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SUBJECT: Final Deficiency Rept BLRD-50-438/58-10 & BLRD-50-439/58-10 re cracked wells on TDI deisel generator turbochargers. Replacemrnt turbocharger casing obtained.

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APR 0 1 1994

BLRD-50-438/85-10
BLRD-50-439/85-10

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Gentlemen:

In the Matter of the Application of)
Tennessee Valley Authority)

Docket Nos. 50-438
50-439

BELLEFONTE NUCLEAR PLANT (BLN) - CRACKED WELDS ON TDI DIESEL GENERATOR TURBOCHARGERS - BLRD-50-438/85-10 AND BLRD 50-439/85-10 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Al Ignatonis on March 18, 1985 in accordance with 10 CFR 50.55(e) as NCR 4028. The first interim report was submitted on April 12, 1985, and a second interim report was submitted on July 10, 1985. Enclosure 1 provides the final report for the subject deficiency. Enclosure 2 identifies the commitment being made as a result of this report.

Should there be any questions regarding this information, please telephone G. M. Morrison, BLN Acting Site Licensing Manager, at (205) 574-8057.

Fred McCluskey

H. Fred McCluskey

Enclosures
cc: see page 2

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ENCLOSURE 1

BELLEFONTE NUCLEAR PLANT (BLN) - UNITS 1 AND 2
CRACKED WELDS ON TDI DIESEL GENERATOR TURBOCHARGERS
BLRD-50-438/85-10 AND BLRD-439/85-10
SCAR BLN 4028 (NCR 4028)

FINAL REPORT

Description of Deficiency

Upon the recommendation of the Transamerica Delaval, Inc. (TDI) Diesel Generator Owners Group, TVA implemented an extensive inspection and maintenance program that revealed cracks in components that would not ordinarily require inspection. The four turbochargers installed on standby diesel generators 1A and 1B had cracks in the four 3/4-inch long tack welds which attached the core plug to the turbine inlet nose piece which is a part of the turbocharger casing. The turbocharger vendor used cast 304 stainless steel for the core plugs and cast HF 20 stainless steel for the casing. The core plugs were screwed into the casing and spot welded to prevent the plugs from backing out. The vendor states that the rapid heatup and cooldown of the easing and core plug during fast starts induced an excessive differential expansion that caused these welds to fail.

Safety Implications

Had the weld cracks gone unnoticed and the welds failed, the core plugs could have backed out causing a pressure loss in the turbocharger. This would reduce the ability of the diesel generator to provide rated power to essential safety-related components, thereby impacting plant safety.

Corrective Actions

A repair procedure was implemented by TVA's Division of Nuclear Construction (formerly the Office of Construction) for the turbochargers on the Unit 1 diesel generators. This was the recommended method or repair issued by Elliot Support Services and TVA's Division of Nuclear Engineering. The repair procedure entailed the removal of the defective tack welds by grinding, liquid penetrant testing of the weld removal area, and installation of a set screw between the core plug and turbine inlet nose piece. The set screw was staked to prevent the plug from backing out. This repair completed all required corrective action for the deficiency on three of the turbochargers. During liquid penetrant testing of the fourth turbocharger, cracks were found to extend into the turbocharger casing. TVA returned this turbocharger to Elliot Support Services for inspection. Destructive testing of the turbocharger casing showed the cracks to be a minor indication, judged by Elliot Support

Services to be superficial. A replacement turbocharger casing was obtained, thoroughly inspected by liquid penetrant examination, checked to verify that the set screws were staked, and installed on the diesel generator.

The unit 2 diesel generator turbochargers will undergo a similar inspection and any needed corrective action will be completed by one year prior to fuel loading of Unit 2.

ENCLOSURE 2

BELLEFONTE NUCLEAR PLANT - UNITS 1 AND 2
CRACKED WELDS ON TDI DIESEL GENERATOR TURBOCHARGERS
BLRD-50-438/85-10 AND BLRD-50-439/85-10
SCAR BLN 4028 (NCR 4028)

COMMITMENT

The unit 2 diesel generator turbochargers will undergo an inspection for tack weld cracks and any needed corrective action will be completed by one year prior to fuel loading of Unit 2.