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Georgia Power
the southern electric system

May 18, 1984

United States Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region II - Suite 3100
101 Marietta Street
Atlanta, Georgia 30303

File: X7BG03-M46
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Reference: Vogtle Electric Generating Plant-Units 1 and 2, 50-424, 50-425; Pullman Power Products Hanger Reinspection Findings; Letter GN-311 dated 2/7/84.

Attention: Mr. James P. O'Reilly

Gentlemen:

On July 15, 1983, Mr. C. W. Hayes, Quality Assurance Manager for the Vogtle Project, reported a potential significant deficiency to the USNRC concerning discrepancies identified in the installation of pipe supports. In our previous correspondence on this matter, Georgia Power Company indicated that the USNRC would be advised by May 18, 1984, of the reportability of this concern. Georgia Power Company has completed its evaluation and has concluded that some of the support installation discrepancies are reportable as substantial safety hazards and significant deficiencies.

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 response contains no proprietary information and may be placed in the NRC Public Document Room upon receipt.

Yours truly,

D. O. Foster

REF/DOF/tdm

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

xc: R. J. Kelly, R. E. Conway, G. F. Head, C. W. Hayes, D. N. MacLemore, D. E. Dutton, W. F. Sanders, R. H. Pinson, P. D. Rice, R. A. Thomas, J. A. Bailey, O. Batum, G. Bockhold, B. M. Guthrie, E. D. Groover, L. T. Gucwa, M. Malcom, H. H. Gregory, III, J. T. Beckham, Jr., J. L. Vota

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EVALUATION FOR A SUBSTANTIAL SAFETY HAZARD
EVALUATION FOR A SIGNIFICANT DEFICIENCY

Pullman Power Products - Hanger Reinspection Findings

Initial Report:

On July 15, 1983, Mr. C. W. Hayes, Quality Assurance Manager for the Vogtle Project, reported a potential deficiency to the USNRC concerning discrepancies identified by Georgia Power Company construction and quality assurance personnel in the installation of pipe supports. The reinspection was initiated due to questions received from the USNRC construction assessment team. Georgia Power Company, in our letter GN-311 dated 2/7/84, forecast when a final report on this subject would be submitted to the USNRC. Georgia Power Company also advised Mr. R. C. Lewis of the USNRC on November 14, 1983 (GN-282) of the measures being taken to correct violations in inspection reports 50-424/83-13 and 50-425/83-13.

Background Information:

Pipe supports are basic components that furnish support to several safety-related systems. Each pipe support is designed, fabricated and installed in accordance with the requirements of the code applicable to the system to be supported and/or the codes applicable to the pipe supports themselves. After installation, the pipe support is inspected to ensure conformance to the applicable codes, project specifications, and the indicated pipe support drawing.

In the course of reinspecting these pipe supports, Pullman Power Products (PPP) issued fourteen (14) non-conformance reports. The deficiencies found on each pipe support fall into one or more of the following categories:

(A) Documentation or identification error

(B) Construction tolerance deviation or support component deficiency

(C) Weld discrepancy

The review of these non-conformance reports will be discussed in the next topic, "Engineering Evaluation."

Engineering Evaluation:

The pipe support construction and weld deficiencies were evaluated to determine whether the condition, had it gone undetected, could have impacted safe operation of the plant. The following categories of pipe support deficiencies are not considered reportable, based on a review and/or evaluation of the NCR data.

A. Documentation or identification errors which do not impact the integrity of the pipe support.

B. Non-safety related pipe supports which do not affect safety related systems.

C. Weld deficiencies which are fully described in the NCR and are found to meet the project's minimum visual inspection criteria for welds (reference: BPC Project Reference Manual, Appendix 1, Standard Appendix VC).

D. Weld deficiencies which are non-propagating and would not diminish the reliability of the weld in service.

The following categories of pipe support deficiencies are not considered reportable based on a reconciliation of the pipe stress analysis and/or the pipe support calculation with the deficiency.

A. Construction tolerance and support component deficiencies which are acceptable in the "as-built" condition.

B. Individual pipe supports which are part of a total pipe support system with sufficient design conservatism such that in the event of an assumed failure of the deficient pipe support, the adjacent supports could have assumed the required extra load to prevent pipe failure.

Pipe supports which did not fall within the above mentioned categories were evaluated on the basis that the deficiency caused a pipe failure. The following analysis was performed to determine the impact on plant safety.

A. High energy lines supported by potentially deficient pipe supports were evaluated for dynamic effects of pipe breaks (pipe whip and jet impingement). In addition, pressure-temperature transients in regions enclosing the postulated pipe break were evaluated to determine if safety-related structural or equipment design basis would be exceeded.

B. A flooding review was performed to determine if the existing plant analysis enveloped the effects of pipe spool failure at the location of each of the potentially deficient pipe supports.

C. All lines were reviewed for radioactive content and the potential for exceeding offsite exposure limits stated in 10 CFR 100 and exposure limits for control room operators in 10 CFR 50, Appendix A, GDC 19.

