

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
CONDUIT JUNCTION BOXES INSIDE CONTAINMENT
NCR EEB 79-8
10 CFR 50.55(e)
FINAL REPORT

Description of Condition

With the issuance of NRC IE Circular 79-05, we became concerned with the adequacy of the "sealed" junction boxes to withstand pressure that could occur from a loss-of-coolant accident (LOCA) or a main steamline break (MSB).

TVA purchases conduit boxes of commercial grade quality specified to meet a National Electrical Manufacturers Association (NEMA) type. Watts Bar Nuclear Plant has boxes inside primary containment that are 14 gauge, NEMA 4-type (watertight). These boxes are used as intermediate junction boxes that house terminations for field wiring that interfaces with vendor equipment and components.

TVA has determined that the field installed conduits connected to these intermediate junction boxes have no provision for sealing around the conduit to box interface. However, a room temperature vulcanizing (RTV) sealant is installed around the cables within the conduits where they enter the box or within a nearby conduit. Although this design will restrict moisture incursion within the conduit during normal operation, it will provide a leakage path during LOCA or MSB conditions. Thus, we do not believe these intermediate junction boxes can be adequately sealed without a redesign.

Safety Implications

Had this condition gone uncorrected, safety-related circuits could have been damaged if enough moisture or steam entered the junction box during a LOCA or MSB. Thus, under LOCA or MSB conditions the safe shutdown of the plant could have been adversely affected.

Corrective Action

Terminations housed in junction boxes will be replaced with splices using Raychem WCSF type N heat shrinkable sleeving as the insulation replacement material for the splices. This corrective action applies to Class IE circuits required to achieve and maintain safe shutdown following a LOCA or main steamline break. These circuits will be spliced before fuel loading of the respective unit.

Action Taken to Prevent Recurrence

In the future the use of terminal blocks for Class IE circuits will be avoided, unless they can be housed in conduit boxes that are sealed to withstand the primary containment design pressure.

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