ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2
DESIGN DEFICIENCY OF VENDOR SUPPLIED DISCHARGE ACCUMULATOR
NCR CEB 79-24
FINAL REPORT
10 CFR 50.55(e)

Description of Condition

During a preoperational test at Sequoyah unit 1, the bellows in the discharge accumulator downstream of the reciprocating charging pump ruptured. The failure has been attributed to a design deficiency by the vendor, Metal Bellows Corporation. The probable cause of the failure is attributed to abrasion or cocking of the liner due to pounding of the movable bellows terminal or from contamination lodging between the movable bellows terminal and the liner.

Safety Implications

The purpose of the discharge accumulator is to reduce pressure pulsations in the discharge piping. The reciprocating charging pump is not safety related but the downstream piping is safety related. Thus had this condition gone uncorrected, a failure of the bellows would result in excessive vibration which could damage safety-related piping.

Corrective Actions

Metal Bellows Corporation has performed a failure analysis and has outlined the following corrective actions. The nickel plated aluminum will be replaced with stainless steel for the liner and nylon will be added as the bearing material on the movable terminal. There will be no abrasion problem with this design. Tests have been performed to compare abrasion and friction between these materials and the test results were acceptable.

The redesigned bellows and liner will be installed during the normal construction sequence.