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



January 25, 1984

BLRD-50-438/83-19
BLRD-50-439/83-15

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 UNITS 1 AND 2 - PRESSURE DROP ACROSS VELAN 2-1/2-INCH STOP/CHECK VALVE - BLRD-50-438/83-19, BLRD-50-439/83-15 - FINAL REPORT

The subject deficiency was initially reported to NRC-OIE Inspector A. K. Hardin on February 2, 1983 in accordance with 10 CFR 50.55(e) as NCR 2212. This was followed by our interim reports dated March 3 and September 20, 1983. Enclosed is our final report. 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

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 UNITS 1 AND 2
PRESSURE DROP ACROSS VELAN 2-1/2-INCH STOP/CHECK VALVE
NCR 2212
BLRD-50-438/83-19, BLRD-50-439/83-15
10 CFR 50.55(e)
FINAL REPORT

Description of Deficiency

During flushing operations of the makeup and purification (MU/P) and high pressure injection (HPI) systems, seven of nine 2-1/2-inch 1500 lb. Velan stop/check valves intermittently failed to fully open and/or have shown indication of excessive pressure drop.

Velan has determined by testing that the cause of the excessive pressure drop and the intermittent failure of the valves to fully open can be attributed to the insufficient area of holes in the valve disc which connects the downstream side of the valve with the area above the disc. The root cause of this deficiency can be attributed to a design error committed on the disc drawing which was intended to reduce machining time. The full effect of this reduced equalizing area was not realized until the testing was performed following the incident at BLN.

Safety Implications

Failures of these valves could cause HPI, which is required for postaccident cooling, to be lost to the reactor coolant system (RCS), or the RCS pressure boundary could be violated during normal operation if there is a pipe break upstream of the subject valves. Thus, the safe operation and shutdown (postaccident) of the plant could be adversely affected.

Corrective Action

Velan has reviewed all stop/check and piston check discs and has determined that the discs must be modified by drilling four holes in the sides of the discs. The existing valve discs for unit 1 are to be replaced with Velan-supplied newly modified valve discs by March 26, 1984. All unit 2 stop/check valve discs will be modified by June 28, 1985.

To prevent recurrence of this deficiency, Velan is revising disc drawings to incorporate design changes, where necessary, to assure that proper clearances and adequate pressure equalization passages are provided for proper operation.