

November 18, 1988

Docket No. 50-333

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Mr. John C. Brons
Executive Vice President - Nuclear Generation
Power Authority of the State of New York
123 Main Street
White Plains, New York 10601

Dear Mr. Brons:

The Commission has issued the enclosed Amendment No. 120 to Facility Operating License No. DPR-59 for the James A. FitzPatrick Nuclear Power Plant. The amendment consists of changes to the Technical Specifications (TS) in response to your application transmitted by letter dated August 24, 1988 (TAC 69315).

The amendment incorporates changes to Bases 3.2 and Tables 3.2-2 and 4.2-2 to reflect a dual time delay degraded voltage protection system which provides a longer actuation time delay under non-loss-of-coolant accident conditions.

While the staff has concluded that the modifications related to this amendment enhance the reliability of AC power for the Engineered Safety Feature loads for the short-term, the staff has limited its approval of the enclosed Technical Specification to one operating cycle (cycle 9). It is expected that this amendment will be implemented in a timely manner and at the next available plant shutdown of sufficient duration following startup from the present refueling outage.

As discussed in the enclosed Safety Evaluation, the staff believes that there are potential design weaknesses related to your ability to reliably conduct manual bus transfers between the onsite and offsite power supplies. These concerns were expressed to you during the March 10, 1988 meeting regarding your April 5, 1986 amendment request concerning changes to the Technical Specifications for reserve power to the emergency buses (TAC 61305). Therefore, the staff believes that the two amendment requests should not be resolved independently, but rather as complementary aspects of a single long-term resolution of this issue. To ensure that timely resolution of this is

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John C. Brons

- 2 -

pursued, please advise me within 30 days of the schedule by which you intend to respond to our June 14, 1988 request for additional information related to TAC 61305.

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

Sincerely,

original signed by

David E. LaBarge, Project Manager
Project Directorate I-1
Division of Reactor Projects, I/II

Enclosures:

- 1. Amendment No. 120 to DPR-59
- 2. Safety Evaluation

cc: w/enclosures
See next page

OFC	:PDI-1	:PDI-1	:PDI-1	:SELB on	:OGC	
NAME	:CVogan	:D:LaBarge	:RCapra	:FRosa		
DATE	:11/11/88	:11/11/88	:11/18/88	:11/17/88	:11/18/88	

Handwritten notes:
 - Next to CVogan: *CV*
 - Next to D:LaBarge: *DL*
 - Next to RCapra: *RC*
 - Next to FRosa: *FR*
 - Next to 11/18/88: *subject to TS permit retesting to 11/18/88 to cycle 9.*

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Mr. John C. Brons
Power Authority of the State of New York

James A. FitzPatrick Nuclear
Power Plant

cc:

Mr. Gerald C. Goldstein
Assistant General Counsel
Power Authority of the State
of New York
10 Columbus Circle
New York, New York 10019

Ms. Donna Ross
New York State Energy Office
2 Empire State Plaza
16th Floor
Albany, New York 12223

Resident Inspector's Office
U. S. Nuclear Regulatory Commission
Post Office Box 136
Lycoming, New York 13093

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

Mr. Radford J. Converse
Resident Manager
James A. FitzPatrick Nuclear
Power Plant
Post Office Box 41
Lycoming, New York 13093

Mr. A. Klausman
Senior Vice President - Appraisal
and Compliance Services
Power Authority of the State
of New York
10 Columbus Circle
New York, New York 10019

Mr. J. A. Gray, Jr.
Director Nuclear Licensing - BWR
Power Authority of the State
of New York
123 Main Street
White Plains, New York 10601

Mr. George Wilverding, Manager
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Power Authority of the State
of New York
123 Main Street
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Mr. Robert P. Jones, Supervisor
Town of Scriba
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Vice President Nuclear Support
Power Authority of the State
of New York
123 Main Street
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Power Authority of the State
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Power Plant
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123 Main Street
White Plains, New York 10601

Charlie Donaldson, Esquire
Assistant Attorney General
New York Department of Law
120 Broadway
New York, New York 10271



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. 120
License No. DPR-59

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 August 24, 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 paragraph 2.C.(2) of Facility Operating License No. DPR-59 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. 120, 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

Robert A. Capra

Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects, I/II

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 18, 1988

ATTACHMENT TO LICENSE AMENDMENT NO.120

FACILITY OPERATING LICENSE NO. DPR-59

DOCKET NO. 50-333

Revise Appendix A as follows:

Remove Pages

60
70c
71
79

Insert Pages

60
70c
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3.2 BASES (cont'd)

The recirculation pump trip has been added at the suggestion of ACRS as a means of limiting the consequences of the unlikely occurrence of a failure to scram during an anticipated transient. The response of the plant to this postulated event falls within the envelope of study events given in General Electric Company Topical Report, NEDO-10349, dated March, 1971.

