May 2, 1985

Docket No. 50-333

Mr. J. P. Bayne
First Executive Vice President,
Chief Operations Officer
Power Authority of the State
of New York
123 Main Street
White Plains, New York 10601

Dear Mr. Bayne:

The Commission has issued the enclosed Amendment No. 88 to Facility Operating License No. DPR-59 for the James A. FitzPatrick Nuclear Power Plant. The amendment consists of changes to the Technical Specifications in response to your request dated January 16, 1985, as supplemented April 8, 1985.

This amendment revises the Technical Specifications to permit reloading and Cycle 7 operation. The revisions account for a new fuel type being added to the core, fuel types being discharged from the core, and the effects of these fuel changes on plant analyses.

A copy of our Safety Evaluation is enclosed.

Sincerely,

Original signed by/

Harvey I. Abelson, Project Manager
Operating Reactors Branch #2
Division of Licensing

Enclosures:
1. Amendment No. 88 to License No. DPR-59
2. Safety Evaluation

cc w/enclosures:
See next page

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Mr. C. A. McNeill, Jr.
Power Authority of the State of New York
James A. FitzPatrick Nuclear Power Plant

cc:

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

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-333

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 88
License No. DPR-59

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 January 16, 1985, as supplemented April 8, 1985, 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-59 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 88 , 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.

FOR THE NUCLEAR REGULATORY COMMISSION

DVassallo

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 2, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 88

FACILITY OPERATING LICENSE NO. DPR-59

DOCKET NO. 50-333

Revise the Appendix "A" Technical Specifications as follows:

Remove	Insert
vii	vii
31	31
47b	47b
123	123
130	130
135d	135d
135e	135e
135f	135f
-	135i

LIST OF FIGURES

3.1 (CONTINUED)

MCPR Operating Limit for Incremental Cycle Core Average Exposure

At RBM Hi-trip level setting	BOC to EOC-2GWD/t	EOC-2GWD/t to EOC-1GWD/t	EOC-1GWD/t to EOC
S = .66W + 39%	1.24	1.29	1.31
S = .66W + 40%	1.27	1.29	1.31
S = .66W + 41%	1.27	1.29	1.31
S = .66W + 42%	1.29	1.29	1.31
S = .66W + 43%	1.30	1.30	1.31
S = .66W + 44%	1.34	1.34	1.34

C. MCPR shall be determined daily during reactor power operation at $\geq$ 25% of rated thermal power and following any change in power level or distribution that would cause operation with a limiting control rod pattern as described in the bases for Specification.3.3.B.5.

D. When it is determined that a channel [illegible]s failed in the unsafe condition, the other RPS channels that monitor the same variable shall be functionally tested immediately before the trip system containing the failure is tripped. The trip system containing the unsafe failure may be placed in the untripped condition during the period in which surveillance testing is being performed on the other RPS channels.

E. Verification of the limits set forth in specification 3.1.B shall be performed as follows:

1. The average scram time to notch position 38 shall be: $\tau_{AVE} \leq \tau_B$

2. The average scram time to notch position 38 is determined as follows:

$$\tau_{AVE} = \sum_{i=1}^{n} N_i \tau_i \Big/ \sum_{i=1}^{n} N_i$$

where: n = number of surveillance tests performed to date in the cycle, Ni = number of active rods measured in

