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Georgia Power
the southern electric system

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

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
STATUS OF IE BULLETIN 79-14

Gentlemen:

Mr R. C. Chou, Nuclear Regulatory Commission (NRC)-Region II, verbally requested Georgia Power Company (GPC) submit additional information regarding the implementation of IE Bulletin 79-14 at Plant Hatch. As discussed with the NRC-Region II staff during a meeting held on July 21, 1987, GPC intends to complete IE Bulletin 79-14 on Plant Hatch - Unit 1 by the end of the Unit 1 1990 refueling outage. The status of Plant Hatch - Unit 2 is enclosed.

If you have questions in this regard, please contact Mr. L. T. Gucwa at (404) 526-7015.

Sincerely,

W. G. Hairston, III
Senior Vice President
Nuclear Operations

JDH/tb

Enclosure: Summary Report, IE Bulletin 79-14, "Seismic Analyses for As-Built Safety-Related Piping Systems," E. I. Hatch Nuclear Plant - Unit 2.

c: (See next page.)

IE11
1/1

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c: Georgia Power Company
Mr. J. T. Beckham, Jr., Vice President - Plant Hatch
Mr. L. T. Gucwa, Manager Nuclear Safety and Licensing
GO-NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. L. P. Crocker, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II
Dr. J. N. Grace, Regional Administrator
Mr. J. E. Menning, Senior Resident Inspector - Hatch

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ENCLOSURE

PLANT HATCH - UNIT 2
NRC DOCKET 50-366
OPERATING LICENSE NPF-5
SUMMARY REPORT IE BULLETIN 79-14
SEISMIC ANALYSES FOR AS-BUILT SAFETY-RELATED PIPING SYSTEMS

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SUMMARY REPORT IE BULLETIN 79-14
SEISMIC ANALYSES FOR AS-BUILT SAFETY-RELATED PIPING SYSTEMS

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SUMMARY REPORT IE BULLETIN 79-14
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EXECUTIVE SUMMARY

IE Bulletin (IEB) 79-14 required each safety-related, Seismic Category I piping system be inspected to verify that the installation was consistent with the design documents used in the seismic analysis. Where deviations were identified, evaluations were required to assess the impact on system operability and code compliance.

Bechtel Power Corporation (BPC) was retained by Georgia Power Company (GPC) to assist in the evaluation of the deviations identified and coordinate the design and issuance of all modifications required for piping systems to meet licensing commitments. As a result of this review, 38 pipe support modifications were implemented to alleviate potential short-term operability concerns, and 204 additional modifications were implemented to establish long-term code compliance. Design drawings have been updated to reflect the modified configurations. All pipe supports and pipe stress problems included in the scope of IEB 79-14 for Unit 2 currently meet the Final Safety Analysis Report (FSAR) commitments for long-term code compliance.

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ENCLOSURE (Continued)

SUMMARY REPORT IE BULLETIN 79-14
SEISMIC ANALYSES FOR AS-BUILT SAFETY-RELATED PIPING SYSTEMS

1.0 INTRODUCTION

The United States Nuclear Regulatory Commission (USNRC) issued IE Bulletin (IEB) 79-14 to address concerns about safety-related piping systems that were not installed in conformance with design documents. (See Reference 1.) The specific concern was that deviations existed between the design documents and the plant as-built condition, potentially impacting the validity of the piping seismic analysis.

IEB 79-14 required each safety-related, Seismic Category I piping system be inspected to verify that the installation was consistent with the design documents used in the seismic analysis. Where significant deviations were identified, the licensees were required to resolve the deviations by establishing system operability and code compliance through analysis and/or modifications to the piping system or its supports.

Bechtel Power Corporation (BPC) was retained by Georgia Power Company (GPC) to assist in the evaluation of the deviations identified for all safety-related, Seismic Category I piping systems. In addition, BPC coordinated the issue of all modifications required for systems to meet Final Safety Analysis Report (FSAR) commitments for long-term code compliance.

