TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II



December 4, 1981



SQRD-50-328/81-28

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:

SEQUOYAH NUCLEAR PLANT UNIT 2 - ADDITIONAL LEVEL OF UNDER- OR OVER-VOLTAGE PROTECTION - SQRD-50-328/81-28 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on April 3, 1981, in accordance with 10 CFR 50.55(e) as NCR SQN EEB 8114. Interim reports were submitted on April 28 and June 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





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ENCLOSURE
SEQUOYAH NUCLEAR PLANT UNIT 2
ADDITIONAL LEVEL OF UNDER- OR OVER-VOLTAGE PROTECTION
SQRD-50-328/81-28
10 CFR 50.55(e)
FINAL REPORT

## Description of Deficiency

During a design review it was determined that the present design of the additional level of under- or over-voltage protection does not fully comply with the time delay selection guidelines as stated in NRC Staff Position 1, "Degraded Grid Voltage Position." These guidelines state the time delay selected shall not exceed the maximum time delay that is assumed in the FSAR accident analysis and shall minimize the effect of short duration voltage transients. The design basis for the present design was that an accident would not occur during the time delay selected to prevent short duration disturbances from reducing the availability of the offsite power sources. Because of this, TVA's design exceeds the maximum safety response time required for mitigating an accident.

## Safety Implications

Had this condition remained undetected, a degraded grid voltage could have adversely affected plant safety. As an example, upon detection of a degraded voltage condition, the subject deficient design would not have initiated a diesel generator start signal until 30 seconds had elapsed from the time of detection. This would have resulted in an inability of the safety injection pump motors to deliver rated flow within 22 seconds after detection of a degraded voltage condition as required. This condition could, therefore, have resulted in inadequate core cooling following a safety injection signal.

## Corrective Action

Condition 18c (page 7) to the Sequoyah unit 1 operating license states that "prior to startup after the first refueling, TVA shall have received NRC approval of an additional operable level of over/under-voltage protection including associated Technical Specifications." This license condition was in response to NRC Staff Position 1, "Degraded Grid Voltage Position."

TVA originally identified NCR SQN EEB 8114 on April 3, 1981 before receiving an operating license for unit 2. Upon receiving a full power unit 2 license, in September 1981, a similar license condition (11b-page 5) to unit 1 was incorporated into the unit 2 license stating that TVA is committed to having degraded voltage protection operational on Class 1E ac auxiliary power system by the end of the first unit 2 refueling outage.

TVA is now conducting a final review of proposed design modifications which should satisfy the NRC staff position on degraded voltage protection and we will resolve this issue with the Office of Nuclear Reactor Regulation during the resolution of conditions in the operating license. TVA expects to finalize the new design and submit technical specification changes incorporating the degraded voltage protection to NRC-NRR for review in early 1982.