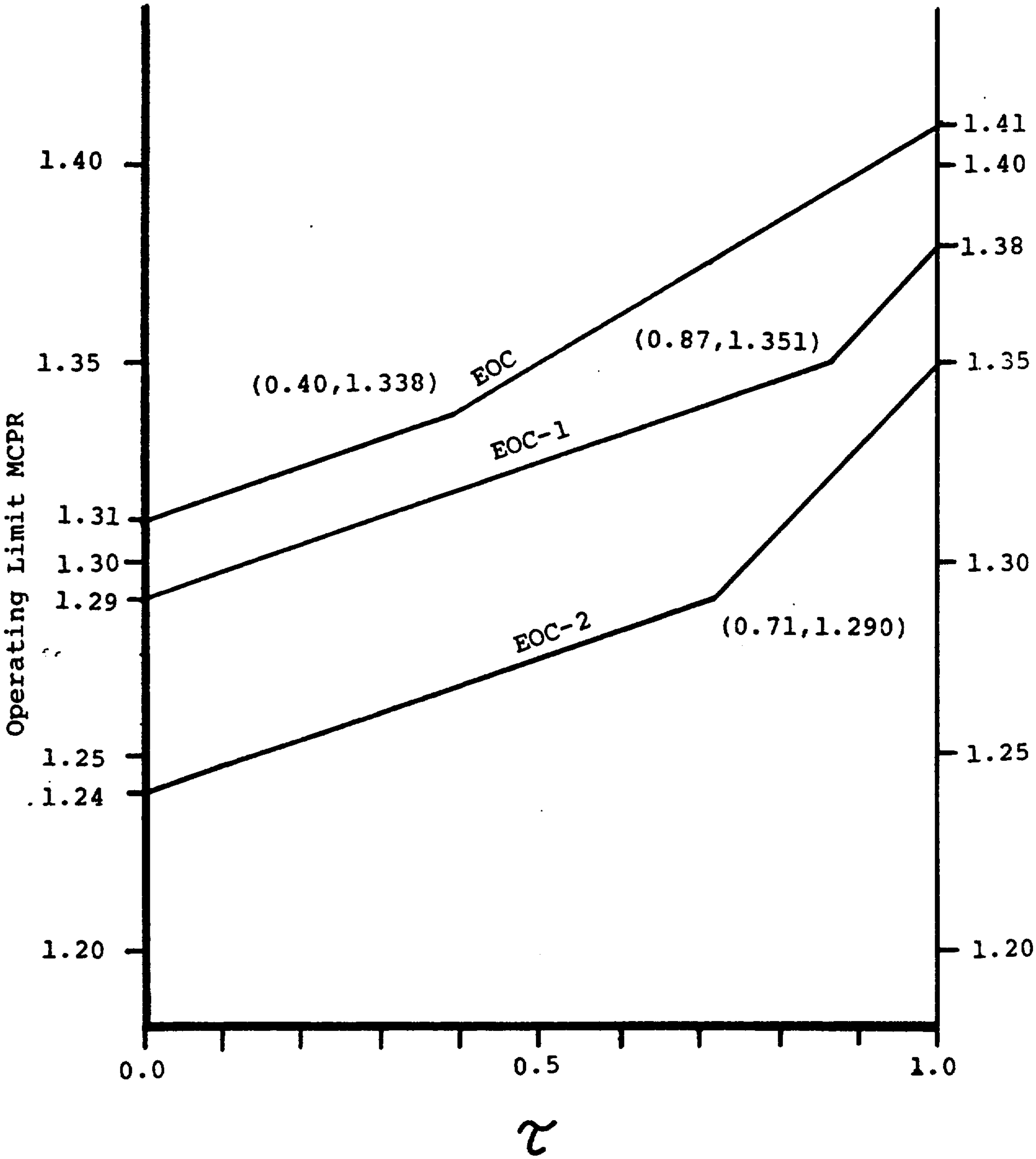
Amendment No. ~~64~~, ~~74~~, ~~79~~ 88

Figure 3.1-2

Operating Limit MCPR

Versus τ (Defined in Section 3.1.B.2)

FOR ALL FUEL TYPES



Amendment No. ~~64~~, ~~74~~, ~~79~~ 88

3.5 (cont'd)

condition, that pump shall be considered inoperable for purposes satisfying Specifications 3.5.A, 3.5.C, and 3.5.E.

H. Average Planar Linear Heat Generation Rate (APLHGR)

The APLHGR for each type of fuel as a function of average planar exposure shall not exceed the limiting value shown in Figures 3.5-9 through 3.5-11. If anytime during reactor power operation greater than 25% of rated power it is determined that the limiting value for APLHGR is being exceeded, action shall then be initiated within 15 minutes to restore operation to within the prescribed limits. If the APLHGR is not returned to within the prescribed limits within two (2) hours, an orderly reactor power reduction shall be commenced immediately. The reactor power shall be reduced to less than 25% of rated power within the next four hours, or until the APLHGR is returned to within the prescribed limits.

4.5 (cont'd)

2. Following any period where the LPCI subsystems or core spray subsystems have not been required to be operable, the discharge piping of the inoperable system shall be vented from the high point prior to the return of the system to service.