To satisfy the IEB's interim requirements, 30-, 60-, and 120-day reports were submitted by GPC in 1979. (See References 2, 3, and 4.) These reports summarized the systems to be inspected, inspection procedures, relevant design documents, and inspection results. Individual and collective assessments of deviations were performed by qualified stress analysts, revealing that, up to that point in time, no deviations existed which were considered of significance to plant operability or seismic qualification.

Subsequent to issuing these interim reports, a more detailed review of all stress problems containing deviations was performed by BPC to document the judgments and conclusions which had been previously reported and to align the mathematical stress models with the as-built piping configurations. This report will summarize the work completed by BPC for Hatch Nuclear Plant - Unit 2 (HNP-2) to verify the effects of deviations on system operability and to document conformance of all safety-related piping systems with FSAR commitments for long-term code compliance.

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2.0 TASKS, ACTIVITIES, AND WORK FLOW

All engineering work to identify and evaluate deviations of as-built safety-related piping systems was completed in accordance with Bechtel Project Procedures. Main steam piping (inside the drywell) and the reactor recirculation system piping were evaluated for compliance with IEB 79-14 by General Electric (GE), the original designer of the systems. Additionally, the control rod drive (CRD) system insert and withdrawal lines inside the drywell and the corresponding support frames were evaluated by Impell Corporation, formerly EDS Nuclear. All required design modifications were coordinated with Bechtel for short-term operability and long-term code compliance. The balance of the CRD piping and remaining systems, as identified in section 4.0, were evaluated by Bechtel.

3.0 FIELD WALKDOWN/SURVEILLANCE OF PIPING

To verify the compatibility of as-built plant conditions with design documents, a walkdown was required for all analyzed safety-related, Seismic Category I piping systems and supports. The walkdown served to identify deviations between the as-built plant configuration and design documents. However, GPC initiated an effort during the construction phase of HNP-2, prior to the issuance of IEB 79-14, to assure the as-built plant configuration of the piping systems and supports was compatible with design drawings and analyses. This pre-startup surveillance program was completed just prior to fuel load, in accordance with GPC Construction Procedures and Construction Instructions. All evaluations required for IEB 79-14 used this pre-startup surveillance documentation in lieu of performing a separate inspection. This fact was stated in the 30-day report to the NRC (Reference 2). Since the completion of this surveillance program, design changes, and deviations are documented via the Design Change Request (DCR) process and As-Built Notice (ABN) procedures of GPC.

As a result of the pre-startup surveillance program, 167 walkdown packages containing support details were generated. All supports with deviations from original design were documented, resolved, and/or justified in the 167 packages. The originals of these walkdown packages are maintained by GPC. After issuance of IEB 79-14, GPC supplied Bechtel with additional marked-up copies of stress isometrics which included pertinent information extracted from these 167 walkdown packages, such as the hanger location changes identified during the pre-startup surveillance in 1978. Bechtel then developed 39 additional as-built packages containing isometric drawings, information from the 1978 pre-startup surveillance program, and USNRC IEB 79-02 ("Pipe Support Base

Plate Designs Using Concrete Expansion Anchor Bolts") program. All this information (i.e., support surveillance packages, GPC-supplied isometrics, and Bechtel-generated isometrics) constitutes the IEB 79-14 "as-built package" used to evaluate safety-related, Seismic Category I systems.

4.0 EVALUATION OF PIPING

4.1 System I Identification

All safety-related, Seismic Category I systems requiring evaluation for IEB 79-14 are identified in Table 1. Copies of the IEB 79-14 "as-built package" described in section 3.0 are available for all the above identified systems.

Evaluation of small-bore piping (≤2-in. diameter) supported in accordance with a chart or "cookbook" procedure was not required for IEB 79-14 compliance. Also, systems that are not safety-related or Seismic Category I but may have a portion of the system seismically supported (i.e., fire protection system, or the Seismic Category II portion of II/I safety items) were not required to be included in the evaluation.

4.2 Non-Conformance Criteria

Non-conformances between the design drawings and the as-built piping systems were identified by comparing as-built data to the data used in the design of the systems. The as-built data were collected from the IEB 79-14 "as-built package" described in section 3.0. A deviation was as defined in Bechtel Project Procedures.

4.3 Evaluation Criteria

All the deviations in each stress problem were reviewed against the latest stress analysis problem of record at the time of evaluation.