D. The analysis included interaction of non-safety related piping with safety related equipment (seismic II/I).

E. A facility response analysis was conducted to determine if pipe support deficiencies in systems required to place the plant in a safe shutdown condition or mitigate the consequences of an event could result in unacceptable system functional performance and adversely affect plant safety. The analysis conservatively assumed the preexistence of a defective pipe support in one train, rendering the train inoperable (due to defect propagation, pipe support failure, and subsequently failure of the pipe), concurrent with the most limiting single active failure following the onset of an event (transient or accident condition) which requires a response from that system.

The results of the engineering evaluation indicated that the deficient pipe supports noted in Table 2, could have unacceptably compromised system functional performance and adversely affected plant safety, had the deficiencies gone undetected. Of the 470 supports identified in the 14 NCRs of Table 1, 24 supports could have adversely affected plant safety. For example, the pipe supports in system 1592, Essential Chilled Water, are located on the essential chilled water lines for the chillers located in the auxiliary building, fuel handling building, and control building. Because this system is not radioactive and is not high energy, there are no pressure/temperature and dose hazards associated with the failure of these pipe supports. However, because the system is safety related and maintains acceptable temperatures in safety related equipment areas, failure of these pipe supports may have affected the capability of the plant to reach a safe shutdown condition. Similarly, a failure in the Nuclear Service Cooling Water System piping could also have prevented the plant from reaching a safe shutdown condition.

Evaluation for Breakdown in a Quality Program:

A review of the quality assurance programs involved has been conducted by Georgia Power Company, and it has been concluded that there has not been a breakdown in a quality assurance program.

Conclusion:

The deficiencies reported on the pipe supports represent a substantial safety hazard and significant deficiency since they would have affected safe operation of the units and since these deficiencies represent a significant deficiency in the construction of the piping systems such that repair is necessary to restore these systems to the criteria and bases of the Final Safety Analysis Report.

Corrective Action:

Pipe supports containing weld deficiencies have been reworked or repaired and are presently in an acceptable condition.

Construction tolerance deviations which are acceptable will remain as is and the as-built drawing will reflect the as-built condition. Pipe stress analyses and/or pipe support design calculations have been updated to reconcile the deficiency with the analyses, as required.

Defective pipe support components have been replaced with new components.

Documentation and identification deficiencies have been corrected.

TABLE 1
NON-CONFORMANCE REPORTS (NCR)
ISSUED ON PIPE SUPPORT REINSPECTION

PPP[1] NCR NO.	DATE[2] OF ISSUE	PIPE SUPPORT QUANTITIES		QUANTITY BY DEFICIENCY CATEGORY		
		TOTAL	SUPPORTING ASME SYSTEMS	A[3]	B[3]*	C[3]*
3173	10/18/83	18	0	--	16	12
3174	11/1/83	40	0	--	18	33
3175	11/1/83	18	0	2	4	14
3176	10/18/83	7	0	--	7	4
3337	11/4/83	1	0	--	1	1
3339	11/4/83	8	0	--	4	5
3560	12/2/83	5	0	--	2	5
3698	1/11/84	98	6	17	38	75
3853	1/12/84	46	12	8	25	22
3900	1/16/84	147	65	13	66	83
3982	1/25/84	1	0	--	--	1
4106	2/7/84	6	3	--	5	2
4113	2/14/84	74	19	17	40	42
4437	1/12/84	1	0	--	1	1
TOTALS: 14 NCRs		470	105	57	227	300

NOTES:

1) "PPP" - Pullman Power Products, Waynesboro, Georgia

2) Date of sign-off of PPP Quality Assurance Manager in disposition box 8 of NCR.

3) A - Documentation or identification error

B - Construction tolerance deviation or support component deficiency

C - Weld discrepancy

* "D/I" errors may also exist on supports containing deficiencies in columns B and C. In some cases, construction and weld deficiencies exist on the same support. Thus, the sum of the three columns is greater than the total quantity of supports.

TABLE 2

REPORTABLE DEFICIENT PIPE SUPPORTS

PPP NCR NO. (MD-)	PIPE SUPPORT NO.	DEFICIENCY: WELD	DEFICIENCY: CONSTRUCTION TOLERANCE OR SUPPORT COMPONENT
System 1202 - Nuclear Service Cooling Water			
3900	V1-1202-003-H016		X
3900	V1-1202-005-H007	X	X
3900	V1-1202-005-H009		X
4113	V1-1202-072-H004	X	X
3900	V1-1202-072-H017	X	
3900	V1-1202-099-H005	X	
4113	V1-1202-111-H003		X
3900	V1-1202-122-H025		X
3900	V1-1202-122-H026	X	
3900	V1-1202-124-H001		X
3900	V1-1202-151-H031	X	X
3900	V1-1202-162-H001	X	
System 1592 - Essential Chilled Water			
3698	V1-1592-020-H002		X
3900	V1-1592-031-H010	X	X
3698	V1-1592-031-H036		X
3900	V1-1592-054-H028	X	
3900	V1-1592-054-H032	X	
4106	V2-1592-019-H006		X
4106	V2-1592-019-H009		X
3853	V2-1592-033-H012	X	X
System 1206 - Containment Spray			
4113	V1-1206-021-H001	X	
4106	V2-1206-048-H003	X	X
System 2303 - Seismic Category 1 Fire Protection Water			
4113	V1-2303-013-H020	X	
4113	V1-2303-013-H021	X	X