Washington Public Power Supply System
Box 1223 Elma, Washington 98541 (206) 482-4428

Docket No. 50-508

March 17, 1983
G03-83-231

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: POTENTIAL 10CFR50.55(e) DEFICIENCY
STRUCTURAL WELDS - FAILURE TO MEET
AWS MINIMUM WELD SIZE REQUIREMENTS
(D/N #47)

Attached is a copy of the final report provided to Region V concerning a potential 10CFR50.55(e) deficiency associated with the subject condition.

Should you have any questions or desire further information, please contact me directly.

R. S. Leddick (760)
Program Director, WNP-3

DRC:nj

Attachment

cc: J. Adams - NESCO, wo/a
D. Smithpeter - BPA, wo/a
Ebasco - New York, wo/a
WNP-3 Files - Richland, wo/a
Records Center - INPO, w/a

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Washington Public Power Supply System
Box 1223 Elma, Washington 98541 (206) 482-4428

Docket No. 50-508

March 14, 1983
G03-83-203

U. S. Nuclear Regulatory Commission, Region V
Office of Inspection and Enforcement
1450 Maria Lane, Suite 260
Walnut Creek, California 94596-5368

Attention: Mr. D. M. Sternberg, Chief
Reactor Projects Branch No. 1

Subject: POTENTIAL 10CFR50.55(e) DEFICIENCY
STRUCTURAL WELDS - FAILURE TO MEET
AWS MINIMUM WELD SIZE REQUIREMENTS
(D/N #47)

On November 24, 1982 the Supply System notified your office of a potential 10CFR50.55(e) deficiency concerning the subject condition. Attached is a Supply System approved final report that provides a description of the problem, corrective actions taken and analysis of the safety implications. Based on the satisfactory completion of qualification testing, the subject condition is not reportable in accordance with 10CFR50.55(e).

Should you have any questions or desire further information, please contact me directly.

R. S. Leddick (760)
Program Director, WNP-3

DRC:nj

Attachments

cc: J. Adams - NESCO
D. Smithpeter - BPA
Ebasco - New York
WNP-3 Files - Richland

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WASHINGTON NUCLEAR PROJECT NO. 3
(DOCKET NO. 50-508)

POTENTIAL 10CFR50.55(e) DEFICIENCY
FINAL REPORT

STRUCTURAL WELDS - FAILURE TO MEET AWS
MINIMUM WELD SIZE REQUIREMENTS (D/N #47)

Description of Deficiency

J. A. Jones (installation contractor) welded fifty (50) clip-to-embed connections in accordance with four (4) CB&I drawings that specified a 1/4" fillet weld. CB&I subsequently issued revisions to each of the drawings revising the weld size to 5/16". It should be noted that this change was made to comply with the requirements of AWS D1.1, Table 2.7, and was not made because of weld size relative to load considerations.

In addition to the undersized weld problem discussed above, J. A. Jones employed multi-pass welding to 1½" thick embed plates, contrary to the requirements of AWS D1.1, Table 2.7. This situation affected nine (9) additional connections.

Note: The provisions of Table 2.7 of AWS D1.1 are intended to ensure sufficient heat input to reduce the possibility of cracking in either the heat-affected zone or weld metal.

Corrective Actions Taken

The problem was specifically identified with the 265 Contract (J. A. Jones). However, due to the nature of the problem (i.e., detailer and contractor unfamiliarity with the requirements of AWS D1.1, Table 2.7), the potential existed that other site contractors may have encountered similar situations. Since it would have been impractical to inspect every small fillet weld on site to assure that the requirements of Table 2.7 had been met, it was decided to proceed with corrective actions as if all contractors had experienced the problem. Therefore, each contractor (except Contract 225)* was directed to qualify their fillet weld procedures in accordance with the requirements of AWS D1.1 and the following more severe restrictions:

a) The coupon plate thickness was 3/4" minimum.

b) The maximum temperature of the coupon immediately prior to welding was 50°F.

c) A single pass 3/16" fillet was deposited on one side of the coupon. After cooling, a 3 pass 5/16" fillet was deposited on the opposite side or on another coupon.

*Contract 225 was not required to perform the qualification testing because they heat all joints to at least 100°F minimum.

Corrective Actions Taken (Continued)

d) The test coupon was restrained to prevent movement during welding.

e) The coupons were welded using the lowest amperage that would produce a visually acceptable weld.

The purpose of the above restrictions was to maximize the cooling rate and maximize restraint in order to provide a situation most likely to cause cracking.

To assure all field weld conditions were covered, the qualification testing also included a requirement for test coupons to be made for each electrode diameter and welding position used in production.

All of the specimens tested were acceptable per the acceptance criteria of AWS D1.1, Section 5. Of particular significance, was the fact that no cracks were found in the macro-etched samples.

Analysis of Safety Implications

Based on each of the contractor's test results, it has been concluded that fillet welding in accordance with the contractor's respective welding procedures will not produce the cracking which the provisions of AWS D1.1, Table 2.7, are intended to preclude. Since qualification testing has been successfully performed, the welds meet the requirements of AWS D1.1. Accordingly, the undersized welds are not reportable per the criteria of 10CFR50.55(e).