



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA ST., N.W., SUITE 3100
 ATLANTA, GEORGIA 30302

Report Nos.: 50-321/83-08 and 50-366/83-08

Licensee: Georgia Power Company
 P. O. Box 4545
 Atlanta, GA 30302

Docket Nos.: 50-321 and 50-366

License Nos.: DPR-57 and NPF-5

Facility Name: Hatch 1 and 2

Inspection at Hatch site near Baxley, Georgia, and the NRC Region II Offices in Atlanta, Georgia

Inspectors:	<u><i>J. J. Blake</i></u>	<u>4/20/83</u>
	<i>for</i> E. H. Girard	Date Signed
	<u><i>W. J. Ross</i></u>	<u>4/15/83</u>
	W. J. Ross	Date Signed
Approved by:	<u><i>J. J. Blake</i></u>	<u>4/20/83</u>
	J. J. Blake, Section Chief	Date Signed
	Engineering Program Branch	
	Division of Engineering and Operational Programs	

SUMMARY

Inspection on March 14 - 18 and 25, 1983

Areas Inspected

This routine, announced inspection involved seventy-four inspector-hours on site in the areas of inservice testing of pumps and valves, plant water chemistry program, and inspector followup items.

Results

Of the three areas inspected, no violations or deviations were identified in two areas; one violation was found in one area (Improperly changed procedure, Paragraph 5.c.(1)).

REPORT DETAILS

1. Persons Contacted

Licensee Employees

- *C. T. Jones, Manager of Engineering
- *T. L. Elton, Plant Engineering Supervisor
- #*E. M. Burkett, Associate Engineer
- *J. M. Watson, Senior QA Field Representative
- C. E. Belflower, QA Site Supervisor
- W. B. Kirkley, Plant Engineer
- E. Sorrel, Records Supervisor
- #J. A. Edwards, Senior Regulatory Specialist D. Smith, Chemical Technician
- C. Parker, Chemical Technician
- D. Smith, Chemical Technician

Other Organization

- #M. Belford, Senior Engineer, Southern Company Services

NRC Resident Inspector

P. Holmes-Ray, Resident Inspector

*Attended exit interview on 3/18/83 at Hatch site

#Attended exit interview on 3/25/83 at Region II offices

2. Exit Interview

The inspection scope and findings were summarized on March 18 and 25, 1983, with those persons indicated in paragraph 1 above. The licensee was informed of the inspection findings listed below. The licensee acknowledged the inspection findings with no dissenting comments.

Violation 366/83-08-01, Improperly changed procedure, Paragraph 5.c.(1).

Unresolved Item 321, 366/83-08-02, Pump test parameter acceptance criteria, Paragraph 5.c.(2).

Unresolved Item 321, 366/83-08-03, Systems and components omitted from the inservice testing program, Paragraph 5.c.(3).

Unresolved Item 321, 366/83-08-04, Inservice testing requirements for containment isolation valves, Paragraph 5.c.(4).

Unresolved Item 321, 366/83-08-05, Stroke time limits, Paragraph 5.c.(5).

Unresolved Item 321, 366/83-08-06, Verification of bearing temperature stabilization, Paragraph 5.c.(6).

Unresolved Item 321, 366/83-08-07, Review of pump test data and declaration of inoperability, Paragraph 5.c.(7).

Unresolved Item 321, 366/83-08-08, Exercising requirements of check valves, Paragraph 5.c.(8).

Unresolved Item 321, 366/83-08-09, Erroneous relief request, Paragraph 5.c.(9).

Inspector Followup Item 321, 366/83-08-10, Errors in pump test procedures, Paragraph 5.c.(10).

Inspector Followup Item 321, 366/83-08-11, Unclear relief requests and program omission, Paragraph 5.c.(11).

Inspector Followup Item 321, 366/83-08-12, Primary coolant chemistry, Paragraph 6.c.(1).

Inspector Followup Item 321, 366/83-08-13, Correction of audit findings, Paragraph 6.c.(2).