The Emergency Bus Undervoltage Trip System transfers the 4 kv emergency electrical buses to the Emergency Diesel Generators in the event an undervoltage condition is detected. The system has two levels of protection: (1) degraded voltage protection, and (2) loss-of-voltage protection. Degraded voltage protection prevents a sustained low voltage condition from damaging safety-related equipment. The degraded voltage protection has two time delays. A short time delay coincident with a loss-of-coolant accident (LOCA) and a longer time delay to allow normal plant evolutions without unnecessarily starting the Emergency Diesel Generators. The loss-of-voltage protection prevents a more severe voltage drop from causing a long term interruption of power. Time delays are included in the system to prevent inadvertent transfers due to spurious voltage decreases. Therefore, both the duration and severity of the voltage drop are sensed by the Emergency Bus Undervoltage Trip System.

*Modification approved for cycle 9 only

JAFNPP
TABLE 3.2-2 (cont'd)

INSTRUMENTATION THAT INITIATES OR CONTROLS THE CORE AND CONTAINMENT
COOLING SYSTEMS

Item No.	Minimum No. of Operable Instrument Channels Per Trip System (1)	Trip Function	Trip Level Setting	Total Number of Instrument Channels Provided by Design for Both Trip Systems	Remarks
37	(1 per 4kV bus)	4kV Emergency Bus Undervoltage Relay (Degraded Voltage)	108 ± 1.5 secondary volts	2 Inst. Channels	1. Initiates both 4kV Emergency Bus Undervoltage Timers. (Degraded Voltage LOCA and non-LOCA) 2. Notes 4 and 6.
38a	(1 per 4KV bus)	4kV Emergency Bus Undervoltage Timer (Degraded Voltage LOCA)	9.0 ± 1.0 sec.	2 Inst. Channels	1. Note 5. *
38b	(1 per 4kV bus)	4kV Emergency Bus Undervoltage Timer (Degraded Voltage non-LOCA)	45 ± 5.0 sec.	2 Inst. Channels	1. Note 5. *
39	(1 per 4kV bus)	4kV Emergency Bus Undervoltage Relay (Loss of Voltage)	85 ± 4.25 secondary volts	2 Inst. Channels	1. Initiates 4kV Emergency Bus Undervoltage Loss of Voltage Timer. 2. Notes 4 and 7.
40	(1 per 4kV bus)	4kV Emergency Bus Undervoltage Timer (Loss of Voltage)	2.50 ± 0.05 sec.	2 Inst. Channels	1. Note 5.
41	2	Reactor Low Pressure	285 to 335 psig	4 Inst. Channels	Permissive for closing recirculation pump discharge valve.

*Modification approved for cycle 9 only

Amendment No. 1A, 4A, 106, 120

JAFNPP

TABLE 3.2-2 (Cont'd)
INSTRUMENTATION THAT INITIATES OR CONTROLS THE CORE AND CONTAINMENT
COOLING SYSTEMS

NOTES FOR TABLE 3.2-2

1. Whenever any ECCS subsystem is required by specification 3.5 to be operable, there shall be two operable trip systems. From and after the time it is found that the first column cannot be met for one of the trip systems, that trip system shall be placed in the tripped condition or the reactor shall be placed in the cold condition within 24 hours.
2. "Deleted"
3. Refer to Technical Specification 3.5.A for limiting conditions for operation, failure of one (1) instrument channel disables one (1) pump.
4. Tripping of 2 out of 2 sensors is required for an undervoltage trip. With one operable sensor, operation may continue with the inoperable sensor in the tripped condition.
5. The 4kV Emergency Bus Undervoltage Timers (degraded voltage LOCA, degraded voltage non-LOCA, and loss-of-voltage) initiate the following: starts the Emergency Diesel-Generators; trips the normal/reserve tie breakers and trips all 4kV motor breakers (in conjunction with 75 percent Emergency Diesel-Generator voltages); initiates diesel-generator breaker close permissive (in conjunction with 90 percent Emergency Diesel-Generator voltages) and; initiates sequential starting of vital loads in conjunction with low-low-low reactor water level or high drywell pressure.
6. A secondary voltage of 108 volts corresponds to approximately 90.8% of 4160 volts on the bus.
7. A secondary voltage of 85 volts corresponds to approximately 71.5% of 4160 volts on the bus.

