



**CENTERIOR  
ENERGY**

**PERRY NUCLEAR POWER PLANT**

10 CENTER ROAD  
PERRY, OHIO 44081  
(216) 259-3737

Mail Address:  
PO. BOX 97  
PERRY, OHIO 44081

**Robert A. Stratman**  
VICE PRESIDENT - NUCLEAR

September 9, 1994  
PY-CEI/NRR-1855L

U. S. Nuclear Regulatory Commission  
Document Control Desk  
Washington, D.C. 20555

Perry Nuclear Power Plant  
Docket No. 50-440  
Response to Generic Letter 94-02  
Regarding Long-Term Solutions  
and Upgrade of Stability Interim  
Corrective Actions

Gentlemen:

Generic Letter (GL) 94-02, Long-Term Solutions and Upgrade of Interim Corrective Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors, dated July 11, 1994, requested Boiling Water Reactor (BWR) owners to 1) take appropriate actions to augment respective procedures and training for preventing or responding to thermal-hydraulic instabilities, and 2) submit a plan describing the long-term stability solution option selected and the proposed implementation schedule for modification of the plant protection systems to ensure compliance with 10 CFR 50, Appendix A, General Design Criteria 10 and 12. The responses to these requests for the Perry Nuclear Power Plant (PNPP), Unit 1 are provided in Attachments 1 and 2, respectively. Background and references for these Attachments are provided in Attachment 3.

If you have questions or require additional information, please contact Mr. James D. Kloosterman, Manager - Regulatory Affairs at (216) 280-5833.

Very truly yours,

RAS:RMC:sc

Enclosure and Attachments

cc: Regional Administrator, Region III  
NRC/NRR Project Manager  
NRC Resident Inspector

130086

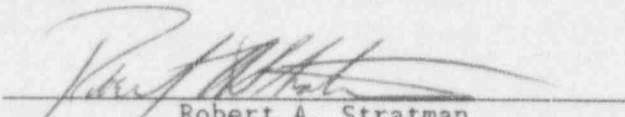
Operating Companies  
Cleveland Electric Illuminating  
Toledo Edison

9409160018 940909  
PDR ADOCK 05000440  
PDR

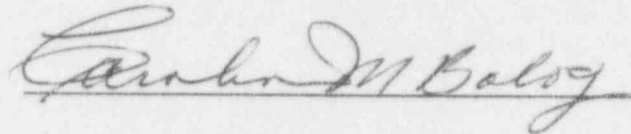
ADD1

Enclosure  
PY-CEI/NRR-1855L

I, Robert A. Stratman, being duly sworn state that (1) I am Vice President, Nuclear - Perry of the Centerior Service Company, (2) I am duly authorized to execute and file this certification on behalf of The Cleveland Electric Illuminating Company and Toledo Edison Company, and as the duly authorized agent for Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company, and (3) the statements set forth herein are true and correct to the best of my knowledge, information and belief.

  
Robert A. Stratman

Sworn to and subscribed before me, this 9<sup>th</sup> day of September,  
1994.



CAROLINE M. BALOG  
Notary Public, State of Ohio  
My Commission expires April 20, 1995  
(Recorded in Lake County)

ATTACHMENT 1  
RESPONSE TO GL 94-02, ITEM 1

Interim Corrective Actions (ICAs) specified in NRC Bulletin 88-07 and its Supplement 1, dated June 15, 1988 and December 30, 1988, respectively, have been implemented at PNPP. In addition, the BWR Owners' Group (BWROG) effort to develop improved guidelines for the ICAs to better address startup and low power maneuvering conditions has been supported by PNPP. A copy of the improved BWROG Guidelines for Stability Interim Corrective Action was provided to the NRC by Reference 1. Based on a review of an advanced copy of these guidelines (Reference 2), the NRC has indicated it will accept the improved BWROG guidelines as an acceptable response to requested actions 1.a and 1.b of GL 94-02.

