TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

82 JAN 22 A9:00

January 18, 1982

Mr. James P. O'Reilly, Director
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - RADIATION DOSE INSIDE CONTAINMENT EXCEEDS CABLE QUALIFICATION - NCR WBN QEB 8001 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector M. Thomas on March 31, 1980 in accordance with 10 CFR 50.55(e). Interim reports were submitted on April 24, July 1, and September 19, 1980 and April 13, June 18, August 18, and November 3, 1981. Enclosed is our final report.

If you have any questions, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager
Nuclear Regulation and Safety

Enclosure
cc: Mr. Victor Stello, Director (Enclosure)
Office of Inspection and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

OFFICIAL COPY

8201290150 820118
PDR ADOCK 05000390
S PDR

IE 27
5/1

An Equal Opportunity Employer

ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
RADIATION DOSE INSIDE CONTAINMENT
EXCEEDS CABLE QUALIFICATION
10 CFR 50.55(e)
NCR WBNQEB8001

FINAL REPORT

Description of Deficiency

This deficiency was discovered during a QA review of ECNs by the Quality Engineering Branch in TVA's Division of Engineering Design. The higher radiation levels inside containment following a loss-of-coolant-accident (LOCA) were determined as a result of a verification of radiation levels inside containment for an FSAR table. The new radiation dose recently calculated is principally beta (4.0×10^8 RADS of a total dose of 4.7×10^8 RADS).

This deficiency was that exposed portions of cables supplying control or power to safety-related equipment (i.e., equipment that must function during or after an accident) inside containment may not be environmentally qualified for the higher radiation dose levels recently calculated to exist inside containment. The only cables that fall into this category at Watts Bar Nuclear Plant are the RTD cables between the detectors and their respective terminal boxes.

Safety Implications

If this deficiency had remained uncorrected, it is possible the RTD cables between the detectors and their respective terminal boxes may have failed. The failure of the Reactor Coolant System (RCS) RTDs would deny the plant operators the ability to monitor RCS temperature following an accident. This could possibly jeopardize the safety of the plant.

Corrective Actions

TVA has installed all RTD cables in flexible stainless steel conduits to provide shielding. Also, TVA has conservatively calculated the beta dose to cable insulation inside containment at Watts Bar Nuclear Plant using the Monte Carlo Electron Photon Code CYLTRAN. The qualification of the cable insulation material for all types of cables in conduits will exceed the exposure of the calculated environment plus a 1-year integrated radiation dose (following a LOCA).

To prevent the recurrence of inadequate environmental qualification of class 1E equipment, TVA will issue the Watts Bar Nuclear Plant Environmental Design Criteria by April 1, 1982.