Inspector Followup Item 321, 366/83-08-14, Demineralizer operation, Paragraph 6.c.(3).

Inspector Followup Item 321, 366/83-08-15, Affects of oxygen concentration in water on stress corrosion cracking, Paragraph 6.c.(4).

3. Licensee Action on Previous Enforcement Matters

Not inspected.

4. Unresolved Items

Unresolved items are matters about which more information is required to determine whether they are acceptable or may involve violations or deviations. New unresolved items identified during this inspection are discussed in paragraph 5.c.

5. Inservice Testing of Pumps and Valves (92706) Units 1 and 2

The inspectors examined selected aspects of the licensee's inservice testing (IST) program and its implementation in order to:

- (1) Verify the licensee's compliance with regulatory requirements and licensee commitments for IST, including the requirements of the applicable code - ASME Section XI (74S75)

- (2) Obtain information for evaluation of requests for relief from IST requirements submitted by the licensee for NRC review

NOTE: The evaluation will be documented in a NRC Safety Evaluation Report now in preparation.

The inspectors examination of this area was conducted through reviews of selected IST program documents procedures, and reviews of the selected IST records and interviews with cognizant licensee personnel, as described below:

a. Review of Program Documents and Procedures

The inspectors selectively reviewed licensee program documents and procedures and interviewed cognizant personnel to determine compliance with requirements and commitments relative to:

- Assignment of responsibilities for preparation of IST procedures, scheduling and assignment of IST, performance of IST, and performance of maintenance
- Control of test procedure changes
- Scheduling of tests
- Establishment and use of pump test reference values and allowable ranges of test parameters (verified for the Unit 1 and 2 Plant Service Water Pumps, Unit 1 Core Spray Pumps, Unit 2 Standby Diesel Generator Service Water Pump, Unit 2 HPCI Pumps and Unit 2 RCIC Pumps)
- Pump test performance criteria including operations performed, quantities measured or observed, minimum system operating time for stabilization of parameters, data recorded, realignment of circuits and verifications, and notification of test completion (as verified for the procedures for the pumps indicated in (4) above).

NOTE: The inspector did not examine or verify in detail the adequacy of the licensee's instructions relative to circuit alignments.

- Identification of pump test parameter measurement instruments and locations (as verified for the pumps identified in (4) above)
- Compilation of pump test records (as verified for the procedures for the pumps identified in (4) above)
- Review and analysis of pump test results
- Summary status listings for pumps and valves

- Specification of valve position indicator checks for Unit 1 and 2 Plant Service Water valves and Core Spray valves
- Exercising tests for Unit 1 and 2 Plant Service Water valves, Core Spray valves and RHR valves E11 F050A and B
- Stroke timing Unit 1 Core Spray valves and Unit 1 and 2 Plant Service Water valves
- Leak rate testing of containment isolation valves
- Testing Unit 1 Main Steam safety relief valves
- Pumps and valves required to be included in the IST programs for both Units

The program documents and procedures reviewed relative to the above were as follows:

- (1) Edwin I. Hatch Nuclear Plant, Unit 1, Response to the Provisions of 10 CFR 50.55a(g), Inservice Inspection Program, submitted in a letter from Widner (Georgia Power Company) to the Director of Nuclear Reactor Regulations dated 1/27/81
- (2) Hatch Unit 2 FSAR, HNP-2-FSAR-5, Section 5.2.8.2.
- (3) HNP-1 and HNP-2 Long-Term ISI Pump and Valve Test Plan
- (4) Procedure HNP-0-ADM-0001, Plant Organization, Staff Responsibilities and Authorities
- (5) Procedure HNP-9, Procedure Writing, Use and Control
- (6) Procedure HNP-831, Tech Specs Surveillance Program
- (7) Procedure HNP-904, Inservice Inspection Program
- (8) Procedure HNP-908, Inservice Inspection Pump and Valve Surveillance Program
- (9) Procedure HNP-1-3201, Core Spray Pump Operability
- (10) Procedure HNP-2-3303, HPCI Pump Operability
- (11) Procedure HNP-2-3405, RCIC Pump Operability
- (12) Procedure HNP-2-3702, SBLC Pump Operability
- (13) Procedure HNP-2-3801, D/G Manual Start (Standby S.W. Pump Operability)

