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United States Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30302

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Reference: Vogtle Electric Generating Plant-Units 1 and 2, 50-424, 50-425;
Pullman Construction Industries - Duct Support Shop Welds;
Also GN-405 dated August 24, 1984.

Attention: Mr. James P. O'Reilly

On June 14, 1984, Mr. R. E. Folker of Georgia Power Company notified Mr. V. Panciera of the USNRC of a potentially reportable deficiency concerning partial penetration welds in some HVAC duct supports where full penetration welds were required by design. In our letter GN-408 dated August 24, 1984, Georgia Power Company indicated that the NRC would be notified of the results of our evaluation of this concern by September 21, 1984. Georgia Power Company has concluded its evaluation and determined that a reportable condition could exist based on the reporting criteria of Parts 10 CFR 50.55(e) and 10 CFR 21.

Based upon NRC guidance in NUREG-0302, Revision 1, and other NRC correspondence regarding duplicate reporting of significant deficiencies and substantial safety hazards, Georgia Power Company is reporting this event as a significant deficiency pursuant to the requirements of Part 10 CFR 50.55(e). A summary of our evaluation is attached for your information.

This letter contains no proprietary information and may be placed in the NRC's Public Document Room upon receipt.

Yours truly,

D. O. Foster
D. O. Foster *um*

REF/DOF/tdm

xc: U. S. Nuclear Regulatory Commission, Document Control Desk

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EVALUATION FOR A SUBSTANTIAL SAFETY HAZARD EVALUATION FOR A SIGNIFICANT DEFICIENCY

Duct Support Shop Welds

Initial Report:

On June 14, 1984, Mr. R. E. Folker of Georgia Power Company reported a potentially significant deficiency to Mr. V. Panciera of the USNRC concerning the lack of full penetration welds on some HVAC duct supports. In a subsequent letter, Georgia Power Company indicated that the USNRC would be informed of the results of the evaluation of this subject by September 21, 1984. The duct supports were fabricated by Pullman Construction Industries (PCI).

Background Information:

The basic component is a rigid frame used for the support of HVAC ducts or dampers. The frame consists of steel tube sections with material joints at the corners that are joined with full or partial penetration welds. Failure of these supports could lead to the subsequent failure of portions of the safety-related HVAC system.

This condition was discovered during a Pullman/Kenith-Fortson (P/K-F) modification of a HVAC duct support. The P/K-F construction personnel discovered that only partial penetration welds had been made for a joint specified on the design drawing as a full penetration weld. The tube joint identified was a single-bevel, full penetration weld, with the intersection centerline of the tube steel piece at 135°. Similar discrepancies were found in support welds with intersection centerlines at 90°.

Engineering Evaluation:

In order to determine the extent of the welding discrepancies, seven supports with the mitered tube steel joints were selected from the storage yard. Ultrasonic tests were performed to determine if the referenced welds were full penetration. These tests could indicate the existence of a full penetration weld; however, all seven supports had welds that exhibited areas of incomplete penetration. One of the seven supports was subsequently cross-sectioned and exhibited approximately 50% penetration. It was concluded that there was not a reliable method of nondestructively determining the effective throat of the weld in question. The eleven installed supports will be removed and replaced. In addition, the supports which had not been installed will not be utilized.

In order to evaluate the safety implications of the lack of full weld penetration, the engineering drawings were reviewed and a list of fabricated HVAC supports with similar joint configurations was compiled (see

Table 1). It was determined that a limited number (11) of supports were installed with the questionable weld penetration. It was also determined that 30 supports were to use this joint configuration.

Since the destructive examinations indicated that the amount of partial penetration could not be reliably determined, a conservative assumption was made that the partial penetration welds would fail during an assumed operating basis earthquake or other event. This assumed failure mode could have resulted in the control room emergency ventilation air conditioning system and other portions of this essential HVAC system not being available to perform their safety-related function as discussed in the Final Safety Analysis Report.

Review of QA Program:

A full-scope audit of the Pullman Construction Industries quality assurance program was conducted by Bechtel Power Corporation's Procurement Supplier Quality Department on August 22-24, 1984. The audit concluded that a significant quality program breakdown had not occurred.

