UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 13, 1997

Mr. Kevin P. Donovan, Chairman
Boiling Water Reactor Owners' Group
Centerior Energy
Perry Power Plant
MC A210
P. O. Box 97
Perry, OH 44081

SUBJECT: BWR OWNERS' GROUP TOPICAL REPORT, NEDO-32539, RECLASSIFICATION OF POST-ACCIDENT CONTAINMENT HYDROGEN/OXYGEN MONITORS (TAC NO. M95772)

Dear Mr. Donovan:

By letter dated April 10, 1996, the BWR Owners' Group (BWROG) requested that the staff review BWROG/GE topical report "NEDO-32539; Reclassification of the Boiling Water Reactor Post-Accident Containment Hydrogen/Oxygen Monitors." The stated objective of the topical report is to "modify the classification of the containment post-accident continuous hydrogen/oxygen monitors to 'Non-Safety'." The report proposes alternative design criteria and quality assurance criteria that the BWROG believes to be acceptable alternatives to those specified in "Regulatory Guide 1.97, Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs During and Following an Accident." The BWROG proposes that replacement parts be procured as commercial-grade and not subject to dedication. The topical report would apply to all BWRs. It does not purport to demonstrate that the commercial grade dedication process is impractical or impossible or that it constitutes an unreasonable "hardship," but it does indicate that the specific concern the owners' group is attempting to address is one of "availability and maintainability." The report cites 200 hrs/yr as a typical downtime, with cases as high as 500 hrs/yr, and indicates that declassification would increase the available selection of vendors resulting in increased reliability through lower failure rates.

The request for declassification is based on the BWROG's analysis of the consequences of post-LOCA failure of the hydrogen/oxygen monitoring system analyzers. The analysis examined the DBA-LOCA scenario and the EPGs and concluded that there was "no adverse impact from a hydrogen/oxygen monitoring system failure." However, the details of the analysis and basis for the conclusion are unclear. It appears that the analysis takes credit for other non-safety-grade equipment such as the PASS, or inerting system instruments, or otherwise assumes less conservative radiolysis phenomena that are inconsistent with Regulatory Guide 1.7.

The staff has completed its review of NEDO-32539 and concludes that the BWROG has not demonstrated that hydrogen/oxygen analyzers are not necessary to (a) perform manual actions for initiating and terminating operation of combustible gas control systems, (b) verify that combustible gas control system safety functions are being performed, and (c) assess the threat of containment

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breach or loss of safety-related equipment in containment due to deflagration. Instruments that are "primary" for use in any one of these three purposes are required to be safety-grade. The post-accident hydrogen/oxygen monitors are primary instruments for all three of these purposes, any one of which is alone sufficient to justify a safety-grade classification. The BWROG has, therefore, not demonstrated an adequate basis for the staff to deviate from Regulatory Guide 1.7, Position C.3, which states:

> **Combustible gas control systems and the provisions for mixing, measuring, and sampling should meet the design, quality assurance, redundancy, energy source, and instrumentation requirements for an engineered safety feature.**

The staff views the post-accident analyzers as analogous to the containment pressure monitoring instruments. The containment pressure monitoring instruments are considered necessary to monitor the containment overpressure threat in a manner similar to the analyzers being necessary to monitor the hydrogen threat. The pressure monitoring instruments are required to be safety-grade even though DBA thermal-hydraulic analyses indicate that the containment would not be overpressurized from the pressure transient of any postulated break.

Therefore, the staff concludes that current regulations, as implemented through regulatory guidance documents, do not permit declassification of the post-accident monitoring system hydrogen/oxygen analyzers on the basis of the information provided by NEDO-32539. Therefore, the staff cannot approve NEDO-32539.

If you have any questions concerning the staff's review, please contact the project manager, Jim Wilson, at (301) 415-1108.

Sincerely,

David B. Matthews, Chief
Generic Issues and Environmental
Projects Branch
Office of Nuclear Reactor Regulation

Project No. 691

cc: see attached list

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David B. Matthews, Chief
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