ENCLOSURE
HARTSVILLE NUCLEAR PLANTS A AND B AND PHIPPS BEND NUCLEAR PLANT
INCORRECT ROOT FACE ON SKEWED CADWELD SLEEVES
(NCR'S HTN CEB 80-04 AND PBN CEB 80-04)
(FORMERLY NCR CEB 80-11)
10CFR50.55(e)
REPORT NO. 2 (FINAL)

On March 14, 1980, TVA informed NRC-OIE Region II Inspector, R. W. Wright, of a potentially reportable condition under 10CFR50.55(e) regarding the adequacy of welds on skewed cadweld sleeves due to the incorrect root face.

Description of Deficiency

Root face on No. 18 skewed cadweld sleeves, manufactured by ERICO, Cleveland, Ohio, varies from 3/32 inch to 1/2 inch. Since the design was based on an assumed 1/16-inch root face, the proper weld penetration was not achieved. The cadweld sleeves in question were welded to drywell-framed embedments and main steam tunnel embedments at an angle of 45 degrees. These embedments were fabricated by Atlas Machine and Iron Works, Gainesville, Virginia. The ERICO drawing shows a 1/16-inch root face.

Safety Implications

The cadweld sleeves have been approved for use by GE/CFBraun (see corrective action). It has been shown that the welds on cadweld sleeves with a 1/2" (worst case) root face are adequate. Therefore, this condition could not have adversely affected plant safety.

Corrective Action

The cadweld sleeves to be used in future fabrications have been delivered to Atlas. Atlas fabricated some representative structures using the same welding processes used for structures already fabricated and sleeves with the worst case root face (1/2 inch). A destructive pull test was performed on nine sample structures, three tests for each of the three welding procedures used. The structures pulled were made of two counterposed skewed cadweld sleeves, both welded to an A572 V55, 1-1/2-inch plate (see attachment).

GE/CFBraun reviewed the test results (see attachment) and the weld geometry calculations. Based on this evaluation, they determined that the cadwelds are acceptable to use as-is. The CFBraun design drawings will be revised to reflect a maximum root face of 1/2-inch.

ATTACHMENT

TEST RESULTS FOR CADWELD QUALIFICATION

| Test Plate No. | #18 Rebar Bar Stress (KSI) |
|---|---|
| 1 | 95 |
| 2 | 93.75 |
| 3 | 95.5 |
| 4 | 103.1 |
| 5 | 94.5 |
| 6 | 107.75 |
| 7 | 110.6 |
| 8 | 110 |
| 9 | 109 |

No welds failed during this test. All failures were in the bar, except that test number 4 did not go to actual failure due to overheating of the test machine. The minimum bar stress to be met is 75 KSI. Three tests were conducted for each of the three welding procedures used.