123 Main Street
White Plains, New York 10601
914 681 6200

New York Power Authority

J. Phillip Bayne
Executive Vice President
Nuclear Generation

August 24, 1984
JPN-84-56

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing

Subject: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Mark I Program

Reference: 1. NRC letter, D. B. Vassallo to J. P. Bayne, dated July 24, 1984.

Dear Sir:

In Reference 1 the NRC transmitted a request for additional information on the structural aspects of the FitzPatrick plant unique analysis report for torus attached piping.

Attachment I provides the response as requested.

If you have any questions concerning this information, please contact Mr. J. A. Gray, Jr. of my staff.

Very truly yours,

J. P. Bayne
First Executive Vice President
Chief Operations Officer

cc: Office of the Resident Inspector
U. S. Nuclear Regulatory Commission
P. O. Box 136
Lycoming, New York 13093

A025
1/1

ATTACHMENT I TO JPN-84-56

MARK I PROGRAM

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

JAFNPP Torus Program

Response to Review Questions on TES Report
TR-5321-2, PUAR for Torus Attached Piping

Item 1 In Section 2.4.2 of the PUA Report, TR-5321-2 (2), some conditions are listed that would be evaluated in case the conservative condition for SRV pipe stress could not be met. Provide the reason for considering the first of these cases and verify the value and derivation of the allowable stress associated with this case.

Response The first two alternate cases listed in paragraph 2.4.2 are similar except the first includes an OBE seismic event and the second an SSE. They represent cases 14 and 15 in Table 1. It was judged necessary to consider both of these as separate cases for FitzPatrick because the FSAR defines separate spectra for OBE and SSE. That is, they are not simple multiples as in most other plants (see paragraph 2.2.5). The fact that the spectra are different and that SSE has higher damping that OBE (two percent versus one percent) made it appear possible that responses in small frequency bands could be higher for OBE than SSE. The first alternate load case, containing OBE, was therefore run to cover this possibility.

The allowable stress for this case is shown in paragraph 2.4.2 as 1.85_h. This is a typographical error and should have read $1.8\ S_h$, in accordance with footnote 3 to Table 1 in the TAP report.

Item 2 With respect to Section 3.3.5 of the PUA Report, TR-5321-2 (2), indicate whether the 10 percent rule of Section 6.2d (1) was used to exempt any branch piping from analysis. If so, provide calculations demonstrating conformance to this rule. Also, indicate why, in the analysis of flexible branch piping, a displacement equal to the total torus attached piping motion as the connection point was used for the FitzPatrick plant, whereas TES used twice the torus attached piping motion for other plants.

Response The 10 percent rule was not used to exempt any branch piping from analysis.

The analysis of the flexible branch piping for FitzPatrick plant was performed using twice the torus attached piping motion as it was for the other plants. The report will be revised to correct this in the final issue.

Item 3 With respect to Section 3.4.1 of the PUA Report, TR-5321-2 (2), indicate whether seismic loads were considered in load cases 25 and 15 (Table 1).

Response The larger of the OLE or SSE seismic stress was included in the evaluation of load cases 25 and 15 (Table 1). Both seismic events were considered for the reasons discussed in Item 1 above.

Item 4 With respect to Tables 3-1 and 3-2 of the PUA Report, TR-5321-2 (2), indicate whether the lines in each of the following sets are identical and explain why only one result appears for each set.

X-202A and X-202F, X-202B and X-202G, X-210A and X-211A, X-210B and X-211B, X-213A and X-213B, and X-206A, B, C, and D.

Response Lines X-202A and F are connected by a common system in a single analytical model. A single analysis was performed and only the maximum stress results are reported.

Lines X-202B and G are similar in configuration and in analysis method to that used in X-202A and F.

Lines X-210A and X-211A are connected by a cross-over system in a single analytical model. A single analysis was performed and only the maximum stress results are reported.

Lines X-210B and X-211B are similar in configuration and in analysis method to that used in X-210A and X-211A.

Lines X-213A and B are identical and only the maximum stress results of one system are reported.

Lines X-206A, B, C, and D are two similar systems where X-206A and B are connected by a common piping system and X-206C and D are identical to X-206A and B. Only the maximum stress results from one system are reported.

Item 5 With respect to Section 3.4.6 of the PUA Report, TR-5321-2 (2), provide the analytical results of the fatigue evaluation of the torus shell penetrations.

Response The usage factor "u" is used to determine the fatigue acceptability. This is calculated as

$$u = \frac{\text{Maximum number of cycles possible}}{\text{Number of allowable cycles at } S_a}$$

The allowable number of cycles at S_a is calculated according to ASME Section III, NE-3221.5, and uses Table I-9 in the Appendices.

The maximum number of full stress cycles was conservatively taken as 10,000 as discussed in the PUAR (2), paragraph 3.4.6. (The actual number of full stress cycles is actually about 1,000.)

Based on an assumed 10,000 full stress cycles, the three highest usage factors for large bore pipe penetrations (as tabulated in Table 3-6 of the PUAR) are:

Large Bore Penetration Usage Factors

	Cycles		
Penetration	Assumed	Allowable	Usage Factor
X-212	10,000	12,000	0.83
X-225A	10,000	21,000	0.48
X-210B	10,000	23,200	0.43

All small bore penetrations have usage factors less than 0.01.