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Georgia Power
the southern electric system

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NED-83-376

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U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region II - Suite 2900
101 Marietta Street, NW
Atlanta, Georgia 30303

ATTENTION: Mr. James P. O'Reilly

NRC DOCKET 50-366
OPERATING LICENSE NPF-5
EDWIN I. HATCH NUCLEAR PLANT UNIT 2
DISCUSSION OF PIPE WHIP RESTRAINT INSTALLATION
AND PLANT OPERATIONS

Gentlemen:

Georgia Power Company reported the discovery of the improper installation of certain pipe whip restraints by Licensee Event Report 50-366/283-46 dated June 23, 1983. Attached hereto is a more comprehensive discussion of the circumstances of that event, as well as a justification for plant operation in the present plant configuration.

Please consider this information at the earliest opportunity. Unit 2 startup is tentatively scheduled within the week, and a timely effort will be required to resolve this issue in support of that schedule. We are available for discussion of this subject at your convenience.

Should you have questions, please contact this office.

Very truly yours,

L. T. Gucwa

L. T. Gucwa

WEB/mb
Enclosure

xc: J. T. Beckham, Jr.
H. C. Nix, Jr.
Director of Nuclear Reactor Regulation, U. S. NRC, Washington, D.C.
Senior Resident Inspector

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Attachment to letter to U. S. NRC I&E Region II
dated June 28, 1983 (Discussion of Pipe Whip Restraints)

PLANT HATCH UNIT 2

SAFETY EVALUATION FOR OPERATION WITH MISSING PIPE WHIP RESTRAINTS FOR HIGH ENERGY LINES OUTSIDE THE CONTAINMENT

BACKGROUND

As part of the design of redundant air headers for the drywell pneumatic system, a review was performed for postulated break locations and mitigation protection in the main steam pipe chase. In determining the potential pipe break effects on the drywell pneumatic system, the reactor core isolation cooling (RCIC) steam line break in the pipe chase was reviewed. The Hatch Unit 2 FSAR Fig. 15.A-25 identifies a whip restraint "A" for the RCIC steam line. A review of engineering drawings did not indicate the existence of the pipe whip restraint. A field check revealed that the subject whip restraint was not installed.

In light of the above, the FSAR Sections 15A and 15A-A (for High Energy Line Breaks Outside the Containment) were reviewed. The whip restraint requirements were identified and a field walkdown was performed to verify their existence.

The inspection revealed that in addition to the RCIC steam line restraint, the following restraints were also missing:

1. Two restraints on the reactor water cleanup (RWCU) system (one on the suction to the pumps and the other on the discharge from the pumps), as shown in FSAR Fig. 15A-26 and discussed in Paragraph 15A.5.5.

2. Two restraints on the auxiliary steam line in the reactor building at elevation 130', as shown in FSAR Fig. 15A-29.

3. Three restraints on the control rod drive system return to the feedwater, as discussed in FSAR Paragraphs 15A.A.1 and 15A.A.3.

During construction of Unit 2, the eight restraints in question were requested by the design engineer to resolve high energy line break (HELB) concerns. The preliminary feasibility of the design was done, but it does not appear to have been pursued further. One whip restraint on the RWCU return to the feedwater (originally requested for the HELB evaluation) was installed. It appears that this was installed as part of the CRD re-route (that was initiated later) to the RWCU system.

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REQUIREMENTS

The restraints in the RCIC and RWCU systems were required to protect the containment isolation valves for the subject lines from postulated breaks downstream of the valves.

The restraint requirement for the auxiliary steam line is not described in the FSAR text, but is shown in Fig. 15.A-29. Originally, in accordance with the guidance transmitted by Mr. A. Giambusso's December 1972 letter, this line was classified as moderate energy (cracks only). FSAR Section 15.A.A.1 subsequently re-classified it as a high energy line operating for less than 1% of the plant operating time and required crack postulation only.

