

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

400 Chestnut Street Tower II

USNRC REGION II  
ATLANTA, GEORGIA

83 SEP 1  
August 30, 1983

48:08

WBRD-50-390/82-25

U.S. Nuclear Regulatory Commission  
Region II  
Attn: Mr. James P. O'Reilly, Regional Administrator  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

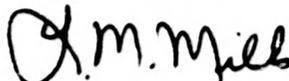
WATTS BAR NUCLEAR PLANT UNIT 1 - NUCLEAR INSTRUMENTATION SYSTEM (NIS)  
CONDUIT INSTALLATION - WBRD-50-390/82-25 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on February 18, 1982 in accordance with 10 CFR 50.55(e) as NCR 3836R. Interim reports were submitted on March 22, July 5, and October 26, 1982 and March 17, 1983. 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 Licensing

Enclosure

cc (Enclosure):

Mr. Richard C. DeYoung, Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Records Center  
Institute of Nuclear Power Operations  
1100 Circle 75 Parkway, Suite 1500  
Atlanta, Georgia 30339

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**ENCLOSURE**

**WATTS BAR NUCLEAR PLANT UNIT 1  
NUCLEAR INSTRUMENTATION SYSTEM (NIS) CONDUIT INSTALLATION  
NCR 3836R  
WBRD-50-390/82-25  
10 CFR 50.55(e)  
FINAL REPORT**

**Description of Deficiency**

The electrical conduit system for the Nuclear Instrumentation System (NIS) cables were not installed per section 4.1 of the Westinghouse Electrical Corporation, Atomic Power Division, Instrumentation and Control Standards as noted on TVA conduit and grounding drawings.

In several instances, as specified in paragraph 2.3.5 of the above standard, minimum separation between all four divisional channels and nondivisional NIS conduit systems and potential electrical noise sources were not maintained.

Due to the extreme congestion in the areas through which the NIS conduit system must be routed, it is virtually impossible to comply with the Westinghouse specified minimum NIS conduit separation from potential electric noise source requirements.

**Safety Implications**

Deviation from the Westinghouse instrumentation and control standard concerning spacing of NIS conduit systems could allow electrical noise to be induced in NIS signal conductors. Excessive noise in the NIS signals could cause spurious reactor radiation levels which in turn might cause an inadvertent reactor trip. While a reactor trip could not adversely affect safe operation, TVA feels that such a situation would unnecessarily challenge the plant safety systems.

**Corrective Action**

TVA has contacted Westinghouse about evaluating and testing worst case deviations at a Westinghouse facility using TVA-generated envelopes, but Westinghouse has replied that they would be unable to analyze the conditions supplied them. Instead, Westinghouse has recommended that the NIS be energized and aligned as early as possible to determine if actual problems exist with the system.

The Westinghouse minimum separations are conservative values specified to guarantee against possible electric noise problems. Reduced separations will not necessarily cause NIS noise problems, as evidenced by the operating experience accrued at Sequoyah Nuclear Plant which has a similar installation configuration.

Based on the successful operation of this system at Sequoyah and Westinghouse's recommendation, TVA has issued exception No. EX-WB-DC-30-4-3 to design criteria WB-DC-30-4, "Separation of Electric Equipment and Wiring." This exception allows for the as-installed deviations to the minimum separations specified between NIS neutron detector cables and electric noise sources in the Westinghouse standard. TVA has begun testing the NIS and expects to complete this testing by November 30, 1983. Any specific noise problems found during this testing will be handled and documented on a case-by-case basis.