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 RECIP. NAME RECIPIENT AFFILIATION
 MILLER, C.L. Project Directorate I-2

SUBJECT: Responds to NRC Bulletin 93-003, "Resolution of Issues Re
 RV Water Level Instrumentation in BWRs." Licensees
 procedures have been revised to incorporate instrument
 checks that will ensure early detection of level anomalies.

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Robert G. Byram
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JUL 29 1993

Director of Nuclear Reactor Regulation
Attention: Mr. C. L. Miller, Project Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

**SUSQUEHANNA STEAM ELECTRIC STATION
RESPONSE TO NRC BULLETIN 93-03,
"RESOLUTION OF ISSUES RELATED TO REACTOR
VESSEL WATER LEVEL INSTRUMENTATION IN BWRS"
PLA-4006 FILE R41-1A**

Docket Nos. 50-387
and 50-388

Reference: PLA-4003, R.G. Byram to C.L. Miller, "Review of Forced Outage Impact on Response to Bulletin 93-03," dated July 16, 1993.

Dear Mr. Miller:

The purpose of this submittal is to respond to NRC Bulletin 93-03 dated May 28, 1993. Each requested action and associated PP&L response is provided below.

NRC REQUESTED ACTIONS

1. Short Term Compensatory Actions:

(a) Within 15 days of the date of this bulletin, each licensee is requested to implement the following measures to ensure that potential level errors caused by reference leg de-gassing will not result in improper system response or improper operator actions during transients and accident scenarios initiated from reduced pressure conditions (Mode 3):

(1) Establish enhanced monitoring of all RPV level instruments to provide early detection of level anomalies associated with de-gassing from the reference legs.

PP&L Response: Our procedures have been revised to incorporate instrument checks which will ensure early detection of level anomalies. They now include:

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- a. Requirements to backfill narrow range level instrument reference legs to ensure instrument reliability during normal or forced shutdowns, and prior to placing RHR in shutdown cooling.
- b. Requirements to perform instrument checks if backfilling has not been performed, by cross-comparison of Narrow and Extended Range instrument channels. Acceptance criteria are provided based on an expected, pressure-compensated indicated level difference.

Training has been performed to ensure proper understanding and implementation of these changes by affected personnel.

- (2) Develop enhanced procedures or additional restrictions and controls for valve alignments and maintenance that have a potential to drain the RPV during Mode 3.

PP&L Response: A review of all operations with the potential for draining the reactor vessel and associated procedures has been performed. Revisions have been incorporated based on the potential for the de-gassing phenomena to impact level instrument reliability.

- (3) Alert operators to potentially confusing or misleading level indication that may occur during accidents or transients initiating from Mode 3. For example, a drain-down event could lead to automatic initiation of high-pressure emergency core cooling systems (ECCS) without automatic system isolation or low-pressure ECCS actuation.

PP&L Response: Training has been conducted for all operations shift personnel on this topic, as well as on the aforementioned backfill procedures.

- (b) By July 30, 1993, each licensee is requested to complete augmented operator training on loss of RPV inventory scenarios during Mode 3, including RPV drain-down events and cracks or breaks in piping.

PP&L Response: Specific training, including simulator exercises, has been developed and is being provided to operators as part of their requalification training program. It will be completed by July 30, 1993.

2. Hardware Modifications

Each licensee is requested to implement hardware modifications necessary to ensure the level instrumentation system design is of high functional reliability for long-term operation. This includes level instrumentation performance during and after transient and accident scenarios initiated from both high pressure and reduced pressure conditions. The hardware modifications discussed here are the same as the modifications requested by Generic Letter 92-04. Since the level instrumentation plays an important role in plant safety and is required for both normal and accident conditions, the staff requests that these modifications be implemented at the next cold shutdown beginning after July 30, 1993. If a facility is in cold shutdown on July 30, 1993, each licensee is requested to implement these modifications prior to starting up from that outage.

PP&L Response: PP&L's current efforts are directed toward two potential modifications:

1. **Vent to Variable Leg:** This modification would install a condensing chamber vent to the instrument variable leg. It is PP&L's preferred solution because it is a more passive design. Several issues need to be resolved with this modification as well; to date they include:
 - a. Need for proof of principle testing,
 - b. Verification that the existing reactor vessel head vent to the main steam lines will not adversely affect operability, and
 - c. Verification of instrument response time.

2. **CRD Backfill System:** this system will provide a continuous flow of Control Rod Drive system water into the reference legs. The objective of this modification is to flush non-condensable gases back out of the reference leg and condensing chamber, and back into the reactor vessel. Issues associated with the final design of this modification include:
 - a. Evaluation of the potential effects of CRD system transients on indicated reactor vessel water level as presented to the NRC by Commonwealth Edison Company on July 26, 1993, and
 - b. Analysis of the thermal stress impact of the colder backfill flow on the reference legs, condensing chambers, and reactor vessel nozzles.

PP&L's current plan for each unit is as follows:

Unit 1: The design of the backfill modification is near completion, pending resolution of the issues noted above (the most significant being the Commonwealth Edison test data). During the ongoing forced outage, PP&L will prestage this modification as currently designed in order to expedite making it operational. We are currently revising our plans to resolve the final design based on the new information Commonwealth Edison has raised, with an objective of making the installation operational upon startup after the upcoming fall refueling and inspection outage. In parallel, PP&L is continuing to pursue the preferred vent modification.


This supersedes the PP&L position on the Unit 1 modification schedule as stated in the referenced letter.

Unit 2: PP&L is also near completion of the design of the backfill modification for Unit 2, and it will be prestaged to the extent possible as conditions permit. Our plan will be to install and test either the backfill modification (depending on our experience on Unit 1), or the vent modification in the Spring 1994 refueling and inspection outage. Should a forced outage to cold shutdown conditions occur prior to resolving the final Unit 1 design, PP&L will consider all potential prestaging activities, but will plan to restart Unit 2 and operate until the Spring outage. Should a forced outage to cold shutdown conditions occur after resolution of the Unit 1 design, PP&L will install the final modification.

PP&L will keep you advised of any changes in our modification strategy as they occur.

Any questions on this response should be directed to Mr. R.R. Sgarro at (215) 774-7914.

Very truly yours,


R. G. Byram

cc: ~~NRC Document Control Desk~~ (original)
NRC Region I
Mr. G. S. Barber, NRC Sr. Resident Inspector - SSES
Mr. R. J. Clark, NRC Sr. Project Manager - Rockville

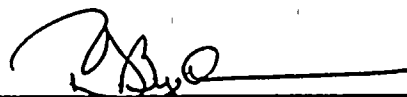
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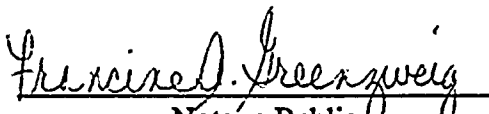
COUNTY OF LEHIGH)

I, ROBERT G. BYRAM, being duly sworn according to law, state that I am Sr. Vice President - Nuclear of Pennsylvania Power & Light Company and that the facts set forth on the attached response to NRC Bulletin 93-03, are true and correct to the best of my knowledge, information and belief.



Robert G. Byram
Sr. Vice President - Nuclear

Sworn to and subscribed
before me this ^{29th} day
of July, 1993.


Notary Public

NOTARIAL SEAL

Francine A. Greenzweig, Notary Public
City of Allentown, Lehigh County, Pa.
My Commission Expires Oct. 29, 1994