- (14) Procedure HNP-1&2-3183, PSW Valve Operability
- (15) Procedure HNP-1-3203, Core Spray Valve Operability
- (16) Procedure HNP-1-3952, Primary Containment Periodic Type B and Type C Leakage Tests.

b. Review of Records

The inspectors reviewed the below listed test results to verify compliance with the requirements of the Code, Technical Specifications and the licensee's IST program:

- (1) Unit 1 Core Spray System pump test results for the period of 11/82 - 2/83
- (2) Unit 1 Core Spray System valve test results for the period of 2/82 - 2/83
- (3) Unit 2 stroke time tests for Reactor Water Cleanup system valves 2G31-F001 and F004 for the period 3/82 - 11/82

c. Findings

During their inspection, the inspectors identified the violation and other concerns described below:

- (1) The licensee's procedure HNP-9, "Procedure Writing, Use and Control", required that all revisions to a procedure be entered on a "Procedure Revision Request Form" indicating the reason for the proposed change. The inspectors found that the acceptance criteria for vibration on the Unit 2 Standby Diesel Service Water pump was changed, in revision 18 to procedure HNP-2-3801, but that (based on a review of procedure change records) the change and the reason therefore were not entered on a "Procedure Revision Request". The licensee's failure to comply with the requirements of procedure HNP-9 for preparing the revision is a violation of the requirements of 10 CFR 50, Appendix B, Criterion V. This was identified to the licensee as violation 366/83-08-01, Improperly Changed Procedure.
- (2) Subsection IWP-3210 of the Code specifies allowable ranges of inservice test quantities for pumps in relation to reference values. The Code defines the reference values from which the ranges are determined, as one or more fixed sets of values of the subject quantities as measured and observed when the pumps are known to be operating acceptably. The Code further states that the reference values shall be at points of operation readily duplicated during subsequent inservice testing. IWP-3112, permits establishment of additional reference values when necessary or

desirable and requires that the reasons for so doing be justified. Subsection IWP-3210 specifies allowable ranges to test quantities in relation to the reference values. IWP-3210 permits the specified ranges to be altered by the licensee to reduced range limits provided both that:

- the original limits could not be met, and
- the pump will fulfill its function operating (at any point) within the new limits

The inspectors found that the licensee had altered the allowable test ranges of flow, differential pressure and vibration for their pumps. For differential pressure and flow the licensee altered the upper limits from 1.03 x Reference to 1.30 x Reference. The allowable range of pump vibration (as noted for the service water pumps) was altered by considering any reference values below 1.5 mils to be 1.5 mils for the purposes of evaluation. The licensee's justification for increasing flow and differential pressure limits was that the specified limits would still permit the systems to fulfill their functions. The vibration limit changes were justified by the licensee based on information, reportedly obtained from a pump manufacturer, that 4 mils peak to peak vibration is the accepted limit for service water pumps and that many pumps had operated for years with higher vibration amplitudes. The inspectors informed the licensee that they were concerned that the limit changes might not be adequately justified.

The inspectors noted that:

- it was not clear that each limit change had been made because the limits could not be met
- the source of the variability that led the licensee to revise his limits was unclear
- although the pump manufacturer stated 4 mils was the accepted limit for pump vibration the procedures permitted higher values to be used

The licensee agreed to have information relative to the above available for review and discussion in subsequent inspection. The inspectors concerns for the limits changes were identified to the licensee as unresolved item 321, 366/83-08-02, Pump Test Parameter Acceptance Criteria. This item will remain open pending Region II's review and technical evaluation of information to be provided by the licensee in subsequent inspection.

