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Executive Vice President
Nuclear Generation

September 29, 1992
JPN-92-061

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-137
Washington, D. C. 20555

Subject: James A. FitzPatrick Nuclear Power Plant
Docket No. 50 - 333
Response to Generic Letter 92-04
BWR Reactor Vessel Water Level Instrumentation Issues

- References:
1. BWR Owners' Group report "BWR Reactor Vessel Water Level Instrumentation", GENE-770-15-0692, Rev. 1, dated August 28, 1992
 2. BWROG letter to the NRC, BWROG-92082, dated September 24, 1992

Dear Sir:

The Authority's response to Generic Letter 92-04 is provided in the attachment to this letter.

Based on a careful review of Reference 1, the Authority has determined that the report is applicable to the James A. FitzPatrick Nuclear Power Plant. The automatic plant response during transients and accidents will not be adversely affected by the potential presence of noncondensable gasses in reactor vessel water level instrumentation reference columns.

The Authority endorses the BWROG positions expressed in Reference 2. It is essential that a firm understanding of the noncondensable gas and condensing chamber phenomena be established before decisions are made concerning possible modifications to reactor vessel water level instrument systems. The comprehensive test plan proposed by the BWROG will establish a basis for these decisions. Accordingly, the Authority requests that the implementation periods stated in action 3 of the Generic Letter, be held in abeyance until completion of the BWROG test program.


The Authority has taken positive measures during the current outage to discover and address potential system problems which have been identified by the General Electric Company on a generic basis. The water level instrument system has been inspected to identify discrepancies with direction of line slope, line supports and system leakage. The Authority is making modifications to correct some instrument line slopes prior to plant start-up as detailed in the attachment to this letter.

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If you have any questions, please contact J. A. Gray, Jr.

Very truly yours,

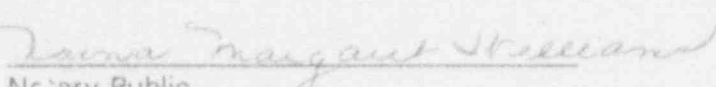


Ralph E. Beedle

STATE OF NEW YORK
COUNTY OF WESTCHESTER

Subscribed and sworn to before me
this twenty-ninth day of September 1992.

NORMA MARGARET WILLIAMS
Notary Public, State of New York
No. 4943820
Qualified in Westchester County
Commission Expires Nov. 7, 1993



Notary Public

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Attachment: Response to Generic Letter 92-04
BWR Reactor Vessel Water Level Instrumentation Issues

Attachment to JPN-92-061

RESPONSE TO GENERIC LETTER 92-04

BWR REACTOR VESSEL WATER LEVEL INSTRUMENTATION ISSUES

New York Power Authority

James A. FitzPatrick Nuclear Power Plant

Docket 50-333

Attachment to JPN 92-061
James A. FitzPatrick Nuclear Power Plant
Response to Generic Letter 92-04

Generic Letter Requested Action 1.

1. *In light of potential errors resulting from the effects of noncondensable gas, each licensee should determine:*
 - a. *The impact of potential level indication errors on automatic safety system response during all licensing basis transients and accidents.*

Authority Response:

The Boiling Water Reactor Owners' Group (BWROG) provided a copy of its report "BWR Reactor Vessel Water Level Instrumentation" (Reference 1) to the NRC and each of the member utilities. This report addresses the safety significance of potential water level indication errors on automatic system response during all licensing basis transients and accidents. This analysis basis is contained in Section 6.0 "Safety Analysis" of the report and is summarized in section 2.2 "Plant Responses to Postulated Accident Scenarios."

The report demonstrates that there is no substantial safety hazard posed by the postulated effects of non-condensable gases on BWR reactor vessel water level instrumentation reference leg behavior.

The Authority recognizes that there are differences among the designs of BWR plants and systems. The Authority has conducted two independent reviews of the information in the BWROG report and examined the General Electric evaluation contained in Attachment II to that report. Based on these reviews, the Authority has determined that the report is applicable to the James A. FitzPatrick Nuclear Power Plant. These reviews confirm the Authority's understanding that the basic plant response to the design basis transients and accident events is sufficiently similar to the BWROG report to eliminate the need for additional plant unique detailed re-analysis.

