123 Main Street
White Plains, New York 10601
914 681.6240

New York Power Authority

John C. Brons
Executive Vice President
Nuclear Generation

April 27, 1989
JPN-89-021

U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Attn: Document Control Desk

Subject: **James A. FitzPatrick Nuclear Power Plant**
Docket No. 50-333
Request for Additional Information
Transfer of Reserve Power to Emergency Buses (JPTS 85-15)

References:

1. NRC letter, H. Abelson to J.C. Brons, dated June 14, 1988 on the same subject.
2. NYPA letter, J.C. Brons, to D.R. Muller (NRC), dated April 10, 1986 (JPN-86-16) on proposed Technical Specification changes.
3. NYPA letter, J.C. Brons to NRC, dated January 6, 1989 on the same subject (JPN-89-001).

Dear Sir:

In Reference 1, the NRC requested additional information (RAI) on the proposed Technical Specification changes regarding transfer of reserve power to emergency buses (Reference 2). In Reference 3, the Authority submitted the information for items 1 through 5 of the RAI.

The purpose of this letter is to provide information for items 6,7, and 9 of the RAI. This information is included as an Attachment to this letter. The Authority is currently evaluating item 8 which pertains to excess torque on motor shafts after fast transfers. Results of this evaluation will be submitted by June 15, 1989.

Should you or your staff have any questions regarding this matter, please contact Mr. J. A. Gray, Jr. of my staff.

Very truly yours,

John C. Brons
Executive Vice President
Nuclear Generation

Attachment

cc: Listed on following page

A001
1/1

cc: U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Office of the Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 136
Lycoming, NY 13093

Mr. David E. La Barge
Project Directorate I-1
Division of Reactor Projects-1/11
U.S. Nuclear Regulatory Commission
Mail Stop 14B2
Washington, D.C. 20555

ATTACHMENT TO JPN-89- 021

REQUEST FOR ADDITIONAL INFORMATION
TRANSFER OF RESERVE POWER TO EMERGENCY BUSES (JPTS 85-15)
JAMES A. FITZPATRICK NUCLEAR POWER PLANT

NEW YORK POWER AUTHORITY
JAMES A. FITZPATRICK NUCLEAR POWER PLANT
DOCKET NO. 50-333
DPR-59

ATTACHMENT TO JPN-89-021

ITEMS 1-5: See NYPA letter to NRC (JPN-89-001) dated 1/6/89.

ITEM 7: (Note: Item 6 is discussed following item 7).

"Provide an estimate of accelerated wear or aging of the equipment subjected to higher than rated currents for the periods of time involved in each slow manual transfer."

Response:

The Authority has evaluated the mechanical and thermal stresses on the 4.16kV switchgear, 5kV non-segregated phase bus duct, normal station service transformer, and the reserve station service transformers due to slow manual bus transfer overload currents. Calculations, which assume an overload duration of 10 seconds, demonstrated that the specified ratings of the equipment are not exceeded. Therefore, the equipment will not be subjected to accelerated wear or aging.

The normal and the reserve station service transformer winding hottest-spot temperatures due to the slow bus transfer overload currents were calculated in accordance with ANSI C 57.92-1981. The transformers were assumed to be temperature stabilized at the normal load current before the transfer. FitzPatrick plant operating procedures require the slow manual bus transfer to be completed as soon as possible. However, FitzPatrick plant operating experience indicates the transfer to be generally completed in less than 5 seconds. For conservatism, a transfer time of 10 seconds was used. The transient winding hottest-spot temperature due to the overload currents is calculated to be 73 degrees C which is less than the hottest-spot winding allowable temperature of 110 degrees C. The overload currents were also compared with the transformer short-circuit withstand capability to determine if adverse mechanical stresses could result. These overload currents were considerably less than the withstand capability of the equipment. Therefore, the transformers will not be subjected to accelerated wear or aging due to the overload currents.

The non-segregated phase bus duct and the 4.16kV switchgear temperatures due to the slow manual transfer overload currents were calculated in accordance with ANSI C 37.10-1979. The method is similar to that used for the transformers. The worst case transient hottest-spot equipment temperature resulting from the overload currents of 10 second duration is 73 degrees C compared with the hottest-spot allowable of 105 degrees C for 4.16kV switchgear/non-segregated phase bus duct and 85 degrees C for current transformers. The overload currents were also compared with the short-circuit current for assessing mechanical stresses. The overload currents were considerably less than the short-circuit current ratings of the equipment. Therefore, the non-segregated phase bus duct and the 4.16kV switchgear will not be subjected to accelerated wear or aging due to the overload currents.

ITEM 6:

"Provide the probability of equipment failures caused by excess currents during transfers."

Response:

Response to Item 7 above shows that the affected equipment will not be subjected to any accelerated wear or aging due to the slow manual bus transfer overcurrents of 10 second duration. Also, overcurrent protection is provided for the equipment as part of the design. Therefore, the slow manual bus transfer overcurrents will not increase the probability of failures of the equipment.

ATTACHMENT TO JPN-89-021

ITEM 8: Response to item 8 will be submitted by June 15, 1989.

ITEM 9:

"Provide a list of equipment carrying excess currents, their current ratings, and the worst case slow manual transfer currents."

Response:

The following Table identifies equipment carrying excess currents, their current ratings and worst case manual transfer currents.

Equipment Name	Nameplate Rating Amps	Worst Case Slow Manual Transfer Currents in Amps
1. Normal Station Service Transformer (NSST) T4		
a. H Winding	1,134	966
b. X Winding (Bus 10100 & 10200)	2,075	3,838
c. Y Winding (Bus 10300 & 10400)	4,150	4,279
2. Non-Segregated Phase Bus Duct from NSST - T4 to Switchgear Buses		
a. Common Duct to Buses 10100 and 10200	2,000	3,838
b. Tap to Bus 10100	1,200	3,508
c. Tap to Bus 10200	1,200	3,349
d. Common Duct to Buses 10300 and 10400	4,000	4,279
e. Tap to Bus 10300	2,000	3,587
f. Tap to Bus 10400	2,000	3,116
3. Non-Segregated Phase Bus Duct from Reserve Station Service Transformer (RSST) T2 To Switchgear Buses		
a. Bus 10200	1,200	2,893
b. Bus 10400	2,000	2,086

ATTACHMENT TO JPN-89- 021

Equipment Name	Nameplate Rating Amps	Worst Case Slow Manual Transfer Currents in Amps
4. Non-Segregated Phase Bus Duct from RSST T3 To Switchgear Buses		
a. Bus 10100	1,200	3,047
b. Bus 10300	2,000	2,586
5. RSST T2		
a. H Winding	109	80
b. X Winding (Bus 10200)	1,036	2,893
c. Y Winding (Bus 10400)	2,073	2,086
6. RSST T3		
a. H Winding	109	90
b. X Winding (Bus 10100)	1,036	3,047
c. Y Winding (Bus 10300)	2,073	2,586
7. Current Transformers		
a. Bus 10100		
Breaker 10102	1,200-5 2,000-2.5	3,508
Breaker 10112	3,000-5 1,200-5	3,047
b. Bus 10200		
Breaker 10202	1,200-5 2,000-2.5	3,349
Breaker 10212	1,200-5 3,000-5	2,893
c. Bus 10300		
Breaker 10302	2,000-5 2,000-2.5	3,587
Breaker 10312	2,000-5 3,000-5	2,586
d. Bus 10400		
Breaker 10402	2,000-5 2,000-2.5	3,116
Breaker 10412	2,000-5 3,000-5	2,086