- (3) The inspectors found that the licensee's IST program did not contain all of the Code required systems and components. As examples, the inspectors noted the following omissions:

- CRD hydraulic system
- Service water valves P41-F311A, B, C and D; P41-321; and P41-322

The licensee was not able to immediately respond regarding the above. The licensee agreed to determine basis for the omissions. The basis for the omissions is considered an unresolved item, identified 321, 366/83-08-03, Systems and Components Omitted from the Inservice Testing Program.

- (4) In the case of valves for which seat leakage must be limited to a maximum in order for them to fulfill their function, the Code specifies requirements for seat leakage tests, specification of maximum permissible leakage rates, analysis of leakage rates and corrective actions for valves with leakage rates exceeding those specified or trending to significantly increased rates. For containment isolation valves the NRC accepts the local leak rate tests (Type C) of 10 CFR 50, Appendix J as meeting the intent of the Code requirement for testing. The licensee fulfills the testing requirements on containment isolation valves through their procedures HNP-1-3801 and HNP-2-3801. However, the procedures appear inadequate in that the licensee does not specify maximum leakage rates for the individual valves and does not provide for the specific analysis of leakage rates and the corrective action required by the Code (IWV-3520(f) and (g) of ASME Section XI).

The licensee indicated that, based on past communications with the NRC, and as indicated in their IST program that was submitted to the NRC for review, they understood that only the Appendix J testing was required on containment isolation valves; that Code required specification of individual maximum leakage rates, analysis of leakage rates, and corrective action were not necessary. The inspectors informed the licensee that they would obtain and provide to the licensee a formal position on this testing. Disposition of the matter will be based on the interpretation obtained and on Region II's further review of the licensee's related actions, as evaluated in future inspections. This is identified unresolved item 321, 366/83-08-04, Inservice Testing Requirements for Containment Isolation Valves.

- (5) In the case of the power operated valves (POVs) that it addresses, the Code requires that the valves be stroke timed. Stroke time limits are required to be set by the licensee. The inspectors questioned the licensee regarding the basis for the stroke times which they specify in their procedures to meet the Code requirements. The inspectors informed the licensee that it was their understanding that there should be two bases for the limiting stroke times. First, the limits set

should assure that the valves will change to the positions required for their safety function in sufficient time to meet system design requirements. Second, the limits should also be an indicator of acceptable valve operation.

The licensee indicated that information as to the basis for their stroke times was not available on site. It was agreed that in a future inspection, Region II would identify a sample of POVs and the licensee would provide the basis for the stroke time limits specified for the valves. Pending Region II's satisfactory review of the bases for the licensee's POV stroke times the matter will be identified as unresolved item 321, 366/83-08-05, Stroke Time Limits.

- (6) The inspectors found that the licensee's procedure for HPCI pump testing, HNP-2-3303, did not specify verification of stabilization of pump bearing temperatures prior to measurement to determine acceptability. The verification of temperature stabilization is a Code requirement. The licensee's procedures for other pump bearing measurements contained requirements for verification of bearing temperature stabilization. The inspectors found, however, that the procedures did not require stabilization of bearing temperatures on pump drivers when driver bearing temperatures were measured. The inspectors informed the licensee that Region II would examine plant practices for such measurements and evaluate the significance of the omissions in subsequent inspections. Pending completion of the evaluation, the matter is identified as unresolved item 321, 366/83-08-06, Verification of Bearing Temperature Stabilization.
- (7) The Code requires analysis of pump test data within 96 hours of completion of a test. The licensee has interpreted this to permit them up to 96 hours for review of test data for determination of pump operability, as indicated in their procedure HNP-908. The inspectors informed the licensee that it was Region II's position that simple acceptance criteria can and should be available for ready determination of pump operability by the shift supervisor, that no significant analysis is required, and that the determination of pump operability is required immediately after obtaining the data. The inspectors agreed to provide a formal NRC position on the matter to the licensee. Pending the licensee's receipt of the NRC's position on this matter and Region II's evaluation of the licensee's related actions this will be identified as unresolved item 321, 366/83-08-07, Review of Pump Test Data and Declaration of Inoperability.
- (8) The Code, in addressing those check valves which it covers, requires testing by exercising them to the position required to fulfill their functions. The Code also states, for normally closed valves that must open on pressure reversal; that the valves shall be tested by proving that the disk moves promptly away from the seat when closing pressure differential is removed and flow through the valve is initiated, or a