During the initial review phase, individual and collective assessments of deviations were made for each stress problem to determine the potential impact on plant operability and the existing seismic analyses. Each stress problem was assigned to one of the three groups described below, depending on the number and severity of each deviation:

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1. No deviations or very minor deviations.

2. Numerous minor deviations, or possibly a more important single deviation, none of which taken collectively or singularly was judged to jeopardize system operability.

3. One or more deviations judged to be significant enough to jeopardize system operability.

As documented in the 120-day report (Reference 4), the results of this initial review revealed no deviations of significance existed to jeopardize plant operability.

To support the judgments applied during the initial review phase, more detailed evaluations of all stress problems containing deviations were completed. Modifications were promptly implemented, as required, to alleviate all potential short-term operability concerns discovered subsequent to issuance of the 120-day report. Permanent calculations were created during the code compliance evaluations and are maintained as part of the permanent documentation.

All stress problems were evaluated for long-term code compliance. Based on guidance provided in the IEB 79-14 evaluation procedures, experienced stress analysts, with the concurrence of a group leader, selected the problems requiring re-analysis. The selection process was based on the extent of the deviations, recognizing the effect of deviations on pipe stresses, support loads, nozzle loads, valve acceleration, etc. If there was any doubt relative to the acceptability of the existing design, the problem was re analyzed.

Deviations were identified, evaluated, and dispositioned in accordance with Bechtel Project Procedures.

4.4 Re-Analysis of Stress Problems

As a result of the evaluations described in subsection 4.3, 66 out of a total of 197 stress problems were re-analyzed to demonstrate that the systems met long-term code compliance. The re-analysis effort for IEB 79-14 was carried out in conjunction with the Mark I Containment Long-Term Program (LTP). The associated hydrodynamic loads were incorporated into applicable stress problems for design evaluations. In addition, during the IEB 79-14 compliance review program (1979-1984), several design changes were also implemented for regulatory compliance

and/or improvement of plant operation. These implemented changes were considered, as required, during the IEB 79-14 review efforts. Detailed documentation for all re-analyzed problems was generated to update design records and is maintained on file in Bechtel's Gaithersburg office.

The remaining 131 problems were not re-analyzed due to one of the following reasons:

1. No deviations existed between the as-built and the as-analyzed piping.

2. Minor deviations, as defined by the IEB 79-14 evaluation procedure, did not significantly affect piping analyses. In this case, backup calculations were completed to support the design.

For all re-analyzed problems, new support and penetration loads were generated for evaluation of these items.

5.0 PIPE SUPPORT EVALUATIONS

As-built pipe support designs were considered acceptable based upon the pre-startup surveillance program performed during 1978. Georgia Power Company Procedures provided guidance for the review, evaluation, and approval of all existing as-built deviations by qualified Bergen-Paterson, Bechtel, and GPC personnel. If deviations requiring modification were noted, the modifications were implemented and re-inspections completed. Therefore, pipe support re-evaluations for IEB 79-14 were not comoleted, except as noted below:

- Review of the piping as-built deviations by stress analysts indicated a significant increase in pipe support design load existed, or

- New support loads were generated as a result of a stress problem re-analysis.

During the review phase, subsequent to issuance of the 120-day report, pipe supports were evaluated for short-term operability when load increases were identified by the stress analysts. Modifications and new support designs were implemented, as required, to alleviate all potential short-term operability concerns. Permanent plant documentation was not generated to support these initial support operability judgments; however, detailed calculations were created and are maintained for code compliance evaluations.

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During the re-analysis effort, new support and penetration loads were generated for review. Load evaluations were completed based upon a comparison of new loads (per the latest stress analysis) with old loads (as shown on the existing detailed support drawing). To document the results for this review, long-term code compliance calculations for each re-analyzed stress problem were generated by Bechtel. Pipe support modifications, as required, were issued to GPC to be implemented in accordance with established plant procedures. (See section 7.)