1*

*Modification approved for cycle 9 only

Amendment No. 48, 61, 106, 120

JAFNPP
TABLE 4.2-2

MINIMUM TEST AND CALIBRATION FREQUENCY FOR CORE AND CONTAINMENT COOLING SYSTEMS

<u>Instrument Channel</u>	<u>Instrument Functional Test</u>	<u>Calibration Frequency</u>	<u>Instrument Check(4)</u>
1) Reactor Water Level	(1)(5)	(15)	Once/day
2a) Drywell Pressure (non-ATTS)	(1)	Once/3 months	None
2b) Drywell Pressure (ATTS)	(1)(5)	(15)	Once/day
3a) Reactor Pressure (non-ATTS)	(1)	Once/3 months	None
3b) Reactor Pressure (ATTS)	(1)(5)	(15)	Once/day
4) Auto Sequencing Timers	None	Once/operating cycle	None
5) ADS - LPCI or CS Pump Disch.	(1)	Once/3 months	None
6) Trip System Bus Power Monitors	(1)	None	None
8) Core Spray Sparger d/p	(1)	Once/3 months	Once/day
9) Steam Line High Flow (HPCI & RCIC)	(1)(5)	(15)	Once/day
10) Steam Line/Area High Temp. (HPCI & RCIC)	(1)(5)	(15)	Once/day
12) HPCI & RCIC Steam Line Low Pressure	(1)(5)	(15)	Once/day
13) HPCI & RCIC Suction Source Levels	(1)	Once/3 months	None
14) 4kV Emergency Bus Under-Voltage (Loss-of-Voltage, Degraded Voltage LOCA and non-LOCA) Relays and Timers.	Once/operating cycle	Once/operating cycle	None
15) HPCI & RCIC Exhaust Diaphragm Pressure High	(1)	Once/3 months	None
17) LPCI/Cross Connect Valve Position	Once/operating cycle	None	None

NOTE: See listing of notes following Table 4.2-6 for the notes referred to herein.

*Modification approved for cycle 9 only

Amendment No. 14, 43, 53, 89, 106, 120



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 120 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 August 24, 1988, the Power Authority of the State of New York (PASNY), licensee for the James A. FitzPatrick Nuclear Power Plant proposed changes to the Technical Specifications to reflect modifications to the emergency bus degraded voltage protection system (TAC 69315). Specifically, Bases 3.2, Tables 3.2-2 and 4.2-2 would be revised to reflect a dual time delay degraded voltage protection system that would be installed to provide a longer actuation time delay under non-loss-of-coolant accident (non-LOCA) conditions.

2.0 EVALUATION

By letter dated March 20, 1987, the NRC approved and issued Amendment No. 106 to the FitzPatrick license. The Amendment approved a second level emergency bus degraded voltage protection system. This degraded voltage protection system is designed to assure an adequate supply of AC power for all Engineered Safety Feature (ESF) loads. The protection system fast starts the Emergency Diesel Generator (EDG) pair associated with a 4kV emergency bus when the bus voltage drops below 90% of nominal voltage for 9 seconds.

Since implementation of the second level emergency bus degraded voltage protection system, two actuations of the system have occurred during normal plant start-ups, resulting in cold fast starts of the EDGs. Both actuations occurred when station electrical loads were transferred from the reserve station transformers (off-site power source) to the normal station transformer (output of the main generator). These actuations were reported to the NRC in Licensee Event Reports (LER) 87-009 (July 10, 1987) and LER 87-014 (October 9, 1987).

In its August 24, 1988 application, PASNY stated that although the emergency bus degraded voltage protection system was designed to withstand short-term voltage drops due to expected operating evolutions (such as starting a large motor), the design of the system did not consider the significant voltage transient associated with bus transfers. The undervoltage transient resulting from the routine transfer of buses during startup is at times sufficient to initiate the degraded voltage protection system. This is most likely when the off-site grid voltage is near the low end of its normal range.

