be obtained upon request addressed to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Reactor Projects I/II.

Dated at Rockville, Maryland this 27th day of July 1988.

FOR THE NUCLEAR REGULATORY COMMISSION

Ronald W. Hernan

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