

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 MILLS, L.M. Tennessee Valley Authority  
 RECIPIENT NAME RECIPIENT AFFILIATION  
 O'REILLY, J.P. Region 2, Atlanta, Office of the Director

SUBJECT: Final deficiency rept re possible essential raw cooling water steam flash, initially reported 801204. Caused by not considering effect of operating reactor bldg coolers w/clean cooling coils during accident. Bypass will be added.

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 TITLE: Construction Deficiency Report (10CFR50.55E)

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400 Chestnut Street Tower II

May 12, 1981

BLRD-50-438/81-01  
BLRD-50-439/81-01

Mr. James P. O'Reilly, Director  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Region II - Suite 3100  
101 Marietta Street  
Atlanta, Georgia 30303

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - POSSIBLE ERCW STEAM FLASH -  
BLRD-50-438/81-01 AND BLRD-50-439/81-01 - FINAL REPORT

On December 4, 1980, R. W. Wright, NRC-OIE Region II, was informed that the subject nonconformance was determined to be reportable in accordance with 10 CFR 50.55(e) as NCR BLN MEB 8007. This was followed by our first interim report dated January 7, 1981. Enclosed is our final report.

If you have any questions concerning this matter, please get in touch with D. L. Lambert at FTS 857-2581.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

L. M. Mills, Manager  
Nuclear Regulation and Safety

Enclosure

cc: Mr. Victor Stello, Jr., Director (Enclosure) ✓  
Office of Inspection and Enforcement  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

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## ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2  
POSSIBLE ERCW STEAM FLASH  
BLRD-50-438/81-01  
BLRD-50-439/81-01  
FINAL REPORT

### Description of Deficiency

The present Reactor Building Cooler (RBC)/Essential Raw Cooling Water (ERCW) System is required to remove heat at a design rate of approximately  $150 \times 10^6$  Btu/hr. Overdesign of the system results in a capacity to remove approximately  $200 \times 10^6$  Btu/hr. The overdesign of the heat exchange components is included in order to overcome possible head losses because of "dirty" pipes (increased fouling factors). The overdesign could also result in a steam flash which might prohibit flow. This deficiency was the result of incomplete consideration of the effect of operating the RBC's with clean cooling coils during accident conditions.

### Safety Implications

If this deficiency had gone uncorrected, boiling might have occurred in the piping on the discharge side of the RBC's, possibly restricting the ERCW flow rate to the cooling coils and lowering the RBC heat removal rate below the design basis LOCA requirement. If it is then assumed that a single failure incapacitates one Reactor Building spray train, the Reactor Building containment pressure could eventually exceed the predicted maximum containment pressure. Containment pressure higher than the predicted maximum could lead to a breach of containment.

### Corrective Action

A temperature-controlled bypass will be incorporated in the ERCW supply to the RBC's in conjunction with a back pressure control valve in the ERCW discharge piping to alleviate the potential boiling problem. Use of the bypass valve will not interfere with the ability of the RBC's to remove energy from the containment atmosphere. ERCW System Design Criteria (N4-KE-D740) has been amended to require these changes, and Engineering Change Notice No. 1189 has been issued to revise the affected design drawings. The physical work will be completed before ERCW System preoperational testing.

To prevent recurrence of this deficiency in future ERCW Systems, TVA will incorporate analytical procedures to check for this problem in ERCW System Mechanical Design Guide M3.3.

This deficiency is not applicable to other TVA nuclear plants since only Bellefonte takes credit in the safety analysis for the combination of RBC/ERCW System for containment heat removal.