As part of its corrective action associated with LER 87-009, PASNY committed to reevaluate the undervoltage and time delay setpoints for the emergency bus

degraded voltage protection system. The licensee has completed its analysis of bus transfer voltage transients and has proposed modifications to the under voltage protection system along with corresponding changes to plant operating procedures and Technical Specifications.

As a result of its reevaluation, the licensee will modify the FitzPatrick emergency bus degraded voltage protection system to incorporate the two time delays recommended in the NRC's Branch Technical Position (BTP) PSB-1, "Adequacy of Station Electrical Distribution System Voltages." The BTP recommends two separate time delays: one coincident with a safety injection actuation (LOCA) signal and a second for normal operation.

RTP Item B.1.b.1 states in part that the first time delay should be of a duration that establishes the existence of a sustained degraded voltage condition (i.e., something longer than a motor starting transient). The subsequent occurrence of a safety injection actuation signal (SIAS) should immediately separate the Class 1E distribution system from the offsite power system. The current FitzPatrick degraded voltage protection design with a 9 second time delay (with a coincident LOCA) will be retained. This time delay was previously reviewed and approved by the staff in Amendment No. 106. The LOCA signals (low reactor water level or high drywell pressure) that will be used in the undervoltage protection logic are the same signals which start the EDGs.

RTP Item B.1.b.2 states that the second time delay should be of a limited duration such that the permanently connected Class 1E loads will not be damaged. Following this delay, if the operator has failed to restore adequate voltage, the Class 1E distribution system should be automatically separated from the offsite power system. Bases and justification must be provided in support of the actual delay chosen. In its August 24, 1988 submittal, PASNY provided the results of its evaluation to support a Technical Specification value of 45 +/- 5 seconds for the extended degraded voltage timer.

An analysis was conducted to determine the voltage transient associated with load transfers from the reserve station transformer to the normal station transformer. The minimum voltage calculated during the transient was 3732V on the 4160V emergency bus (89.7% of rated voltage) based on an initial offsite grid voltage of 117.45kV. (Normal grid voltage varies from 117kV to 122kV.) The evaluation considered: 600V MCC Control Circuits, 575V and 4000V Motors, Class 1E 4160V and 600V Switchgear and the 120V AC Emergency Power System. Based upon this evaluation, the licensee concluded that a 60 second time delay for a second level undervoltage relay during a non-LOCA condition was acceptable to preclude Class 1E equipment damage.

The Technical Specification value of 45 +/- 5 seconds was selected for the extended degraded voltage timer. This delay was less than the analyzed value of 60 seconds, yet long enough to provide sufficient time for the operator to adjust the load tap changer on the normal station transformer to bring the emergency bus voltage within the normal range. PASNY has stated that plant procedures will be revised to reflect the voltage transient analysis. In

addition, when the offsite grid is below 117.45kV, load transfer from the reserve station transformers to the normal station transformer will be prohibited.

By letter dated April 5, 1986 and supplemented on August 5, 1986, PASNY submitted an amendment request to delete a related existing Technical Specification requirement (TAC 61305). This change, which is still under review by the staff, would delete the requirement to transfer the source of power for the emergency buses from the onsite power supply to the offsite power supply whenever one of the EDGs associated with that safety division was found, or made, inoperable. According to PASNY, the reason for requesting the change is that during the evolution of manually transferring power, it is necessary to parallel the sources of power for a period of time. During this period high currents may cause a breaker trip and result in loss of power and reactor scram. A reactor scram resulting from this manual transfer action occurred at FitzPatrick as reported in LER 85-019 dated August 16, 1985.

Both proposed changes are related to problems occurring when performing manual bus transfers between onsite and offsite power supplies. This difficulty in performing manual bus transfers indicates a weakness in the manual bus transfer capability. These concerns were discussed in a meeting between the staff and licensee on March 10, 1988 and are the subject of an outstanding request for additional information sent by letter from NRC to PASNY on June 14, 1988.

From the above discussion, it is clear that the long-term resolution of manual bus transfer operations at FitzPatrick is still undergoing licensee and staff review. However, for the short-term, the staff considers the proposed modifications to the emergency bus degraded voltage protection system described in PASNY's August 24, 1988 submittal, acceptable for addressing the problem of unnecessary cold fast starts of the EDGs during manual bus transfers and will enhance the reliability of AC power for the Engineered Safety Feature Loads and therefore approves the proposed Technical Specification changes for a period of one operating cycle. While the staff is interested in pursuing a timely long-term solution to this issue, PASNY has provided sufficient analysis to assure the staff that the proposed modifications being made during the 1988 refueling outage provide reasonable assurance of safe plant operation during this period of time.