It should be noted that the BWROG Guidelines (Reference 1) are consistent with, but more restrictive than, the ICAs which were previously implemented as a result of NRC Bulletin 88-07, Supplement 1 requirements. The original stability regions implemented at PNPP as defined in the 1988 BWROG ICAs and included in NRC Bulletin 88-07, Supplement 1, were based on stability tests and events known at the time. Subsequent work has identified a sensitivity to reactor power shape and/or feedwater temperature conditions. Because of this, the Reference 1 guidelines incorporate an expanded stability region and power distribution control definition to strengthen the oscillation prevention feature. This, in conjunction with the detection and suppression guidelines, provides a higher degree of protection against power oscillations.

Modifications, where necessary, will be made to PNPP operating procedures and operator training such that they are consistent with, or more conservative than, the BWROG guidelines in Reference 1. The Reference 1 Controlled Entry Region will be treated as part of the Immediate Exit Region and power distribution controls will not be implemented. Procedure changes and training for on-shift operations personnel will be completed by October 17, 1994.

In response to NRC Bulletin 88-07 for PNPP (letter PY-CEI/NRR-0947L, dated December 2, 1988), a commitment was made to administratively require a manual plant scram when operating less than 45% core flow and greater than the 100% rod line. Based on the new BWROG guidelines, the previous commitment is superseded. The Manual Scram Required region will be revised to be consistent with the BWROG recommendations of less than 40% core flow at greater than 100% rod line.

Because the guidelines are intended for use until replaced by a stability long-term solution, modification of the PNPP Technical Specifications are not appropriate. The Reference 1 guidelines and resulting PNPP operating procedure and operator training modifications are intended for use only until the stability long-term solution is implemented. Beyond this, appropriate procedures and training will be specified by the long-term solution implemented at PNPP.

ATTACHMENT 2  
RESPONSE TO GL 94-02, ITEM 2

The long-term solution to be implemented at PNPP will be an Option III solution as described in Reference 4.

Option III is a Local Power Range Monitor (LPRM) based Oscillation Power Range Monitor (OPRM) that uses a microprocessor to monitor groups of LPRM signals. It is based on a detect and suppress approach, and no Exclusion Region is required. Upon identification of neutron flux oscillations characteristic of a thermal-hydraulic instability, the system alarms on small magnitudes and initiates a scram to suppress the oscillation prior to exceeding safety limits. The scram feature is automatically bypassed at high flow or low power to avoid spurious actuations.

The function of the LPRM based OPRM is in parallel with, and independent of, the existing functions of the Average Power Range Monitoring (APRM) System.

The system utilizes amplified LPRM signals from available locations in the existing APRM panels. These LPRM signals are chosen from the associated APRM channels such that the resulting LPRM based system channel response provides adequate coverage of expected oscillation modes. All of the available LPRM signals may be used and grouped to detect oscillations throughout the core by selecting signals that are representative of all geometrically diverse (one per octant) regions of the reactor core. In this way, each LPRM based system has the capability to detect expected oscillation modes.

The development and licensing of this option is proceeding within the BWROG and should provide for a lead plant installation in the 1995 to 1996 time frame. Following initial operation and testing with the solution installed, further refinements may be necessary before further installation efforts at other plants are attempted. It is planned to have the Option III solution installed at PNPP during a refueling outage following the successful lead plant installation and testing. The schedule for this installation will be no later than Refueling Outage 7, presently scheduled for late 1999. In the interim, the ICAs will remain in place to provide necessary protection against instability events.



#### BACKGROUND AND REFERENCES

- 1) Letter, L.A. England (BWROG) to M.J. Virgilio (NRC), BWR Owners' Group Guidelines for Stability Interim Action, dated June 6, 1994.
- 2) Letter, L.A. England (BWROG) to M. J. Virgilio (NRC), BWR Owners' Group Improved Guidelines for Stability Interim Corrective Actions, dated April 4, 1994.
- 3) Letter, A. Thadani (NRC) to L.A. England (BWROG), Acceptance for Referencing of Topical Reports NEDO-31960 and NEDO-31960, Supplement 1, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology", dated July 12, 1993.
- 4) NEDO-31960, Class 1, Licensing Topical Report, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology", June 1991.
- 5) NEDO-31960, Supplement 1, Class 1, Licensing Topical Report, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology (Supplement 1)", March 1992.