3. Whenever the HPCI, RCIC, or Core Spray System is lined up to take suction from the condensate storage tank, the discharge piping of the HPCI, RCIC, and Core Spray shall be vented from the high point of the system, and water flow observed on a monthly basis.

4. The level switches located on the Core Spray and RHR System discharge piping high points which monitor these lines to insure they are full shall be functionally tested each month.

H. Average Planar Linear Heat Generation Rate (APLHGR)

The APLHGR for each type of fuel as a function of average planar exposure shall be determined daily during reactor operation at $\geq$ 25% rated thermal power.

3.5 BASES (cont'd)

requirements for the emergency diesel generators.

G. Maintenance of Filled Discharge Pipe

If the discharge piping of the core spay, LPCI, RCIC, and HPCI are not filled, a water hammer can develop in this piping when the pump(s) are started. To minimize damage to the discharge piping and to ensure added margin in the operation of these systems, this technical specification requires the discharge lines to be filled whenever the system is required to be operable. If a discharge pipe is not filled, the pumps that supply that line must be assumed to be inoperable for technical specification purposes. However, if a water hammer were to occur, the system would still perform its design function.

H. Average Planar Linear Heat Generation Rate (APLHGR)

This specification assures that the peak cladding temperature following the postulated design basis loss-of-cololant accident will not exceed the limit specified in 10 CFR 50 Appendix K.

The peak cladding temperature following a postulated loss-of-coolant accident is primarily a function of the average heat generation rate of all the rods of a fuel assembly at any axial location and is only dependent secondarily on the rod to rod power distribution within an assembly. Since expected local variation in power distribution within a fuel assembly affect the calculated peak clad temperature by less than ± 20°F relative to the peak temperature for a typical fuel design, the limit on the average linear heat generation rate is sufficient to assure that calculated temperatures are within the 10 CFR 50 Appendix K limit. The limiting value for APLHGR is shown in Figure 3.5-6 through 3.5-11.

I. Linear Heat Generation Rate (LHGR)

This specification assures that the linear heat generation rate in any rod is less than the design linear heat generation.

The LHGR shall be checked daily during reactor operation at ≥ 25% rated thermal power to determine if fuel burnup, or control rod movement, has caused changes in power distribution. For LHGR to be a limiting value below 25% rated thermal power, the ratio of local LHGR to average LHGR would have to greater than which is precluded by a considerable margin ehen employing any permissible control rod pattern.

