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

November 29, 1984

BLRD-50-438/82-35
BLRD-50-439/82-32

U.S. Nuclear Regulatory Commission
Region II
Attn: Mr. James P. O'Reilly, Regional Administrator
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Dear Mr. O'Reilly:

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2 - OPERATIONAL DEFECTS IN HIGH-PRESSURE INJECTION NOZZLES AND THERMAL SLEEVES - BLRD-50-438/82-35, BLRD-50-439/82-32 - SEVENTH INTERIM REPORT

The subject deficiency was initially reported to NRC-OIE Inspector Don Quick on April 29, 1982 in accordance with 10 CFR 50.55(e) as NCR BLN NEB 8206. This was followed by our interim reports dated June 1 and July 28, 1982; March 1, April 11, and November 1, 1983; and May 16, 1984. Enclosed is our seventh interim report. We expect to submit our next report on or about June 3, 1985. We consider 10 CFR Part 21 applicable to this deficiency.

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

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Domer

for J. W. Hufham, Manager
Licensing and Regulations

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

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ENCLOSURE

BELLEFONTE NUCLEAR PLANT UNITS 1 AND 2
OPERATIONAL DEFECTS IN HIGH-PRESSURE INJECTION NOZZLES AND THERMAL SLEEVES
NCR BLN NEB 8206
BLRD-50-438/82-35, BLRD-50-439/82-32
10 CFR 50.55(e)
SEVENTH INTERIM REPORT

Description of Deficiency

Recent inspections at several B&W operating plants revealed defects in the makeup/High Pressure Injection (HPI) nozzles and their thermal sleeves and in the makeup piping upstream of these nozzles. The nozzles are located on each reactor coolant cold leg between the reactor coolant pump and reactor vessel. The nozzles and sleeves are supplied by B&W under the Nuclear Steam Supply System (NSSS) contract. The defects include:

- through-wall circumferential crack at the welded joint between the nozzle safe end and the first check valve upstream of the safe end
- loose thermal sleeves
- missing or worn thermal sleeve retaining buttons

The loose thermal sleeves and missing or worn retaining buttons remove the mechanical restraints which were designed to avoid exposing the nozzle and pipe to a thermal shock condition by preventing sleeve movement in the upstream direction.

Although the degraded components at the affected plants were the same, the resulting damage was not identical. Accordingly, B&W is investigating this concern to determine its cause and to determine if it has generic implications for other B&W plants, including Bellefonte. The Bellefonte nozzle configuration is similar to that at the affected plants except that it is a one-piece construction while the nozzles for the affected plants have a welded safe end. B&W has notified TVA of no similar potential deficiencies in the past for other Bellefonte NSSS nozzles. There are no implications for other TVA plants.

Interim Progress

Interim report No. 6 outlined TVA's remaining concern about the adequacy of the sleeve rerolling for the life of the plant. Specifically, TVA requested B&W to provide a quantitative evaluation supporting maintenance of the rolled interface (thermal sleeve/nozzle interface) stress field for the design life thermal transients.

In response to this concern, B&W indicated that the rolled interface design will be verified through periodic inspection of operating units before the time BLN units go into service. TVA has questioned how a near-term inspection program for the HPI nozzle thermal sleeves will verify the 40-year design life.