TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
5N 157B Lookout Place

January 29, 1986

BLRD-50-438/85-23
BLRD-50-439/85-21

U.S. Nuclear Regulatory Commission
Region II
Attention: Dr. J. Nelson Grace, Regional Administrator
101 Marietta Street, NW. Suite 2900
Atlanta, Georgia 30323

Dear Dr. Grace:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - SOLID STATE CONTROL SYSTEM CABINET WIRING WAS DAMAGED DUE TO TARGET ROCK SOLENOID WIRING AND DRAWING ERRORS - BLRD-50-438/85-23, BLRD-50-439/85-21 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Al Ignatonis on August 1, 1985 in accordance with 10 CFR 50.55(e) as NCR 4430. This was followed by our first interim report dated September 3, 1985. Enclosed is our final report. We consider 10 CFR Part 21 applicable to this deficiency.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. L. Gridley
Manager of Licensing

Enclosure
cc: Mr. James Taylor, 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
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ENCLOSURE

BELLEFONTE NUCLEAR PLANTS UNITS 1 AND 2
SOLID STATE CONTROL SYSTEM CABINET WIRING WAS DAMAGED
DUE TO TARGET ROCK SOLENOID WIRING AND DRAWING ERRORS
BLRD-50-438/85-23, BLRD-50-439/85-21
NCR 4430
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

Internal wiring in solid state control system (SSCS) cabinet 1IX-IR-017A was damaged when a 120V ac potential was applied to at least two different field input points of the cabinet. The SSCS was designed for a 48V dc input. The inputs involved were from Target Rock Incorporated (East Farmington, New York) solenoid valves that are controlled by the SSCS. An internal jumper in the Target Rock valves supplied one side of the 120V ac signal (used to energize the solenoid) to the valve position limit switch terminals. On some valves, the 120V ac signal is used to energize local indicating lamps that require the use of an internal jumper; but when the position switches are connected as SSCS inputs, the internal jumper must be omitted.

The root causes of this deficiency were (1) Target Rock supplied a solenoid valve with an internal jumper that was not depicted on their drawings, and (2) TVA failed to specify the removal of one internal jumper that was shown on Target Rock's valve drawings (documentation error).

This deficiency is generic to unit 2 of BLN. Similar wiring errors existed for train B solenoid valves and other Target Rock valves controlled by other train A SSCS cabinets. This condition is not applicable to other TVA plants.

Safety Implications

The damaged SSCS circuitry controls a portion of the reactor coolant vent and drain system (NK). If the identified deficiency was to remain uncorrected, any SSCS-controlled NK component or combination of components could be rendered inoperative, or operated when it should not be operated. This could possibly lead to the inadvertent opening of a NK system drain valve or vent valve and a loss of coolant accident (LOCA). This condition could have adversely affected the safe operation of the plant.

Corrective Action

The Target Rock drawings and TVA schematics for all Target Rock solenoid valves controlled by SSCS have been reviewed. The one documentation discrepancy found, system CA (auxiliary feedwater), has already been corrected by Field Change Request (FCR) E-4110, and the required drawing has been issued. This completes all required documentation changes.

The condition of solenoid valves having jumpers between the coil and limit switches that are not shown on the drawing requires physical inspection of all Target Rock SSCS controlled solenoid valves (whether installed or still in storage) and removal of those jumpers when found.

The remainder of the SSCS will be inspected, and any damage discovered will be repaired.

The completion of corrective action is scheduled to be complete six months before fuel load of the applicable units.

To prevent recurrence, the following actions will be taken:

1. The vendor, Target Rock Incorporated, will be informed of the non-conforming condition and will be formally requested to initiate procedures to ensure that this condition does not recur. This request will be forwarded to Target Rock by April 1, 1986. In addition, TVA's source inspectors have been instructed to more closely compare Target Rock's provided equipment to approved drawings.

2. Only one documentation problem was found, system CA, which has been corrected. This is considered an isolated occurrence, and no further action to prevent recurrence is required.