Figure 3.5-6

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Figure 3.5-7

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Figure 3.5-8

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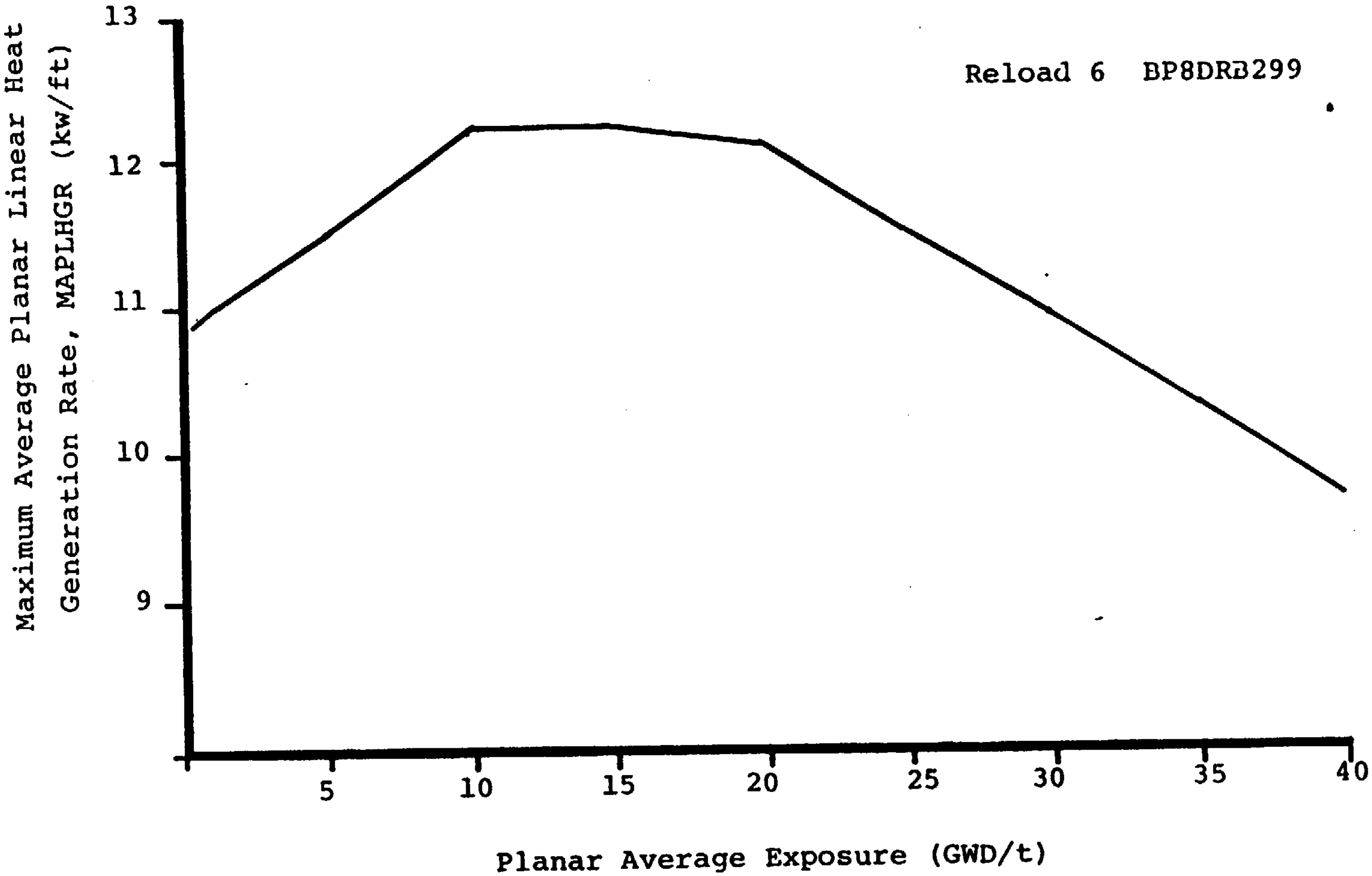
Figure 3.5-11



Maximum Average Planar Linear Heat Generation Rate (MAPLHGR)
Versus Planar Average Exposure

Reference: NEDO-21662-2
(As Ammended
December 1984)

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 88 TO FACILITY OPERATING

LICENSE NO. DPR-59

POWER AUTHORITY OF THE STATE OF NEW YORK

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

1.0 INTRODUCTION

By letter dated January 16, 1985 (Reference 1), the Power Authority of the State of New York submitted proposed changes to the Technical Specifications for the James A. FitzPatrick Nuclear Power Plant to permit reloading and operation for Cycle 7. In support of these changes, the submittal included a Safety Evaluation, as well as the General Electric (GE) Report, "Supplemental Reload Licensing Submittal for the James A. FitzPatrick Nuclear Power Plant Reload 6" (Reference 2), and an addendum (Reference 3) to the GE Report, "Loss-of-Coolant Analysis for James A. FitzPatrick Nuclear Power Plant." The staff has reviewed this submittal and has prepared the following evaluation.

The proposed changes to the FitzPatrick Technical Specifications would specify the Minimum Critical Power Ratio (MCPR) Operating Limit for Incremental Cycle Core Average Exposure, define the vs. Operating Limit MCPR and identify the Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) limits for all fuel types for Cycle 7 operation. In addition, specifications relating to discharged fuel types would be deleted.

2.0 EVALUATION

2.1 Fuel Mechanical Design

The fuel to be inserted into the core for Cycle 7 is similar to that customarily used for BWR reloads and is described in Reference 4. This reference has been approved by the staff (Reference 5). We conclude that no further review of the fuel mechanical design is required.

2.2 Nuclear Design

The nuclear design and analysis of the Cycle 7 reload was performed with methods and techniques which are described in Reference 4 and which are used in all reload analyses performed by GE. The results of the FitzPatrick analyses are within the range of those reload cores previously reviewed by the staff and found to be acceptable. We therefore conclude that the nuclear design and analysis of the Cycle 7 reload is acceptable.

2.3 Thermal-Hydraulic Design

The methods and procedures employed in the thermal-hydraulic (T-H) design and analysis of the Cycle 7 core are described in Reference 4. The value of 1.07 for the safety limit MCPR, approved in that reference, is used for Cycle 7. The methods and procedures used to obtain the operating limit MCPR are those described in Reference 4 and are acceptable.