1.
 - b. *The impact of potential level indication errors on operator's short and long term actions during and after all licensing basis accidents and transients.*

Authority Response:

The BWROG report, Reference 1, addresses, in section 6.9 "Operator Responses," the operator actions that could be anticipated in response to potential water level indication errors. These anticipated operator actions are based on the guidance provided in the Emergency Procedure Guidelines (EPG) for indeterminate water level indication. The Emergency Operating Procedures (EOP) at the James A. FitzPatrick Nuclear Power plant are consistent with the BWROG EPGs. The report discusses in Section 6.0 the immediate (short term) automatic safety actions.

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James A. FitzPatrick Nuclear Power Plant
Response to Generic Letter 92-04

The Authority has provided additional guidance to plant operations personnel as a result of the BWROG Emergency Procedures Committee (EPC) recommendations (Reference 3). This guidance which explains to the operators the potential for water level indication errors during depressurization of the primary system, was provided to the operators by an entry in the night orders and by addition to the licensed operator required reading book. The existing long term guidance provided in the Emergency Operating Procedures together with the interim guidance provided to the operators is sufficient to address the concerns with water level readings following a rapid depressurization.

1. c. *The impact of potential level indication errors on operator actions prescribed in emergency operating procedures or other affected procedures not covered in (b).*

Authority Response:

As stated in section 6.9 of the BWROG report and the response to 1.c. above, the operators have adequate information in the present EOPs as augmented by the recent information communicated by the EPC (Reference 3) to assure appropriate responses. The impact of potential level indication errors on operator actions prescribed in the EOPs or other affected procedures not covered in (b) has also been assessed. It has been determined that no procedure changes are required at this time. The potential need for procedure revisions will be re-evaluated following completion of the BWROG test program.

The BWROG EPC is continuing to review the potential need for any additional guidance in to the EPGs to further address the potential water level indication errors. This review will take into account the information from the BWROG test and analysis program (Reference 4). The Authority endorses and supports the BWROG positions concerning appropriate operator actions as presented in the BWROG letter to the NRC (Reference 2).

Generic Letter Requested Action 2.

2. *Based upon the results of (1), above, each licensee should notify the NRC of short term actions taken, such as:*
 - a. *Periodic monitoring of level instrumentation system leakage; and,*

Authority Response:

Inspection

Because the plant is shutdown, the Authority was able to remove the insulation from the water level instrument lines between the reactor vessel and the condensing pots and walk down the entire level instrument piping system. Selected portions of the system have been photographed for future study. The strip chart recordings of reactor vessel water level from the last three plant shutdowns (following the replacement of Yarway instrumentation with cold leg instrumentation) were reviewed. A notching effect, if present, could not be observed because of variations in actual vessel water level caused by other system components.

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Leak Detection and Correction

The system was inspected for leaks. Evidence of previous small packing gland leaks was found under three isolation valves located outside of containment. The packing will be adjusted or replaced as necessary prior to plant start-up. An additional leak inspection of the entire system at operating pressure will be conducted during the scheduled reactor vessel leak test prior to plant start-up.

Installed Configuration and Line Slope Correction

Drawings describing the configuration of the cold leg water level instrumentation have been reviewed. Slope geometry of the instrument lines was compared to the recommendations of General Electric Service Information Letter (SIL) 470. The SIL recommended a downward slope from the condensing chambers ranging from 1/8 inch to 1/4 inch per foot. Because the installation design for the FitzPatrick plant specified a slope of 1/4 inch per foot, some sections of lines were found to have slopes of less than 1/8 inch per foot. However, except for four lines, the line slope was either in the correct downward direction from the condensing chambers or horizontal.

The available information concerning the FitzPatrick plant cold reference leg geometry has been provided to the BWROG to be factored into the test configurations in the BWROG test plan provided to the NRC in Reference 4. The significance of different characteristics of the configuration of cold leg water level instrumentation will not be understood until the BWROG program test information is available.

