

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

September 19, 1983

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WBRD-50-390/82-112  
WBRD-50-391/82-105

U.S. Nuclear Regulatory Commission  
Region II  
Attn: Mr. James P. O'Reilly, Regional Administrator  
101 Marietta Street, NW, Suite 2900  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

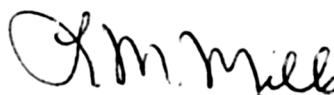
WATTS BAR NUCLEAR PLANT UNITS 1 AND 2 - FINS AND HEADS ON STAR MODEL QE  
SPRINKLER HEADS - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector R. V. Crlenjak on October 26, 1982 in accordance with 10 CFR 50.55(e) as NCRs BLN MEB 8208 and WBN MEB 8204. Interim reports were submitted on November 29, 1982 and March 29, 1983. Enclosed is our final report for NCR WBN MEB 8204. We no longer consider 10 CFR 50.55(e) applicable to this condition.

If you have any questions concerning this matter, please get in touch with R. H. Shell at FTS 858-2688.

Very truly yours,

TENNESSEE VALLEY AUTHORITY



L. M. Mills, Manager  
Nuclear Licensing

Enclosure

cc: Mr. Richard C. DeYoung, Director (Enclosure)  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

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

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ENCLOSURE

WATTS BAR NUCLEAR PLANT UNITS 1 AND 2  
FINS AND HEADS ON STAR MODEL QE SPRINKLER HEADS  
WBN MEB 8204  
WBRD-50-390/82-112, WBRD-50-391/82-105  
10 CFR 50.55(e)  
FINAL REPORT

Description of Deficiency

Star Model QE sprinkler heads have been used in fire suppression systems located in various areas of the plant. Two problems associated with the heat collecting fins on these heads have been brought to TVA's attention by Factory Mutual Research Corporation (FMC). First, the fins can be easily bent preventing the heads from opening during a fire. The upright sprinkler heads are more susceptible to this type of failure than pendant heads. Second, the center strut on the heads corrode at the mounting point for the heat collecting fins. This produces an insulating effect which can change the head's temperature setpoint and operating time.

FMC has also retracted their approval of the Star Model QE sprinkler heads on the basis of these problems and has recommended that they be replaced.

Safety Implications

TVA issued contract 83PL4-931841 to FMC, who conducted the performance test, to determine the actual severity of the problem. TVA furnished photographs to FMC of actual TVA installations to facilitate the simulation of conditions at TVA facilities.

FMC's test report indicates that "The subject sprinklers would have responded promptly to a fire." This conclusion was based on two observations. First, the fins and struts are of similar copper composition, thus, minimizing the possibility of an electrolytic reaction between these components. Secondly, the sprinkler heads functioned properly during the test except when the fins were wrapped around the head's support arms. TVA feels that it is not possible for the fins to be bent into this configuration except through deliberate vandalism. Since no sprinkler heads can be designed against such deliberate acts, head replacement is considered to be unnecessary.

Consequently, since the sprinkler heads are to be used "as is," no nonconforming condition exists, and therefore, no condition adverse to safety exists. Therefore, TVA no longer considers this condition reportable under the provisions of 10 CFR 50.55(e).