2.4 Thermal-Hydraulic Stability

The FitzPatrick reload submittal relies on the GE cycle-specific analysis procedure (GESTAR) to demonstrate that the reactor has sufficient margin to be free of thermal-hydraulic instabilities. The maximum decay ratio calculated in the FitzPatrick submittal is 0.86. Our evaluation (Reference 6) of the GE T-H stability methodology has shown that there is an uncertainty of 0.2 in the calculated decay ratio. Since the FitzPatrick decay ratio is based on a best estimate calculation, the true decay ratio could be as high as 1.06 (0.86 + 0.2). Since a decay ratio greater than 1.00 indicates an undamped oscillation, the FitzPatrick analysis does not show any margin from undamped oscillations.

Our evaluation (Reference 6) of the GE T-H stability methodology also concludes that a core design consisting of approved GE fuel bundles in conjunction with GE SIL-380 operating recommendations incorporated into the Technical Specifications is in compliance with GDC 10 and 12 requirements. Since the licensee could not show through analysis that T-H instabilities are prevented by design, the licensee has committed (Reference 7) to incorporate the operating limitations specified in GE SIL-380 into plant operating procedures prior to startup of Cycle 7, and to submit revised Technical Specifications that would reflect these limitations in a timely manner. With the licensee's commitment relative to the GE SIL-380 recommendations, the staff concludes that T-H instability does not pose a safety concern for continued operation of FitzPatrick.

2.5 Transient and Accident Analyses

The transient and accident analyses for Cycle 7 have been performed using the methods contained in Reference 4. The licensee has reported the results of those events which required reanalysis to support Cycle 7 operation. Because the transient and accident analyses have been performed using previously approved methods, and the results, including those of the reanalyzed events, meet the staff's acceptance criteria, we conclude that these analyses are acceptable.

2.6 MCPR and MAPLHGR Limits

A safety limit MCPR has been imposed to assure that 99.9 percent of the fuel rods in the core will not experience boiling transition during normal operation and anticipated operational transients. As stated previously, the safety limit of 1.07 was used for Cycle 7.

To assure that the fuel cladding integrity safety limit MCPR will not be violated during any anticipated transient, the most limiting events were reanalyzed for this reload (Reference 2) to determine which events result in the largest reduction in MCPR. The operating limit MCPR was then established by adding the largest reduction factor in the MCPR to the safety limit MCPR. Since acceptable methods (Reference 4) have been used, we find the MCPR Technical Specification changes to be acceptable.

The MAPLHGR limit specified in the proposed Technical Specification changes is consistent with Reference 3 and is, therefore, acceptable.

Based on the preceding review, we find the proposed changes to the FitzPatrick Technical Specifications to be acceptable. Additionally, based on the commitment of the licensee (Reference 7) regarding thermal-hydraulic stability, we find Cycle 7 operation of FitzPatrick acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this 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 this amendment.

4.0 CONCLUSIONS

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.

5.0 REFERENCES

1. Letter, C. A. McNeill, Jr. (Power Authority of the State of New York) to D. B. Vassallo (NRC), January 16, 1985.

2. Supplemental Reload Licensing Submittal for James A. FitzPatrick Nuclear Power Plant Reload 6, General Electric, 23A 1806, November 1984.

3. Errata and Addendum Sheet No. 4 to NEDO 21662-2, "LOCA Analysis Report for James A. FitzPatrick Nuclear Power Plant," December 1984.

4. GESTAR II - "General Electric Standard Application for Reactor Fuel," NEDE-24011-P-A-6, April 1983.

5. Approval letter, D. G. Eisenhut (NRC) to R. Gridley (GE) dated May 12, 1978 and supplements thereto, forming Appendix C to Reference 4.

6. Letter, C. O. Thomas (NRC) to H. C. Pfefferlen (GE) dated April 24, 1985 - Acceptance for Referencing of Licensing Topical Report NEDE-24011, Rev. 6, Amendment 8, "Thermal Hydraulic Stability Amendment to GESTAR II."

7. Letter, J. P. Bayne (Power Authority of the State of New York) to D. B. Vassallo (NRC), April 8, 1985.

Principal Contributor: M. Chatterton

Dated: May 2, 1985