SUMMARY

An ongoing review of the James A. FitzPatrick offsite power supply and associated transfers of the emergency electrical buses is underway by the staff and licensee with the long-term objective of assuring a fully capable and reliable manual transfer capability between the offsite and onsite power supplies.

For the short-term, the staff concludes that the proposed Technical Specifications, reflecting modifications to the emergency bus degraded voltage protection system to add a 45 +/- 5 second time delay before starting the EDGs under non-LOCA conditions, are acceptable for one operating cycle (cycle 9).

To ensure timely long-term resolution of this issue, PASNY should respond to the staff's June 14, 1988 request for additional information.

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 Sec 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.

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 public health and safety of the public.

Dated: November 18, 1988

PRINCIPAL CONTRIBUTOR:

C. Morris

November 18, 1988

Docket No. 50-333

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The amendment incorporates changes to Bases 3.2 and Tables 3.2-2 and 4.2-2 to reflect a dual time delay degraded voltage protection system which provides a longer actuation time delay under non-loss-of-coolant accident conditions.

While the staff has concluded that the modifications related to this amendment enhance the reliability of AC power for the Engineered Safety Feature loads for the short-term, the staff has limited its approval of the enclosed Technical Specification to one operating cycle (cycle 9). It is expected that this amendment will be implemented in a timely manner and at the next available plant shutdown of sufficient duration following startup from the present refueling outage.

As discussed in the enclosed Safety Evaluation, the staff believes that there are potential design weaknesses related to your ability to reliably conduct manual bus transfers between the onsite and offsite power supplies. These concerns were expressed to you during the March 10, 1988 meeting regarding your April 5, 1986 amendment request concerning changes to the Technical Specifications for reserve power to the emergency buses (TAC 61305). Therefore, the staff believes that the two amendment requests should not be resolved independently, but rather as complementary aspects of a single long-term resolution of this issue. To ensure that timely resolution of this is

5821020 447 3pp

John C. Brons

- 2 -

pursued, please advise me within 30 days of the schedule by which you intend to respond to our June 14, 1988 request for additional information related to TAC 61305.

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

Sincerely,

original signed by

David E. LaBarge, Project Manager
Project Directorate I-1
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cc: w/enclosures
See next page

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NAME	:CVogan	:D:LaBarge	OK :RCapra	:FRosa	FX	SET, subject to TS permit notations to include A.
DATE	:11/1/88	:11/11/88	:11/18/88	:11/17/88	: 11/18/88	:

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Mr. John C. Brons
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cc:

Mr. Gerald C. Goldstein
Assistant General Counsel
Power Authority of the State
of New York
10 Columbus Circle
New York, New York 10019

Ms. Donna Ross
New York State Energy Office
2 Empire State Plaza
16th Floor
Albany, New York 12223

Resident Inspector's Office
U. S. Nuclear Regulatory Commission
Post Office Box 136
Lycoming, New York 13093

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

Mr. Radford J. Converse
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Charlie Donaldson, Esquire
Assistant Attorney General
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 - 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:

~~881120449
TAP~~

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3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects, I/II

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 18, 1988

ATTACHMENT TO LICENSE AMENDMENT NO.120

FACILITY OPERATING LICENSE NO. DPR-59

DOCKET NO. 50-333

Revise Appendix A as follows:

Remove Pages

60
70c
71
79

Insert Pages

60
70c
71
79

3.2 BASES (cont'd)

The recirculation pump trip has been added at the suggestion of ACRS as a means of limiting the consequences of the unlikely occurrence of a failure to scram during an anticipated transient. The response of the plant to this postulated event falls within the envelope of study events given in General Electric Company Topical Report, NEDO-10349, dated March, 1971.

The Emergency Bus Undervoltage Trip System transfers the 4 kv emergency electrical buses to the Emergency Diesel Generators in the event an undervoltage condition is detected. The system has two levels of protection: (1) degraded voltage protection, and (2) loss-of-voltage protection. Degraded voltage protection prevents a sustained low voltage condition from damaging safety-related equipment. The degraded voltage protection has two time delays. A short time delay coincident with a loss-of-coolant accident (LOCA) and a longer time delay to allow normal plant evolutions without unnecessarily starting the Emergency Diesel Generators. The loss-of-voltage protection prevents a more severe voltage drop from causing a long term interruption of power. Time delays are included in the system to prevent inadvertent transfers due to spurious voltage decreases. Therefore, both the duration and severity of the voltage drop are sensed by the Emergency Bus Undervoltage Trip System.