Conclusion:

If these weld discrepancies had not been corrected, the potential failure of safety-related HVAC systems and components requiring the operation of these systems could have occurred and could have adversely affected the future safe operation of the plant. It has also been concluded that these discrepancies in the construction of a structure and system will require extensive redesign and repair to meet the criteria and bases stated in the safety analysis report.

These discrepancies could also represent a substantial safety hazard due to the possibility of major degradation of essential safety-related equipment such that a required safety function could not be performed. Based upon NRC guidance in NUREG-0302, Revision 1 and other correspondence, Georgia Power Company is reporting this condition under the reporting requirements of Part 10 CFR 50.55(e).

Corrective Action:

- (1) The PCI shop procedure will be revised to assure proper fit-up and application of backup bars.
- (2) A Bechtel Power Corporation welding engineer and a supplier quality representative will assist in the preparation of a physical standard for acceptance. The physical standard will be used to assure compliance with the design drawings and purchase specification requirements. Fit-up and welding of the physical standard will be checked by the sectioning of the model to verify full weld penetration.

- (3) Three supports were refabricated on site to facilitate the turnover of the battery room from Construction to Operations. These supports will be examined using NDE methods approved by AWS to assure full penetration welds were obtained.

TABLE 1

HVAC SUPPORTS WITH SIMILAR JOINT CONFIGURATIONS AND AFFECTED SYSTEMS

Support No.	System No.	Title	Installed
DS-A112103-240	1531	Control Building Control Room HVAC	No
DS-211B116-183	1533	Control Building Levels A, B, 1 & 2 Normal HVAC	No
DS-2111107-65	1531	Control Building Control Room HVAC	No
DS-211B116-189	1533	Control Building Levels A, B, 1 & 2 Normal HVAC	No
DS-A112104-194	1537	Control Building Locker & Toilet Exhaust	Yes
DS-A111107-63	1531	Control Building Control Room HVAC	No
DS-A081106-40	1551	Auxiliary Building Outside Air Supply & Normal HVAC	No
DS-A114115-31	1533	Control Building Levels A, B, 1 & 2 Normal HVAC	Yes
DS-A114115-13	1531	Control Building Control Room HVAC	Yes
DS-A114115-81	1531	Control Building Control Room HVAC	Yes
DS-A081106-41	1551	Auxiliary Building Outside Air Supply & Normal HVAC	No
DS-211A102-148	1539	Control Building Cable Spreading Room HVAC	Yes
DS-211A102-139	1539	Control Building Cable Spreading Room HVAC	Yes
DS-211A102-126	1539	Control Building Cable Spreading Room HVAC	Yes
DS-211A102-121	1539	Control Building Cable Spreading Room HVAC	Yes
DS-211A102-110	1539	Control Building Cable Spreading Room HVAC	Yes
DS-211A102-109	1539	Control Building Cable Spreading Room HVAC	Yes
DS-211A102-108	1539	Control Building Cable Spreading Room HVAC	Yes
DS-211A102-107	1539	Control Building Cable Spreading Room HVAC	No
DS-211A102-106	1539	Control Building Cable Spreading Room HVAC	No
DS-211A102-103	1539	Control Building Cable Spreading Room HVAC	No
DS-211A102-102	1539	Control Building Cable Spreading Room HVAC	No
DS-211A102-105	1539	Control Building Cable Spreading Room HVAC	No
DS-211A102-104	1539	Control Building Cable Spreading Room HVAC	No
DS-211A102-36	1539	Control Building Cable Spreading Room HVAC	No
DS-211A102-35	1539	Control Building Cable Spreading Room HVAC	No
DS-211A102-34	1539	Control Building Cable Spreading Room HVAC	No
DS-211B103-256	1533	Control Building Levels A, B, 1 & 2 Normal HVAC	No
DS-A112119-57	1537	Control Building Locker & Toilet Exhaust	No
DS-A112119-41	1533	Control Building Levels A, B, 1 & 2 Normal HVAC	No