mechanical opening force is applied to the disk. The inspectors, in reviewing the licensee's IST program for both units, found that the licensee apparently considered it necessary to show prompt opening in the exercise test referred to above, but not to show opening to the position required to fulfill function. Examples of valves for which this was the case included Unit 1 and 2 valves E11-F050A and B. The inspectors informed the licensee that they would be provided with a formal NRC position on the proper interpretation of the requirements. Disposition of the matter will be based on the interpretation provided and Region II's further review of the licensee's related actions, as evaluated in future inspections. This is identified as unresolved item 321, 366/83-08-08, Exercising Requirements for Check Valves.

- (9) Requests for relief from Code requirements submitted to the NRC for valves E11-F050A and B (for both units) stated that there was not means to fully stroke these valves. From discussion with the licensee the inspectors found that this was erroneous. The licensee indicated that this error apparently occurred because they had also applied this same request to two valves through which flow was never introduced. The licensee indicated their intent to prepare and submit a revised IST program and relief requests later in 1983. The error is to be corrected in the planned revision. This matter will remain open for Region II's further review of the licensee's program and relief requests (including the previously noted planned revisions such that the significance of the errors may be evaluated and correction of the program verified). Pending completion of these actions this matter is identified as unresolved item 321, 366/83-08-09, Erroneous Relief Request.
- (10) In reviewing the licensee's procedures for pump testing the inspectors identified the following errors which appeared to be so obvious as to be of minor significance:
- Procedure HNP-2-3183 specified no stroke time for valve P41-316D (identical stroke times were specified for valves 316A, B and C).
 - An instrument range in Table 1 of procedure HNP-2-3801 was specified as "later".
 - The bearing temperature required action range was incorrectly specified 180°F in procedure HNP-2-3702 whereas it should have been >math>180^{\circ}\text{F}</math>.

The licensee indicated that the above errors would be promptly corrected. Region II will further verify the lack of significance in these errors and verify correction of errors in subsequent inspection. Pending completion of the verifications this is identified inspector followup item 321, 366/83-08-10, Errors in Pump Test Procedures.

- (11) In reviewing the licensee's IST programs and the included requests for relief from Code requirements, the inspectors found that requests for relief from bearing temperature measurements on RHR, Core Spray, and Service Water pumps appeared unclear; and that the program omitted (an apparent typographical omission) certain tests for the Standby Diesel Service Water pump. The inspectors verified that the test procedure for the pump included the required tests. The licensee agreed to review the bearing temperature relief requests and clarify them if necessary. Also, the licensee agreed that part of the test requirements for the Standby Diesel Service Water Pump had been omitted from their program in error and stated they would correct the error. Pending Region II's re-examination of the licensee's IST program and relief requests to verify the adequacy of corrections, this matter is identified as inspector followup item 321, 366/83-08-11, Unclear Relief Requests and Program Omission.

Within the areas examined, no violations or deviations were observed except as reported in paragraph 5.c.(1) above.

6. Plant Water Chemistry Program (92706) Units 1 and 2

The inspectors reviewed with the licensee the scope of the Hatch water chemistry program and the effectiveness of this program, during the operating life of both units, in preventing operational and structural malfunctions. The inspectors also examined selected areas of chemical control to verify that the chemistry program fulfills the requirements of the Technical Specifications.

