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 Document Control Branch (Document Control Desk)

SUBJECT: Interim deficiency rept re min edge distance between lug attachments & welds on piping. Initially reported on 870420. Acceptable min distance added to specs. Installed lugs to be reviewed for spacing. Final rept by 1 yr before fuel load.

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 TITLE: 50.55(e) Construction Deficiency Report

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MAY 22 1987

BLRD-50-438/87-02
BLRD-50-439/87-01

10 CFR 50.55(e)

U.S. Nuclear Regulatory Commission
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Gentlemen:

BELLEFONTE NUCLEAR PLANT (BLN) UNITS 1 AND 2 - MINIMUM EDGE DISTANCE BETWEEN LUG ATTACHMENTS AND WELDS ON PIPING - BLRD-50-438/87-02, BLRD-50-439/87-01 - INTERIM REPORT

The subject deficiency was initially reported to NRC-Region II Inspector Art Johnson on April 20, 1987, in accordance with 10 CFR 50.55(e) as SCR BLN CEB 8702. Enclosed is our interim report. We expect to submit our final report on or about one year before fuel load. We do not consider 10 CFR 21 to be applicable to SCR BLN CEB 8702.

If there are any questions, please get in touch with D. L. Terrill at (205) 574-8820.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

J. A. Danner
R. L. Gridley, Director
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Enclosure
cc: see page 2

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U.S. Nuclear Regulatory Commission

MAY 22 1987

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ENCLOSURE

BELLEVILLE NUCLEAR PLANT UNITS 1 AND 2 MINIMUM EDGE DISTANCE BETWEEN LUG ATTACHMENTS AND WELDS ON PIPING

BLRD-50-438/87-02, BLRD-50-439/87-01

SCR BLN CEB 8702

10 CFR 50.55(e)

INTERIM REPORT

Description of Deficiency

In installation of structural lug attachments to pipes, the minimum edge distance between the lug and pipe welds or other discontinuities may have been violated. The minimum edge distance between a structural lug attachment to a pipe and a pipe weld or other discontinuity, such as an elbow, is $\sqrt{r_m t}$ where r_m is the mean pipe radius and t is the pipe wall thickness. The qualification of lugs is based on the equations contained in either Welding Research Council (WRC) Bulletin 198, Appendix A, or ASME Code Class N-318-1. In either case the validity of the results obtained from the use of the equations depends on keeping the lug at a minimum distance of $\sqrt{r_m t}$ from the nearest weld or other discontinuity. The fact that lugs may have been located closer than this minimum value to the nearest discontinuity would invalidate the use of these qualifying equations. The cause of this deficiency is the fact that neither General Construction Specification G-43 nor Construction Specification N4C-913 contains a section implementing the spacing requirement of WRC or ASME. In addition, there were no design or construction installation notes which implemented this requirement.

The condition described in this SCR could exist in any Category I or I(L) piping system that utilizes lug attachments welded to a pipe. This condition was identified as a result of the generic review of the Watts Bar Nuclear Plant condition documented by SCR WBN CEB 8692.

Safety Implications

The affected piping could have areas of localized stress that would exceed the allowable stress which would result in a decreased margin of safety in the pipe design; however, the pipe supporting structure would not be affected. This condition could also result in a loss of pressure boundary at this localized area if ultimate stresses are exceeded. Such a failure or loss of pressure boundary in a safety-related piping system could result in a condition that would adversely affect the safe operation of the plant.

Interim Progress

Drawing 3GA0059-00-27, R3, will be issued by January 1, 1988, to incorporate Field Change Request H-6118 which contains the following note: "Effective March 1, 1987, a minimum distance of $\sqrt{r_m t}$, where r_m is the mean pipe radius and t is the nominal pipe wall thickness, shall be maintained between any lug edge and any discontinuities or welds on piping." In addition, the

Interim Progress (Continued)

above spacing requirement will be added to Construction Specification N4C-913, R5, which will be issued by January 1, 1989. An analytical review of lugs that were not installed using the specified spacing ($\sqrt{r_m t}$) will be performed to determine if sufficient conservatism exists. If sufficient conservatism does not exist, a review will be performed to identify all lugs not meeting the spacing requirement which were installed before March 1, 1987. TVA will evaluate each discrepant lug on a case-by-case basis and assess the adequacy of the piping. This assessment will determine if the lug will be removed, relocated, redesigned, or approved as-is. A final report will be provided one year before fuel loading.