

TENNESSEE VALLEY AUTHORITY

CHATTANOOGA, TENNESSEE 37401  
400 Chestnut Street Tower II

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May 15, 1984

BLRD-50-438/84-16

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:

BELLEFONTE NUCLEAR PLANT UNIT 1 - SETTING OF SHUTDOWN VOLTAGE FOR VITAL  
INVERTERS BY INTERNATIONAL POWER MACHINES - BLRD-50-438/84-16 - FINAL  
REPORT

The subject deficiency was initially reported to NRC-OIE Inspector  
Ross Butcher on February 9, 1984 in accordance with 10 CFR 50.55(e) as  
NCR 2862. This was followed by our interim report dated March 1, 1984.  
Enclosed is our final report. We consider 10 CFR Part 21 applicable to  
this deficiency.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

*DS Kammer*

*for* 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

## BELLEFONTE NUCLEAR PLANT UNIT 1 SETTING OF SHUTDOWN VOLTAGE FOR VITAL INVERTER BY INTERNATIONAL POWER MACHINES BLRD-50-438/84-16 10 CFR 50.55(e) NCR 2862 FINAL REPORT

### Description of Deficiency

During the performance of preoperational test PT-EJ-01 entitled "120V Class 1E AC Vital Power Distribution System," the channel F 120V ac vital inverter (EJ-EOPS-62E) tripped when 480V ac input power was removed from the inverter to simulate a loss of power condition. The detector control assembly low dc shutdown voltage of the inverter had been set at 130V which prevented the auctioneering unit from transferring to the dc backup by shutting the inverter down. It is believed that the correct inverter setpoint should be 103V. The apparent root cause of the discrepancy can be attributed to a disagreement in the International Power Machines (IPM), Mesquite, Texas instruction manual where page 4.43 of manual 6348-007L-6112-XXDK-0462 lists the shutdown voltage to be 130V dc, while table III-2 on page 3.b lists 103V dc for inverter shutdown.

### Safety Implications

Since the channel F 120V ac vital inverters are tripping due to the detector control assembly low dc shutdown voltage of the inverter being set at 130V instead of 103V, the vital batteries which power all class 1E electrical equipment would not be available during a loss of all offsite power. Thus, the safe operation of the plant would be adversely affected.

### Corrective Action

IPM has stated in a February 28, 1984, letter that the root cause of the deficiency was a typographical error on pages 4.43, section 4.4.5.3, step (e) on manual Nos. 6348-007L-6112-XXDK-0462 and 6348-040L-6112-XXDK-0461. The correct set point for the low dc shutdown should be 103V dc rather than the 130V dc as shown in the manual. The vital inverter has been reset to respond to the correct voltage. IPM has performed a thorough review of the remaining procedures which has revealed another typographical error on page 4.45, section 4.4.5.5, step (f). The procedure states that the voltage to be used is in section 4.5.4; however, the actual voltage value is on page 4.41, which is section 4.4.4. IPM also verifies that these discrepancies are the only known errors in the procedures and to the best of their knowledge the remaining procedures are correct and valid. Pages 4.43 and 4.45 of the above two manuals have been revised and issued to TVA's Division of Construction for use. These two manuals are also applicable to unit 2 at Bellefonte Nuclear Plant. There are no other contracts for this equipment at TVA nuclear plants.