TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
400 Chestnut Street Tower II

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WBRD-50-390/83-37
WBRD-50-391/83-37

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 - CROSS-TRAINED DIESEL GENERATOR HEAT EXCHANGER INLET VALVES - WBRD-50-390/83-37, WBRD-50-391/83-37 - SECOND REVISED FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Linda Watson on May 31, 1983 in accordance with 10 CFR 50.55(e) as NCR W-124-P. Our final report and revised final report were submitted on June 28 and July 26, 1983, respectively.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

D S Kammer

for L. M. Mills, Manager
Nuclear Licensing

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

Records Center
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
CROSS-TRAINED DIESEL GENERATOR HEAT EXCHANGER INLET VALVES
NCR W-124-P
WBRD-50-390/83-37, WBRD-50-391/83-37
10 CFR 50.55(e)
SECOND REVISED FINAL REPORT

## Description of Deficiency

The unit 1 and unit 2 diesel generator heat exchanger inlet isolation valves FCV-67-66 and FCV-67-67 are to open automatically upon a diesel generator start from relay SSIX in accordance with logic drawing 47W611-67-2 R3. FCV-67-65 and FCV-67-68 open instead. Thus on an A train diesel generator start, the B train heat exchanger valves will open instead of the A train valves.

Investigation into the cause has shown that in late 1978 engineering change notice (ECN) 1731 was written to delete the automatic diesel start signal from two of the four subject valves. On completion of ECN 1731 the electrical drawings were correct and compatible. In early 1980 ECN 2259 was written to realign each subject valve with its true header. To accomplish this the TVA valve numbers were switched on the valve schematic (45W760-67-04). The valve schematic shows the auto start and non-auto start configuration on the same presentation. The auto start feature is encircled with a dotted line and flagged to define the applicable valve. That identification was inadvertently switched which caused the auto start feature to be appplied to the incorrect valve. This error was not discovered during checking process due to inadequate knowledge of engineering procedures governing the review and checking of design drawings on the part of the checker.

## Safety Implications

With a "B" train diesel generator inoperable for whatever cause, upon loss of all offsite power, the "A" diesel generator would start and the diesel generator would tie on the shutdown board without automatic initiated flow through its heat exchanger. The shutdown board could be deenergized if the situation were not corrected by operator action. Thus, the loss of a single component could result in the loss of total system function and, therefore, the safety of plant operations would be jeopardized.

## Corrective Action

All logic, schematic, and connection drawings involved with this NCR have been reviewed and checked against the mechanical flow diagrams for compatability. ECNs 3968 (unit 1) and 3969 (unit 2) were issued to revise applicable drawings to apply the diesel start signal to the correct valve. Field change request (FCR) FS-151 was initiated to allow immediate correction by the field. All corrections have been completed.

TVA believes that the current design review process is adequate to identify deficiencies of this type. As stated in TVA's Division of Engineering Design (EN DES) Engineering Procedure (EP) 4.25, "Design Review and Interface Coordination of Detailed Construction and Procurement Drawings," section 3.0, "Policy,":

> "The verification of system or structural acceptability is a continuous process. It begins as the first design-related document is being prepared and continues through the preparation of design criteria, the development of the detailed design, and the performance of qualification tests."

EP 4.25 defines the responsibilities of EN DES personnel who are involved in the process of performing those aspects of design verification, by the design review process, which are applicable to EN DES nuclear power plant detailed construction and procurement drawings. The procedure was revised on January 31, 1983, to require independent review/checking of drawings to ensure the acceptability of a design. The independent reviewer must be a person who does not have direct technical or administrative supervision over the designer, for the work being reviewed. This independent reviewer must not have (1) specified a singular design approach, (2) ruled out certain design considerations, or (3) established the design inputs for the particular design aspect being verified. Normal implementation of these requirements in the review process will ensure that drawings and other design documents more accurately reflect the intent of design criteria.

Also, to prevent recurrence, an EN DES EP training and utilization program was initiated by the Manager of EN DES on February 26, 1982 (reference M. N. Sprouse's memorandum to Those listed dated February 26, 1982). This ongoing program will provide adequate EP training at the section level which will prevent the recurrence of errors related to inadequate knowledge of procedures.