

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401

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OCT 05 1987

WBRD-50-390/86-59
WBRD-50-391/86-59

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

WATTS BAR NUCLEAR PLANT (WBN) UNITS 1 AND 2 - QUESTIONABLE QUALIFICATION OF
CONDUIT TO EQUIPMENT CONNECTIONS - WBRD-50-390/86-59 AND WBRD-50-391/86-59 -
FINAL REPORT

The subject deficiency was initially reported to NRC Region II Inspector
Glen Walton on November 25, 1986, in accordance with 10 CFR 50.55(e), as
SCRs WBN EEB 8663 and WBN EEB 8664. Our interim report was submitted on
December 29, 1986, and included NCR W-416-P that had been reported on
August 11, 1986. Enclosed is our final report.

If there are any questions, please telephone R. D. Schulz at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. Gridley
R. Gridley, Director
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Regulatory Affairs

Enclosure
cc: See page 2

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U.S. Nuclear Regulatory Commission

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ENCLOSURE

WATTS BAR NUCLEAR (WBN) PLANT UNITS 1 AND 2
QUESTIONABLE QUALIFICATION OF CONDUIT TO EQUIPMENT CONNECTIONS
WBRD 50-390/86-59 AND 50-391/86-59
SCRs WBN EEB 8663, WBN EEB 8664, AND NCR W-416-P
10 CFR 50.55(e)

FINAL REPORT

Description of Deficiency

TVA previously documented a condition adverse to quality (CAQ) on nonconforming condition report (NCR) W-416-P, which identifies that some Automatic Switch Company (ASCO) solenoid operated valves (SOVs) were installed at WBN in a configuration that had not been seismically qualified. An interim report for NCR W-416-P was submitted to NRC on August 11, 1986. Subsequently, significant condition reports (SCRs) WBN EEB 8663 and WBN EEB 8664 were issued. These SCRs serve to broaden the scope of the CAQ identified by NCR W-416-P. They identify that TVA does not have documentation to ensure that class 1E or seismic category 1(L) electrical equipment/instruments (including the SOVs) in seismic category 1 structures are seismically qualified when the weight of rigidly attached conduit bodies, fittings, or other conduit hardware is added.

Typically, electrical equipment is qualified with flexible conduit routed to it. The conduit design drawings only indicate the conduit size, type, identifier, and general conduit route. The drawings do not detail all of the field installed hardware, nor limiting configurations at the conduit/equipment interface. For example, certain types of equipment/instruments are provided with manufacturer's pigtail cables that require field terminations or splicing to TVA field cable. This usually requires that a conduit body be attached to the equipment housing to accommodate the termination or splice.

The subject CAQ was caused by a failure to fully consider the seismic aspects of adding field installed conduit hardware that could be required between affected equipment/instruments and their associated flexible conduit. Consequently, the configuration of the various field installations was not controlled nor documented, and their seismic qualification is indeterminate.

Safety Implications

Without adequate assurance that affected class 1E and seismic category 1(L) electrical equipment is seismically qualified, TVA must assume that the equipment would fail during a seismic event. The failure of the affected equipment could adversely affect various safety-related systems. Thus, the subject condition could adversely affect the safety of operations of the plant.

Corrective Action

TVA has established guidelines and design limits for acceptable conduit installation configurations for use with the affected equipment. These guidelines and design limits are documented on Quality Information Release (QIR) CEB-87-086. Design output will be issued detailing requirements for the

installation of conduit hardware between the flexible conduit and the equipment/instrumentation. These details will be utilized by the Division of Nuclear Construction to verify the acceptability of present installations, to rework inadequate installations to an acceptable configuration, and to control future installations.

Future designs will be evaluated to ensure that attachments to equipment/instruments do not invalidate the seismic qualification. This evaluation will be performed as part of the interface reviews required by Nuclear Engineering Procedure (NEP) 5.2 and should prevent recurrence of this deficiency.

Corrective actions for units 1 and 2 will be completed prior to fuel load of the respective unit.