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New York Power Authority

October 5, 1984
JPN-84-63

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

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

Subject: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Control of Heavy Loads
(NUREG-0612)

References:

1. NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants" dated July 1980
2. NYPA letter, J. P. Bayne to D. B. Vassallo, dated January 31, 1984 (JPN-84-06) regarding response to draft Technical Evaluation Report

Dear Sir:

As the result of a May 30, 1984 conference call between the Authority and members of your staff regarding the control of heavy loads (References 1 and 2), we have prepared responses to three questions raised during this telephone conversation. These questions and our responses are included as an attachment to this letter.

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

Very truly yours,

Robert A Burns for

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, NY 13093

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Attachment to JPN-84-63

NEW YORK POWER AUTHORITY
James A. FitzPatrick Nuclear Power Plant

<u>Response to Verbal Request for Additional Information
Regarding the Control of Heavy Loads
(NUREG-0612)</u>

Q1. Perform a stress analysis of the VHLR (Vessel Head Lifting Rig) and DSLR (Dryer/Separator Lifting Rig) to confirm their design margin(s); submit your results.

R1. In accordance with the requirements of Section 5.1.1(4) of NUREG-0612, the Head Strongback and the Dryer/Separator Sling were evaluated with respect to ANSI N14.6-1978, Section 3.2, Design Criteria. Although compliance with the "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings" by the American Insititute of Steel Construction (AISC) is not mandatory, the devices were also evaluated against this specification.

The evaluation is based on classical stress analysis methods and hand calculations. The stress analysis of the Head Strongback used the manufacturer's design loads: 80 tons for the RPV head, and 60 tons for the drywell head. These loads are higher than the actual loads (68 and 43 tons, respectively.) In the analysis of the Dryer/Separator Sling, actual weights were used (42 tons for the separator, 37.5 tons for the dryer). Dead weights of the lifting rigs themselves were neglected in the analysis. In light of the results obtain, and magnitude of the loads used; it can be observed that if the dead weights were included, the conclusions of the analysis would not change significantly.

A dynamic impact factor of 1.15 was applied to the static load of the lift, in accordance with CMAA-70. For both the Head Strongback and the Dryer/Separator Sling stress analysis, the load was assumed to be equally distributed for each of the four legs of the device.

The Head Strongback was found to exceed the requirements of AISC and ANSI standards. The Dryer/Separator Sling was found to exceed the requirements of AISC and ANSI standards, except for the pins at the four sockets. For these pins, the calculated safety factors are below the ANSI requirements (approximately 1% for yield strength and 2.6% for ultimate strength.)

This slight difference is considered insignificant and, therefore, the intent of NUREG-0612 and ANSI N14.6-1978 has been met.

Q2. For the Stud Tensioner and Thermal Insulation Lifting Rigs, demonstrate: (a) That the loads are light (10,000 lbs.); (b) moved only when the head is installed; and, (c) provide assurance of measures to prevent movement when the head is removed.

R2. Stud Tensioner Lifting Rig (STLR)

The Authority has initiated an analysis of the Stud Tensioner Lifting Rig to determine the extent of its compliance with ANSI N14.6-1978 in accordance with Section 5.1.1(4) of NUREG-0612. Portions of the Stud Tensioner Lifting Rig were analyzed and compared to ANSI B30.9-1971, (four-leg bridle sling and single slings) or AISC, "Specification for the design, fabrication and erection of structural steel for buildings" (steel angle members of the spreader). A dynamic impact factor of 1.15 was applied to the static load in accordance with the Crane Manufacturers Association of America CMAA-70, "Specifications for Electric Overhead Traveling Cranes." The total weight of the tensioners and the lifting rig is approximately 6 tons.

The rated capacity of two STLR components are not available to allow an analysis of the whole STLR. The Authority will complete the STLR analysis as soon as these values become available.

Results of this analysis show that the FitzPatrick STLR meet the requirements of ANSI N14.6 - 1978 and ANSI B30.9-1971 except for the bridle sling eye bolts. The Authority will replace the existing eye bolts with new bolts that meet the applicable requirements of these standards before the next scheduled refueling outage when the STLR is used.

Thermal Insulation Lifting Rig (TILR)

In accordance with the requirements of Section 5.1.1(5) of NUREG-0612, the Authority completed an analysis of the thermal insulation head sling (TILR) to determine the extent of its compliance with ANSI B30.9-1971. A dynamic impact factor of 1.15 was applied to the static load of the lift, in accordance with CMAA-70. The weight of the head thermal insulation is approximately ten (10) tons.

The results of this analysis show that the FitzPatrick thermal insulation head sling meets the requirements of ANSI B30.9-1971 and Section 5.1.1(5) of NUREG-0612.

Q3. Regarding safe load paths: (a) verify that load paths have been developed for major heavy loads; (b) for other, smaller maintenance loads, determine the limiting load drop (weight/height) that the structure can withstand and; (c) demonstrate that adequate margins are provided in load handling procedures to insure that these limits will not be exceeded for these smaller loads only.

R3. (a) The Authority does not consider it necessary to develop safe load path for all major loads at this time. Rather, a safe load path will be established prior to the start of any such lift.

(b) & (c) For smaller maintenance loads, a visual inspection of the areas in the immediate vicinity of the load and along the load path will be performed prior to any lift. This inspection will identify any special hazard(s) that may be present in these areas. Special attention will be focused on the potential for significant consequences considering the potential energy of the load(s). If no special hazards are identified, the load will be performed using applicable procedures and good industry safety practices.

In the event that a special hazard was identified during the inspection, an evaluation of the special hazard(s) will be performed to determine any precautions or conditions necessary to assure a safe lift.

This method is preferrable because the potential consequences of a specific load traveling a specific load path can be clearly defined and evaluated.