Inside the drywell, in the curved section of a 2 inch diameter pipe (steam leg supply) extending from the reactor vessel to supply two condensing pots a slope in the wrong direction (less than 1/8 inch per foot) was found on the "A" side. In another section of the same line after (reduction in diameter to 1 1/2 inches), between the common (to another condensing pot) tee and the 2A condensing pot, a section approximately 1 foot 9 inches long was found to be sloping in the wrong direction at less than 1/8 inch per foot. The negative slopes of these two lines will not be modified unless the results of the BWROG test program clearly demonstrate that negative slopes in this configuration contribute to errors in reactor vessel water level indications.

Three sections of 3/8 inch diameter tubing lines located outside the drywell were found to have upward slope which could have trapped noncondensable gases. These sections will be re-oriented to provide a continuous downward slope from the condensing chamber prior to start-up.

The remaining lines, with downward slopes of less than 1/8 inch per foot from the condensing pot, or with no slope (horizontal), will not be changed at this time for the following reasons:

- a) The slope of the lines is either continuously downward (correct direction) from the condensing chambers (generally at a slope of 1/4 inch per foot) or horizontal.
- b) The slope of lines located in the drywell will increase toward 1/8 inch per foot with vessel heat up and expansion.
- c) The original installation design for the FitzPatrick plant specified a slope of 1/4 inch per foot.
- d) The BWROG test program is expected to provide more definitive information concerning the relationship and significance of instrument line slope to the potential level instrument errors.

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System Expansion Restrictions and Correction

The system was inspected for adequate seismic support and for adequate provision for thermal expansion. Two condensing chamber structural supports were found to be installed in a way which could restrict expansion during vessel heat up. Analysis determined that these supports were not required. These supports will be removed prior to plant start-up.

The significance of both configuration characteristics and condensing chamber performance, as they relate to the accumulation of noncondensable gas in the reference leg, will be better understood after completion of the BWROG test program. In the interim, water level will be closely monitored during planned shutdowns. Indications of mismatches, if they occur, will be documented.

2. b. *Implementation of procedures and operator training to assure that potential level errors will not result in improper operator actions.*

Authority Response:

As discussed in the response to items 1.b. and 1.c., the Authority has informed its operators of the information contained in the letter from the BWROG EPC (Reference 3). A formal classroom training module for licensed operators will be developed to address the issues raised by Generic Letter 92-04 upon completion of the BWROG test plan and evaluation by the determination by the Authority of necessary procedural changes or plant modifications.

Generic Letter Request 3.

3. *Each licensee should provide its plans and schedule for corrective actions, including any proposed hardware modifications necessary to ensure the level instrumentation system design is of high functional reliability for long term operation. Since this instrumentation plays an important role in plant safety and is required for both normal and accident conditions, the staff recommends that each utility implement its longer term actions to assure a level instrumentation system of high functional reliability at the first opportunity but prior to starting up after the next refueling outage commencing three months after the date of this letter.*

Authority Response:

The Authority endorses the BWROG test plan originally provided to the NRC on August 12, 1992 (Reference 4). The Authority also reaffirms support of the BWROG plan by endorsing the BWROG letter of September 24, 1992 (Reference 2). The James A. FitzPatrick Nuclear Power Plant is currently scheduled to start-up in late October 1992. The next refueling outage is expected to be conducted during the first quarter of 1994. If the BWROG program indicates that modifications are necessary to assure that the level instrumentation is of high functional reliability, a modification schedule will be provided to the NRC three months prior to plant shut down for the scheduled outage in 1994.

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References:

1. "EWR Reactor Vessel Water Level Instrumentation", revision 1, August 28, 1992, General Electric Nuclear Energy for BWR Owners' Group, GENE-770-15-0692, DRF# A00-03647-D. Transmitted by letter George J. Beck, BWROG to William T. Russell, NRC, letter number BWROG-92074 dated August 28, 1992.
2. Letter, George J. Beck, Chairman, Regulatory Response Group, BWR Owners' Group, to NRC, letter number BWROG-92082 dated September 24, 1992.
3. Memorandum, B. T. Williamson II, Chairman, BWROG Emergency Procedure Committee to BWR Owners' Group Members Plant Operations Superintendents, OG92-907-62, dated August 19, 1992.
4. Letter, George J. Beck, Chairman Regulatory Response Group, BWR Owners' Group, to William T. Russell, NRC, letter number BWROG-92072, dated August 12, 1992.