*Modification approved for cycle 9 only

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TABLE 3.2-2 (cont'd)

INSTRUMENTATION THAT INITIATES OR CONTROLS THE CORE AND CONTAINMENT
COOLING SYSTEMS

Item No.	Minimum No. of Operable Instrument Channels Per Trip System (1)	Trip Function	Trip Level Setting	Total Number of Instrument Channels Provided by Design for Both Trip Systems	Remarks
37	(1 per 4kV bus)	4kV Emergency Bus Undervoltage Relay (Degraded Voltage)	108 ± 1.5 secondary volts	2 Inst. Channels	1. Initiates both 4kV Emergency Bus Undervoltage Timers. (Degraded Voltage LOCA and non-LOCA) 2. Notes 4 and 6.
38a	(1 per 4KV bus)	4kV Emergency Bus Undervoltage Timer (Degraded Voltage LOCA)	9.0 ± 1.0 sec.	2 Inst. Channels	1. Note 5. *
38b	(1 per 4kV bus)	4kV Emergency Bus Undervoltage Timer (Degraded Voltage non-LOCA)	45 ± 5.0 sec.	2 Inst. Channels	1. Note 5. *
39	(1 per 4kV bus)	4kV Emergency Bus Undervoltage Relay (Loss of Voltage)	85 ± 4.25 secondary volts	2 Inst. Channels	1. Initiates 4kV Emergency Bus Undervoltage Loss of Voltage Timer. 2. Notes 4 and 7.
40	(1 per 4kV bus)	4kV Emergency Bus Undervoltage Timer (Loss of Voltage)	2.50 ± 0.05 sec.	2 Inst. Channels	1. Note 5.
41	2	Reactor Low Pressure	285 to 335 psig	4 Inst. Channels	Permissive for closing recirculation pump discharge valve.

*Modification approved for cycle 9 only

Amendment No. 14, 40, 106, 120

JAFNPP

TABLE 3.2-2 (Cont'd)
INSTRUMENTATION THAT INITIATES OR CONTROLS THE CORE AND CONTAINMENT
COOLING SYSTEMS

NOTES FOR TABLE 3.2-2

1. Whenever any ECCS subsystem is required by specification 3.5 to be operable, there shall be two operable trip systems. From and after the time it is found that the first column cannot be met for one of the trip systems, that trip system shall be placed in the tripped condition or the reactor shall be placed in the cold condition within 24 hours.
2. "Deleted"
3. Refer to Technical Specification 3.5.A for limiting conditions for operation, failure of one (1) instrument channel disables one (1) pump.
4. Tripping of 2 out of 2 sensors is required for an undervoltage trip. With one operable sensor, operation may continue with the inoperable sensor in the tripped condition.
5. The 4kV Emergency Bus Undervoltage Timers (degraded voltage LOCA, degraded voltage non-LOCA, and loss-of-voltage) initiate the following: starts the Emergency Diesel-Generators; trips the normal/reserve tie breakers and trips all 4kV motor breakers (in conjunction with 75 percent Emergency Diesel-Generator voltages); initiates diesel-generator breaker close permissive (in conjunction with 90 percent Emergency Diesel-Generator voltages) and; initiates sequential starting of vital loads in conjunction with low-low-low reactor water level or high drywell pressure.
6. A secondary voltage of 108 volts corresponds to approximately 90.8% of 4160 volts on the bus.
7. A secondary voltage of 85 volts corresponds to approximately 71.5% of 4160 volts on the bus.