6.0 RESULTS

Based upon the piping and support review completed to assess short-term operability, nine Preliminary Design Change Requests (PDCR) were issued to GPC for implementation. These modifications were completed not only to alleviate potential operability concerns but to implement certain design changes which were judged to be prudent. A total of 38 pipe supports were either modified, added, or deleted. This effort was completed between 1979 and 1981.

Piping and support load reviews for long-term code compliance were completed between 1981 and 1984. As a result of this effort, 204 pipe support modification packages were issued and the modification implemented. Modifications included the addition, deletion, relocation, and/or upgrading of pipe supports.

It should be emphasized that not all the design modifications resulted solely from IEB 79-14 evaluations. As described in subsection 4.4, the LTP and plant improvement design changes were considered in conjunction with the IEB 79-14 efforts, when applicable. The total number of supports requiring modification reflects those which resulted from considering the combined effects of IEB 79-14 deviations, LTP loads, and implemented design changes.

7.0 IMPLEMENTATION OF MODIFICATIONS

Once the engineering evaluation determined the need for modification to a piping system or support, modification drawings were generated and issued. The design input to these modification drawings came from new support analyses, as well as field feasibility checks of proposed design changes. The feasibility checks were accomplished by field walkdowns and are documented in Request for Additional Data (RAD) files maintained in Bechtel's Gaithersburg office.

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After achieving a workable code compliance modification, DCR documents were issued for the modifications in accordance with established plant procedures. Bechtel engineering efforts during implementation included pre-construction walkdowns and resolution of field interferences that occurred after the original modifications were issued. During actual construction, deviations from the issued design documents were identified and issued to Bechtel for review and approval through Field Change Requests (FCR) of Field Deviation Requests (FDR).

Upon completion of a design modification, an ABN was generated by GPC and issued to Bechtel for review and approval. Final as-built drawings were then created and issued for each modified design.

The procedures for modifications have been in effect since the completion of the pre-startup surveillance program at HNP-2 and apply to all future modifications, thereby assuring the plant configuration is compatible with design drawings and analyses.

8.0 CONCLUSIONS

All engineering work required to identify and evaluate deviations of as-built safety-related piping systems has been completed. All pipe supports and pipe stress problems included in the scope of IEB 79-14 for HNP-2 currently meet long-term code compliance criteria. Required modifications have been implemented, and all support stresses, pipe stresses, valve accelerations, and equipment nozzle loads have been reviewed to assure that applicable allowable limits are satisfied. Procedures are in effect to assure plant configuration will continue to be compatible with design drawings and analyses.

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REFERENCES

Reference No.	Title
1	U. S. Nuclear Regulatory Commission IE Bulletin 79-14, Seismic Analysis for As-Built Safety-Related Piping Systems, dated July 2, 1979; Revision 1, dated July 18, 1979. Supplement 1, dated August 15, 1979. Supplement 2, dated September 7, 1979.
2	IE Bulletin 79-14 30-Day Report, B-GP-6321, July 30, 1979.
3	IE Bulletin 79-14 60-Day Report, B-GP-6362, September 13, 1979.
4	IE Bulletin 79-14 120-Day Report, B-GP-6408, October 29, 1979.

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ENCLOSURE (Continued)

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TABLE 1

HNP-2 SYSTEMS LIST FOR IEB 79-14

MPL IDENTIFIER	SYSTEM NAME
2B21	Nuclear Boiler System
2B31	Reactor Recirculation System
2C11	Control Rod Drive System
2C41	Standby Liquid Control System
2E11	Residual Heat Removal System
2E11	RHR Service Water System
2E21	Core Spray System
2E32	MSIV Leakage Control System
2E41	HPCI System
2E51	RCIC System
2G11	Radwaste System
2G31	RWCU System
2G41	Fuel Pool Cooling System
2G51	Torus Drainage and Purification System
2N11	Main Steam System (T Bldg.)
2P11	Condensate Supply System
2P41	Service Water System
2P42	RBCCW System
2P52	Instrument Air System
2P64	Chill Water System
2R43	Diesel Start-up Air System
2T46	Standby Gas Treatment System
2T48	Containment Purge and Inerting System
2T49	Post LOCA H2 Recombiner System

Note: Only the safety-related, Seismic Class I portion of the above systems was considered for compliance to IEB 79-14.