TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

FEB 13 1987

WBRD-50-390/87-06
WBRD-50-391/87-06

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Office of Nuclear Reactor Regulation
Washington, D.C. 20555

Attention: Dr. J. Nelson Grace

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - ICE CONDENSER FLOOR DRAIN PIPING INADEQUATELY QUALIFIED - WBRD-50-390/87-06, WBRD-50-391/87-06 - INTERIM REPORT

The subject deficiency was initially reported to NRC-Region II Inspector Steve Elrod on January 16, 1987, in accordance with 10 CFR 50.55(e) as SCRs WBN NEB 8663 and 8664. Enclosed is our interim report. We expect to submit our next report on or about February 26, 1988.

If there are any questions, please get in touch with R. D. Schulz at (615) 365-8527.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Domer

R. Gridley, Director
Nuclear Safety and Licensing

Enclosure

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U.S. Nuclear Regulatory Commission

FEB 13 1987

cc (Enclosure):
Mr. Gary G. Zech, Director
TVA Projects
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

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

U.S. Nuclear Regulatory Commission
Watts Bar Resident Inspector
P.O. Box 700
Spring City, Tennessee 37381

ENCLOSURE
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
ICE CONDENSER FLOOR DRAIN PIPING INADEQUATELY QUALIFIED
WBRD-50-390/87-06, WBRD-50-391/87-06
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INTERIM REPORT

DESCRIPTION OF DEFICIENCY

Ice condenser floor drain piping and check valves do not conform to Watts Bar Nuclear Plant (WBN) Design Criteria WB-DC-40-36, "Classification of Piping, Pumps, Valves and Vessels." According to this design criteria, components required to perform a containment cooling safety function should be ANS Safety Class 2b (TVA Class C). The ice condenser floor drain pipes are necessary to route ice melt drain flow to the inner side of the crane wall to provide cooling after a loss-of-coolant accident (LOCA) or a mainsteam line break (MSLB) inside containment. The floor drain piping is currently designated TVA Class G, nonsafety grade. The floor drain check valves were supplied by Westinghouse. The remaining components of the floor drain piping were purchased by TVA.

The ice condenser floor drains were not considered essential to safety when originally designed, and were built to nonsafety grade standards as specified by Westinghouse, the system's designer. Tests described in WBN FSAR section 6.7.13 demonstrated that containment final pressure following a LOCA was not affected by ice condenser floor drain performance. The ice melt solution was assumed available in the ECCS Pump NPSH analyses in FSAR section 9.2.7.1. However, a design change was implemented which sealed the crane wall to elevation 716' in order to ensure adequate water depth in the RHR containment sump area. Because the crane wall is now sealed, any ice melt solution spilled outside the crane wall is prevented from draining back inside the crane wall to the sump. Therefore, spilled ice solution may not be available for ECCS supply as assumed in the analysis.

Additionally, in November 1985, Westinghouse submitted to NRC on behalf of TVA ice condenser drain test analyses which documented the use of the ice melt drain flow to maintain lower compartment temperatures below design maximum should superheated steam be released following a MSLB inside containment. Consideration was not given to the fact that the ice condenser floor drain piping and check valves required to direct this containment cooling ice melt solution to the inner side of the crane wall were nonnuclear safety grade (TVA Class G) and designated Seismic Category I(L) for position retention only. As such, it has not been analyzed nor qualified to ensure that the piping integrity would be maintained in case of a seismic event.

This piping deficiency was noted during a review of all WBN Class G piping performed as part of the corrective action for NRC Violation No. 390, 391/86-02-03 and SCR WBN EEB 8626 which identified a discrepancy in classification of auxiliary control air piping.

SAFETY IMPLICATION

There are two safety considerations resulting from this deficiency.

1. If the integrity of the ice condenser floor drain pipes were to fail during a LOCA or MSLB, the ice melt solution could be spilled outside the crane wall. The immediate containment cooling effect would be lost since the ice melt water would not fall through the lower containment atmosphere inside the crane wall. In the event of a superheated steam release due to steam generator tube uncovery following a MSLB, environmental qualification temperatures for safety-related equipment in lower containment could be exceeded, and the safe shut down capability of the plant might be reduced. This condition could adversely affect the safety of operations of the plant.

2. ECCS supply water for residual core and containment heat removal would also be reduced if the ice melt solution spilled outside the crane wall and became isolated from the RHR sump. However, this aspect of the deficiency would not necessarily affect adversely the safety of operations of the plant. This is because RHR Sump Model studies indicate that a water depth of 7.8 feet above the containment floor is adequate to prevent vortexing and to allow sufficient RHR pump suction during recirculation. If all the ice melt solution fell outside the crane wall, the depth of water in the sump area would be at least 8.27 feet from Refueling Water Storage Tank and cold leg accumulator injection water alone.

INTERIM PROGRESS

Corrective action is being coordinated with Westinghouse. The options being considered to resolve the drain piping class deficiency are:

1. Remove existing ice condenser drain piping and replace with fully qualified ASME Section III components.

2. Perform stress analysis to ensure the capability of the existing piping to maintain its integrity and perform the required safety functions. Any portion which does not meet ASME Section III Class 3 stress criteria will be replaced. Also designate the piping as TVA Class C with exceptions to ensure that adequate quality assurance measures will be taken for any future maintenance or modification procedures. An exception would be written for WBN Design Criteria WB-DC-40-36 to justify the acceptability of the use of non-ASME piping for the Ice Condenser floor drains. Analysis of the drain piping check valves is being coordinated with Westinghouse, the component supplier.

TVA will provide a final report on this item to NRC on or about February 26, 1988.

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