The restraint requirement for control rod drive (CRD) return is described in paragraphs 15.A.A.1 and 15.A.A.3. There is no figure reference in the updated HNP-2 FSAR. However, Figure 15A-13 of the original FSAR identifies the whip restraint locations. The CRD line has since been rerouted to return to the RWCU system.

SHORT-TERM PLAN

The immediate plan of action for Georgia Power Company is as follows:

1. Proceed expeditiously on design and procurement of the missing RWCU and RCIC restraints. During operation these locations are in inaccessible areas of the plant.

2. Proceed expeditiously to postulate pipe break locations, design and procure whip restraints for the rerouted CRD return line to the Reactor Water Cleanup System.

3. Isolate the auxiliary steam line in the reactor building so that no failures need be postulated while this line is isolated.

LONG-TERM PLAN

In accordance with the intent of the FSAR and the requirements to maintain isolation capabilities, the design of pipe whip restraints for the RCIC steam, RWCU pump suction/discharge and the CRD return line is in progress. The design considers the use of energy absorbing material and/or wire ropes to mechanistically address the dynamic effects of the pipe break. The analysis follows the Bechtel Topical Report, BN-TOP-2 in conjunction with the FSAR design criteria. The following schedule summarizes the work necessary to restore the systems to the original design criteria:

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dated June 28, 1983 (Discussion of Pipe Whip Restraints)

	ACTIVITY	COMPLETION DATE
1.	Field Walkdown	Completed
2.	Conceptual Design	July 1, 1983
3.	Detailed Design (Calculations and Checking)	September 1, 1983
4.	Material Receipt	October 15, 1983
5.	Final Feasibility Check	October 15, 1983
6.	Installation	Next refueling outage or shutdown of sufficient duration after receipt of materials.

It is the intent of Georgia Power Company to install all the required whip restraints by the end of the 1984 refueling outage.

JUSTIFICATION FOR CONTINUED OPERATION

Georgia Power Company believes that operation of Plant Hatch Unit 2 during the next cycle is justified for the following reasons.

1. The postulated breaks have been considered per the non-mechanistic assumptions required by the Giambusso letter (Appendix B to Branch Technical Position APCSB 3-1), for postulating terminal end and intermediate break locations. The FSAR figures show the stress levels in the piping to be well below the 0.8 (S_h + S_A) criterion. Therefore, when evaluated realistically, the stresses in the piping would not be sufficient to lead to piping failures.

2. The probability of experiencing a pipe break anywhere in the plant is very low and is further reduced when determined for specific break points. We have estimated the probability of an uncontrolled release of reactor coolant, due to rupture of the RCIC or RWCU piping combined with an additional single failure of the respective inboard isolation valve to be between 10^{-9} and 10^{-7} per year. The probability of damage to essential cable trays due to a pipe break in the CRD return line or auxiliary steam line is on the order of 10^{-5} per year.

3. Absence of whip restraints does not affect the equipment or pipe supports, nor does it have an effect upon the stress analyses.

4. Design, material procurement and installation of the restraints, if required prior to restart of Plant Hatch Unit 2, would require approximately 2 to 4 additional months of outage time. The additional cost is not justified when considering the minimal benefit received in the area of reduced risk to the health and safety of the public.

5. The containment isolation valves on the RCIC and RWCU systems automatically isolate to limit blowdown on receipt of a signal indicating a failure in the respective system line. The isolation signals for the RCIC valves consist of high steam line space temperature, high steam line flow, low steam supply pressure, and high turbine exhaust pressure. The RWCU valves will isolate on high differential flow, high differential temperature between the inlet and outlet cleanup room ventilation, high ambient temperature, or high temperature downstream of the non-regenerative heat exchanger. See FSAR Table 6.2-5 and Sections 7.4.1 (for RCIC) and 7.7.6 (for RWCU).

Georgia Power Company will conduct an audit of Bechtel to determine if this failure of the engineering design process is an isolated incident.