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November 16, 1978  
JNRC-78-59

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Director of Nuclear Reactor Regulation  
United States Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Mr. Thomas A. Ippolito  
Operating Reactors Branch No. 3  
Division of Operating Reactors

Subject: James A. FitzPatrick Nuclear Power Plant  
Rotated Bundle Loading Error Event Analysis  
Docket No. 50-333 P

Dear Sir:

General Electric Company has performed an analysis of the rotated bundle loading error event for James A. FitzPatrick Nuclear Power Plant (JAFNPP). This letter forwards the results of the analysis which we received from General Electric Company on November 15, 1978. As was indicated in a telephone conversation with Philip Polk and Marvin Mendonca of the Commission, a final report concerning the subject matter, which we expect to receive from General Electric Company on November 22, 1978, will be transmitted to you later.

The analysis was performed for Reload 2, Cycle 3 operation of the James A. FitzPatrick Nuclear Power Plant using the variable water gap method. The method was approved by the Commission in a letter to R. E. Engel (GE) from D. G. Eisenhut (NRC) dated May 8, 1978. As a result of the analysis, Section 15 in the Reload 2 licensing supplement (NEDO-24129 June 1978) should be replaced with the following:

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15. LOADING ERROR RESULTS (5.5.4)

Limiting Event: Rotated Bundle\*

<u>Fuel Type</u>	<u>Initial CPR**</u>	<u>Minimum CPR</u>
80RB283	1.22	1.07
80RB265L	1.22	1.07

\* Variable water gap method of analysis

\*\* Includes 0.02 Critical Power Ratio (CPR) penalty for uncertainties in GEXL CPR predictions using axially varying R-factors.

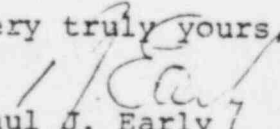
The rotated bundle event therefore remains the limiting event for 8x8R fuel from BOC3 to EOC3-2GWd/t. From EOC3-2GWd/t to EOC3 the load rejection without bypass event remains the limiting event for 8x8R fuel. The FitzPatrick Cycle 3 Operating Limits are therefore as follows:

<u>Exposure Range</u>	<u>Minimum Critical Power Ratio (MCPR) Operating Limit**</u>		
	<u>7 x 7</u>	<u>8 x 8</u>	<u>8 x 8R</u>
From BOC3 to EOC3-2GWd/t	1.21	1.22	1.22
From EOC3-2GWd/t to EOC3-1GWd/t	1.25	1.33	1.33
From EOC3-1GWd/t to EOC3	1.30	1.37	1.37

Attachment A to this letter shows revised Technical Specification page to reflect the new Minimum Critical Power Ratio (MCPR) Operating Limit for 8x8R fuel in the exposure range of "BOC3 to 2GWd/t before EOC3".

As indicated to Marvin Mendonca of the Commission in the aforementioned telephone conversation, the analysis will allow the setpoint for the off-gas radiation monitor to be returned to the value used during Cycle 1 operation of the James A. FitzPatrick Nuclear Power Plant following approval of the analysis by the Commission. Attachment B transmits the original Technical Specification page used for Cycle 1 regarding the off-gas radiation monitor.

Very truly yours,

  
Paul J. Early  
Assistant Chief Engineer-  
Projects

Att.

ATTACHMENT A

DOCKET NO. 50-333

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

3.1 LIMITING CONDITIONS FOR OPERATION

3.1 REACTOR PROTECTION SYSTEM

Applicability:

Applies to the instrumentation and associated devices which initiate the reactor scram.

Objective:

To assure the operability of the Reactor Protection System.

Specification:

- A. The setpoints, minimum number of trip systems, minimum number of instrument channels that must be operable for each position of the reactor mode switch shall be as shown on Table 3.1-1. The design system response time from the opening of the sensor contact to and including the opening of the trip actuator contacts shall not exceed 100 msec.

B. Minimum Critical Power Ratio (MCPR)

During reactor power operation at rated power and flow, the MCPR operating limits shall not be less than those shown below:

FUEL TYPE	MCPR OPERATING LIMIT FOR INCREMENTAL CYCLE 3 CORE AVERAGE EXPOSURE		
	BOC3 to 2GWd/t before EOC3	EOC3-2GWd/t to EOC3-1GWd/t	EOC3-1GWd/t to EOC3
7x7	1.21	1.25	1.30
8x8	1.22	1.33	1.37
8x8R	1.22	1.33	1.37

4.1 SURVEILLANCE REQUIREMENTS

4.1 REACTOR PROTECTION SYSTEM

Applicability:

Applies to the surveillance of the instrumentation and associated devices which initiate reactor scram.

Objective:

To specify the type of frequency of surveillance to be applied to the protection instrumentation.

Specification:

- A. Instrumentation systems shall be functionally tested and calibrated as indicated in Tables 4.1-1 and 4.1-2 respectively.

B. Maximum Fraction of Limiting Power Density (MFLPD)

The MFLPD shall be determined daily during reactor power operation at  $\geq 25\%$  rated thermal power and the APRM high flux scram and Rod Block trip settings adjusted if necessary as required by Specifications 2.1.A.1.c and 2.1.A.1.d, respectively.

ATTACHMENT B

DOCKET NO. 50-333

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

Table 3.2-4  
 RADIATION MONITORING SYSTEMS THAT INITIATE AND/OR ISOLATE SYSTEMS

Minimum No. Of Operable Instrument Channels (1)	Trip Function	Trip Level Setting	Total Number of Instrument Channels Provided By Design For Both Channels	Action (2)
1	Refuel Area Exhaust Monitor	$\leq 2.7 \times 10^5$ cpm (5)	2 Inst. Channels	A or B
1	Reactor Building Area Exhaust Monitors	$\leq 2.7 \times 10^5$ cpm (5)	2 Inst. Channels	B
1	Off-Gas Radiation Monitors	$\leq 7 \times 10^4$ mR/hr(3)	2 Inst. Channels	C
1	Turbine Bldg. Exhaust Monitors	$\leq 1.8 \times 10^5$ cpm (5)	2 Inst. Channels	C
1	Radwaste Bldg. Exhaust Monitor	$\leq 6.7 \times 10^5$ cpm (5)	2 Inst. Channels	C
1	Main Control Room Ventilation Monitor	$\leq 4 \times 10^3$ cpm (6)	1 Inst. Channel	D
2	Mechanical Vacuum Pump Isolation	$\leq 3$ times normal full power background	4 Inst. Channels	E
1	Liquid Radwaste Discharge Monitor	(4)	1 Inst. Channel	F

NOTES FOR TABLE 3.2-4

1. Whenever the systems are required to be operable, there shall be two operable or tripped instrument channels per trip system. From and after the time it is found that this cannot be met, the indicated action shall be taken.
2. Action
  - A. Cease operation of the refueling equipment.
  - B. Isolate secondary containment and start the standby Gas Treatment System.
  - C. Refer to Section 2.3.B.4 of Environmental Technical Specification.
  - D. Control Room Isolation is manually initiated.
  - E. Uses same sensors as Primary Containment Isolation on high main steam line radiation. Table 3.2-1.
  - F. Refer to Environmental Technical Specification 2.3.A.3.
3. Refer to Specification 2.3.B of the Environmental Specifications.
4. Trip setting to correspond to Specification 2.3.A of the Environmental Technical Specifications.
5. Conversion factor is  $9.0 \times 10^7$  cpm - 1 uci/cc.
6. Conversion factor is  $8.15 \times 10^7$  cpm - 1 uci/cc.