- a. The inspectors overview of the program was obtained through discussions with cognizant plant personnel on subjects of: operational experience of the two Hatch units; metallurgical failures associated with chemical induced corrosion; and control of water chemistry in the reactor cooling system, suppression pool, and service water system. The results of these discussions are summarized as follows. Hatch has experienced the type of cracks in the recirculation system that have been identified in IE Bulletin 83-02, however, the licensee does not attribute these cracks to inadequate chemical control. Certain control rods have experienced pitting that is attributed to copper induced corrosion. (Copper tends to concentrate in the water within the reactor vessel and approaches the 30 ppb limit set as a plant guide). The licensee is observing extraction of zinc from the paint on the walls of the torus, but the presence of this ion in the suppression pool water has not been determined to be detrimental. The suppression pool water is usually turbid due to the presence of algae. The licensee does not use any chemicals to control the purity of the reactor cooling water or the suppression pool water, but does inject chlorine into cooling water taken from the Altamaha River and also into the closed cycle cooling water. Radiolysis within the reactor vessel results in concentrations of dissolved oxygen of about 200 ppm. Such a high level of oxygen is normal in BWRs and is being investigated by the NRC as potentially facilitating stress-corrosion cracking.

- b. The inspectors examined the following specific procedures to determine if they cover all chemical parameters in the Technical Specifications and other parameters that are required to control potential operational and metallurgical problems.

- (1) HNP-0-CCP-07633, Primary Coolant Sampling Program
- (2) HNP-0-CCP-07629, Hotwell/Condensate Pump Discharge Analysis Program
- (3) HNP-0-CCP-0716, Condensate Demineralizer Performance Program
- (4) HNP-0-CCP-0726, Suppression Pool Sampling
- (5) HNP-0-CCP-0732, Plant Startup Chemical Control

The two chemical parameters (chloride and conductivity) that have concentration limits set by Technical Specifications were verified to have been determined on the schedule designated in the plant's computerized data base. (All other chemical tests are tracked in the Chemistry Department's own system.) The inspectors did not review any test results during this inspection.

As part of their review of the plant's Chemistry Program, the inspectors reviewed the licensee's report 82-QC-1, "Audit of Site Chemistry and Radiochemistry" dated March 18, 1982. This audit covered the second half of 1981 and identified four deficiencies in the implementation of the Chemistry Program.

- 1) Inadequate and untimely reviews of data sheets
- 2) Lack of documentation to support completion of activities
- 3) Inaccurate and inadequate procedures
- 4) Noncompliance with reagent's shelf life and labeling requirements

The licensee's audit also revealed that the guides (limits) for several chemical parameters (including conductivity, SiO_2 , and all variables associated with the clean-up demineralizers) were routinely being exceeded. These results were indicative that the demineralizers were not operating effectively during the audit period.

- c. The inspectors identified four matters of interest with regard to the continued adequacy of the water chemistry program which will be reviewed further in subsequent inspections:

- (1) The results of tests performed in accordance with procedure HNP-0-CCP-7633 will be followed as inspector followup item 321, 366/83-08-12, Primary Coolant Chemistry

- (2) The licensee's correction of the deficiencies described in their audit report 82-QC-1 will be followed as inspector followup item 321, 366/83-08-13, Correction of Audit Findings
- (3) The apparently inefficient operation of the licensee's demineralizers will be reviewed further as inspector followup item 321, 366/83-08-14, Demineralizer Operation
- (4) The significance of the levels dissolved oxygen concentrations in systems experiencing stress corrosion cracking will be reviewed further as inspector followup item 321, 366/83-08-15, Affects of Oxygen Concentrations in Water on Stress Corrosion Cracking.

Within the areas examined, no violations or deviations were identified.

7. Inspector Followup Items (92706) Units 1 and 2

(Open) Inspector Followup Item (321/82-23-01, 366/82-21-01): Controls on issue and update of pump and valve inspection plans. This item involves the licensee's failure to provide document control for and to update their Long-Term Inservice Inspection Pump and Valve Test Plans for Unit 1 and Unit 2. The concern was originated by the licensee and, as a result of an NRC inspector's interest in its proper resolution it was identified as a NRC inspector followup item.

The inspectors discussed the updating aspects of the item with the licensee and were informed that this work was still in progress. Therefore, the item will remain open.