*Modification approved for cycle 9 only

Amendment No. 48, 61, 106, 120

JAFNPP
TABLE 4.2-2

MINIMUM TEST AND CALIBRATION FREQUENCY FOR CORE AND CONTAINMENT COOLING SYSTEMS

<u>Instrument Channel</u>	<u>Instrument Functional Test</u>	<u>Calibration Frequency</u>	<u>Instrument Check(4)</u>
1) Reactor Water Level	(1)(5)	(15)	Once/day
2a) Drywell Pressure (non-ATTS)	(1)	Once/3 months	None
2b) Drywell Pressure (ATTS)	(1)(5)	(15)	Once/day
3a) Reactor Pressure (non-ATTS)	(1)	Once/3 months	None
3b) Reactor Pressure (ATTS)	(1)(5)	(15)	Once/day
4) Auto Sequencing Timers	None	Once/operating cycle	None
5) ADS - LPCI or CS Pump Disch.	(1)	Once/3 months	None
6) Trip System Bus Power Monitors	(1)	None	None
8) Core Spray Sparger d/p	(1)	Once/3 months	Once/day
9) Steam Line High Flow (HPCI & RCIC)	(1)(5)	(15)	Once/day
10) Steam Line/Area High Temp. (HPCI & RCIC)	(1)(5)	(15)	Once/day
12) HPCI & RCIC Steam Line Low Pressure	(1)(5)	(15)	Once/day
13) HPCI & RCIC Suction Source Levels	(1)	Once/3 months	None
14) 4kV Emergency Bus Under-Voltage (Loss-of-Voltage, Degraded Voltage LOCA and non-LOCA) Relays and Timers.	Once/operating cycle	Once/operating cycle	None
15) HPCI & RCIC Exhaust Diaphragm Pressure High	(1)	Once/3 months	None
17) LPCI/Cross Connect Valve Position	Once/operating cycle	None	None

NOTE: See listing of notes following Table 4.2-6 for the notes referred to herein.

*Modification approved for cycle 9 only
Amendment No. 14, 43, 53, 89, 106, 120



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 120 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 August 24, 1988, the Power Authority of the State of New York (PASNY), licensee for the James A. FitzPatrick Nuclear Power Plant proposed changes to the Technical Specifications to reflect modifications to the emergency bus degraded voltage protection system (TAC 69315). Specifically, Bases 3.2, Tables 3.2-2 and 4.2-2 would be revised to reflect a dual time delay degraded voltage protection system that would be installed to provide a longer actuation time delay under non-loss-of-coolant accident (non-LOCA) conditions.

2.0 EVALUATION

By letter dated March 20, 1987, the NRC approved and issued Amendment No. 106 to the FitzPatrick license. The Amendment approved a second level emergency bus degraded voltage protection system. This degraded voltage protection system is designed to assure an adequate supply of AC power for all Engineered Safety Feature (ESF) loads. The protection system fast starts the Emergency Diesel Generator (EDG) pair associated with a 4kV emergency bus when the bus voltage drops below 90% of nominal voltage for 9 seconds.

Since implementation of the second level emergency bus degraded voltage protection system, two actuations of the system have occurred during normal plant start-ups, resulting in cold fast starts of the EDGs. Both actuations occurred when station electrical loads were transferred from the reserve station transformers (off-site power source) to the normal station transformer (output of the main generator). These actuations were reported to the NRC in Licensee Event Reports (LER) 87-009 (July 10, 1987) and LER 87-014 (October 9, 1987).

In its August 24, 1988 application, PASNY stated that although the emergency bus degraded voltage protection system was designed to withstand short-term voltage drops due to expected operating evolutions (such as starting a large motor), the design of the system did not consider the significant voltage transient associated with bus transfers. The undervoltage transient resulting from the routine transfer of buses during startup is at times sufficient to initiate the degraded voltage protection system. This is most likely when the off-site grid voltage is near the low end of its normal range.

As part of its corrective action associated with LER 87-009, PASNY committed to reevaluate the undervoltage and time delay setpoints for the emergency bus

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degraded voltage protection system. The licensee has completed its analysis of bus transfer voltage transients and has proposed modifications to the under voltage protection system along with corresponding changes to plant operating procedures and Technical Specifications.

As a result of its reevaluation, the licensee will modify the FitzPatrick emergency bus degraded voltage protection system to incorporate the two time delays recommended in the NRC's Branch Technical Position (BTP) PSB-1, "Adequacy of Station Electrical Distribution System Voltages." The BTP recommends two separate time delays: one coincident with a safety injection actuation (LOCA) signal and a second for normal operation.

RTP Item B.1.b.1 states in part that the first time delay should be of a duration that establishes the existence of a sustained degraded voltage condition (i.e., something longer than a motor starting transient). The subsequent occurrence of a safety injection actuation signal (SIAS) should immediately separate the Class 1E distribution system from the offsite power system. The current FitzPatrick degraded voltage protection design with a 9 second time delay (with a coincident LOCA) will be retained. This time delay was previously reviewed and approved by the staff in Amendment No. 106. The LOCA signals (low reactor water level or high drywell pressure) that will be used in the undervoltage protection logic are the same signals which start the EDGs.

