

ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2  
DEFICIENT INSTALLATION OF SEISMIC PIPE HANGER ANCHORS  
NCR CAQR M-31  
FIRST INTERIM REPORT

Description of Deficiency

This deficiency is the failure, in several different cases, to properly install anchor bolts which attach seismic pipe hanger base plates to concrete walls. This deficiency was initially discovered by mechanical engineers providing normal surveillance of the installation of seismic pipe hangers. At the present time, 15 (six as reported in the first interim report, plus nine discovered since the first interim report) instances of improper anchor bolt installation have been found. Systems to be mounted on the hangers with deficiently installed anchors include Safety Injection (SIS), Chemical and Volume Control (CVCS), Component Cooling Water (CCS) and Essential Raw Cooling Water (ERCW).

This deficiency was caused by the lack of concern on the part of some individual craftsmen installing seismic pipe hangers. If the installation of base plate anchor bolts was made difficult, either by interference with reinforcing steel in the concrete or some other reason, the craftsmen used nonapproved methods to install those anchor bolts.

Safety Implications

If this deficiency had remained uncorrected, the hanger plates with deficient anchor bolts may not have been able to resist loads associated with severe seismic events. Piping systems, such as ERCW and CCS, supported by these hangers may have been damaged. Thus, the safe operation of the plant could have been adversely affected.

Corrective Action

Since our first interim report, it has been determined that the deficient anchor bolts were installed by several crews assigned to install the seismic pipe hanger anchors. However, some of these deficient anchor bolts are considered more significant than others. The six instances of improper anchor bolt installation described in the first interim report were more significant than the nine cases discovered since. The crews responsible for the former cases are no longer at the Watts Bar site.

The number of anchor bolts given full inspection during the installation process has been increased to at least one anchor per hanger. This will mean that approximately 15 percent of all anchors installed since discovery of this deficiency will be fully inspected. At the present time,

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approximately 100 anchors that were installed by craftsmen in other crews before the discovery of this deficiency have been inspected. Nine of these were found to have been improperly installed. All hangers installed by the craftsmen responsible for the improper installations described in our first interim report have been inspected.

The original six defective anchors had essentially no load-carrying capability, whereas the nine defective anchors discovered since our first interim report appear to have adequate load-carrying capability. This was verified by pull tests on several of these anchors. These nine defective anchors have all been replaced in spite of the fact that, of those tested, all successfully passed the pull test. For this reason, TVA does not feel that the condition represented by these nine defective anchors is as significant as the condition represented by the six defective anchors originally reported in our first interim report. Details of the inspection program are not complete and will be presented in a subsequent report on this deficiency.

Corrective actions already taken include additional training for second shift personnel involved with the installation of hangers, and increased surveillance by mechanical engineers responsible for the installation activities.

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