



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

April 3, 1987

AEOD/E707

MEMORANDUM FOR: Harold R. Denton, Director  
Office of Nuclear Reactor Regulation

Thomas E. Murley, Regional Administrator, Region I

J. Nelson Grace, Regional Administrator, Region II

A. Bert Davis, Acting Regional Administrator, Region III

Robert D. Martin, Regional Administrator, Region IV

John B. Martin, Regional Administrator, Region V

FROM: C. J. Heltemes, Jr., Director  
Office for Analysis and Evaluation  
of Operational Data

SUBJECT: DESIGN AND CONSTRUCTION PROBLEMS AT OPERATING  
NUCLEAR PLANTS

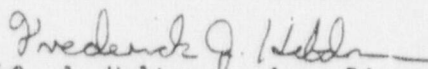
A recently completed engineering evaluation report on the above subject is enclosed. The report identifies a significant number of licensee event reports involving design and construction deficiencies associated with safety-related systems at operating plants. These deficiencies were not detected by the plant QA or QC programs during plant construction or modification phase and had existed since original construction or modification.

Our evaluation indicates that the deficiencies identified could be attributed to inadequate document controls, unreviewed safety and design condition or inadequate review during modification, and the deficiencies can be grouped into six categories; (1) piping stress exceeding code limits, (2) incorrect hardware or improper installation of hardware, (3) lack of fire seals for electrical cable penetrations, (4) electrical wiring error, (5) errors in electrical, instrumentation and control circuits, and (6) electrical and control panels not seismically supported. These were significant deficiencies in design and construction which could have posed potential hazards to the safety of plant operation had these remained uncorrected.

In each case the licensee discovered the deficiencies during a special review or inspection initiated due to reasons other than the requirements of the plant QA or QC programs. This indicates that the plant QA and QC programs and related construction, preoperational and startup testing may not have been adequate to identify all existing design and construction problems, with the likelihood that there may be other undetected, significant design and construction deficiencies in operating plants.

In view of this safety concern, it is suggested that NRC staff review the adequacy of current QA and QC programs used in plant modification to verify that the plant is in compliance with design and construction requirements. Also, this report could be used for guidance in future plant inspection and review activities in this area.

If you have questions or comments, please do not hesitate to contact me or Chuck Hsu (x24443) of my staff. We shall be happy to meet with you or your staff to discuss this matter.

  
Frederick J. Heltemes, Jr., Director  
Office for Analysis and Evaluation  
of Operational Data

Enclosure:  
As stated

cc w/enclosure:  
C. Rossi, NRR  
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