

ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
EXPANSION ANCHORS NOT PASSING
QUALIFICATION TESTS
NCR'S 871 AND 898
10 CFR 50.55(e)
FIFTH INTERIM REPORT

Description of Deficiency

Self-drilling expansion shell anchors were installed in the plant before their qualification to TVA General Construction Specification G-32. Initial qualification testing of two anchor installation configurations failed to qualify all sizes of expansion shell anchors that had been installed in the plant. The failure of the initial tests were due to installation of the test anchors in concrete containing 9 percent entrained air which is not to test specifications.

NCR 871 describes problems encountered in the qualification of anchors placed in concrete without cutting through rebar. NCR 898 describes problems encountered in the qualification of anchors placed in concrete with cutting through rebar.

Interim Progress

For the configuration of anchors without cutting rebar, each size of self-drilling anchors being used on the project has been qualified upon retest in accordance with the requirements of TVA General Construction Specification G-32 for anchor qualification. The reports of the qualification retest of this configuration have been reviewed and found to be acceptable.

A testing program was initiated to determine the load carrying capacity of the anchor configuration where self-drilling expansion anchors are installed in concrete through reinforcing steel. Analysis of the results of the test indicated that an excessive proportion of anchors installed into reinforcing steel would have capacities lower than design requirements. A second test was conducted. The results of the second test were essentially the same as the first set of test results.

TVA has determined there are no self-drilling expansion anchors installed in concrete through rebar in mechanical piping system supports. However, some of these anchors are located in electrical cable trays and HVAC support installations. TVA has also determined that these installations are located in three floors of the Auxiliary and Control Buildings. The anchors in question were installed during the period of February 1977 to July 1978. TVA will attempt to locate these anchors by review of installation records. When found, the shell anchors will be replaced. If the anchors cannot be reliably located from the installation records, TVA will randomly select and test samples from all anchors in the affected systems to check the measure of confidence which can be established for design values.

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