BTP Item B.1.b.2 states that the second time delay should be of a limited duration such that the permanently connected Class 1E loads will not be damaged. Following this delay, if the operator has failed to restore adequate voltage, the Class 1E distribution system should be automatically separated from the offsite power system. Bases and justification must be provided in support of the actual delay chosen. In its August 24, 1988 submittal, PASNY provided the results of its evaluation to support a Technical Specification value of 45 +/- 5 seconds for the extended degraded voltage timer.

An analysis was conducted to determine the voltage transient associated with load transfers from the reserve station transformer to the normal station transformer. The minimum voltage calculated during the transient was 3732V on the 4160V emergency bus (89.7% of rated voltage) based on an initial offsite grid voltage of 117.45kV. (Normal grid voltage varies from 117kV to 122kV.) The evaluation considered: 600V MCC Control Circuits, 575V and 4000V Motors, Class 1E 4160V and 600V Switchgear and the 120V AC Emergency Power System. Based upon this evaluation, the licensee concluded that a 60 second time delay for a second level undervoltage relay during a non-LOCA condition was acceptable to preclude Class 1E equipment damage.

The Technical Specification value of 45 +/- 5 seconds was selected for the extended degraded voltage timer. This delay was less than the analyzed value of 60 seconds, yet long enough to provide sufficient time for the operator to adjust the load tap changer on the normal station transformer to bring the emergency bus voltage within the normal range. PASNY has stated that plant procedures will be revised to reflect the voltage transient analysis. In

addition, when the offsite grid is below 117.45kV, load transfer from the reserve station transformers to the normal station transformer will be prohibited.

By letter dated April 5, 1986 and supplemented on August 5, 1986, PASNY submitted an amendment request to delete a related existing Technical Specification requirement (TAC 61305). This change, which is still under review by the staff, would delete the requirement to transfer the source of power for the emergency buses from the onsite power supply to the offsite power supply whenever one of the EDGs associated with that safety division was found, or made, inoperable. According to PASNY, the reason for requesting the change is that during the evolution of manually transferring power, it is necessary to parallel the sources of power for a period of time. During this period high currents may cause a breaker trip and result in loss of power and reactor scram. A reactor scram resulting from this manual transfer action occurred at FitzPatrick as reported in LER 85-019 dated August 16, 1985.

Both proposed changes are related to problems occurring when performing manual bus transfers between onsite and offsite power supplies. This difficulty in performing manual bus transfers indicates a weakness in the manual bus transfer capability. These concerns were discussed in a meeting between the staff and licensee on March 10, 1988 and are the subject of an outstanding request for additional information sent by letter from NRC to PASNY on June 14, 1988.

From the above discussion, it is clear that the long-term resolution of manual bus transfer operations at FitzPatrick is still undergoing licensee and staff review. However, for the short-term, the staff considers the proposed modifications to the emergency bus degraded voltage protection system described in PASNY's August 24, 1988 submittal, acceptable for addressing the problem of unnecessary cold fast starts of the EDGs during manual bus transfers and will enhance the reliability of AC power for the Engineered Safety Feature Loads and therefore approves the proposed Technical Specification changes for a period of one operating cycle. While the staff is interested in pursuing a timely long-term solution to this issue, PASNY has provided sufficient analysis to assure the staff that the proposed modifications being made during the 1988 refueling outage provide reasonable assurance of safe plant operation during this period of time.

SUMMARY

An ongoing review of the James A. FitzPatrick offsite power supply and associated transfers of the emergency electrical buses is underway by the staff and licensee with the long-term objective of assuring a fully capable and reliable manual transfer capability between the offsite and onsite power supplies.

For the short-term, the staff concludes that the proposed Technical Specifications, reflecting modifications to the emergency bus degraded voltage protection system to add a 45 +/- 5 second time delay before starting the EDGs under non-LOCA conditions, are acceptable for one operating cycle (cycle 9).

To ensure timely long-term resolution of this issue, PASNY should respond to the staff's June 14, 1988 request for additional information.

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 Sec 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.

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 public health and safety of the public.

Dated: November 18, 1988

PRINCIPAL CONTRIBUTOR:

C. Morris