



UNITED STATES  
 NUCLEAR REGULATORY COMMISSION  
 REGION II  
 101 MARIETTA STREET, N.W.  
 ATLANTA, GEORGIA 30323

May 16, 1988

Report Numbers: 50-321/88-11 and 50-366/88-11

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

Docket Numbers: 50-321 and 50-366

License Numbers: DPR-57 and NPF-5

Facility Name: Hatch 1 and 2

Inspection Dates: March 26 - April 22, 1988

Inspection at Hatch site near Baxley, Georgia

Inspectors:	<u><i>Peter Holmes-Ray</i></u>	<u>5/11/88</u>
	Peter Holmes-Ray, Senior Resident Inspector	Date Signed
	<u><i>John E. Menning</i></u>	<u>5/11/88</u>
	John E. Menning, Resident Inspector	Date Signed

Accompanying Personnel: Randall A. Musser

Approved by:	<u><i>Marvin V. Sinkule</i></u>	<u>5/13/88</u>
	Marvin V. Sinkule, Chief, Project Section 3B Division of Reactor Projects	Date Signed

SUMMARY

Scope: This routine inspection was conducted at the site in the areas of Licensee Action on Previous Enforcement Matters, Operational Safety Verification, Maintenance Observations, Plant Modification, Surveillance Testing Observations, ESF System Walkdown, Radiological Protection, Physical Security, Reportable Occurrences, and Operating Reactor Events.

Results: One violation was identified involving improper design of torus to drywell vacuum breaker test solenoid valves.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

T. Beckham, Vice President - Plant Hatch  
C. Coggin, Training and Emergency Preparedness Manager  
\*D. Davis, Manager General Support  
J. Fitzsimmons, Nuclear Security Manager  
\*P. Fornel, Maintenance Manager  
\*O. Fraser, Site Quality Assurance (QA) Manager  
\*M. Googe, Outages and Planning Manager  
\*H. Nix, Plant Manager  
\*T. Powers, Engineering Manager  
\*D. Read, Plant Support Manager  
H. Sumner, Operations Manager  
\*S. Tipps, Nuclear Safety and Compliance Manager  
R. Zavadoski, Health Physics and Chemistry Manager

Other licensee employees contacted included technicians, operators, mechanics, security force members, and office personnel.

#### NRC Resident Inspectors

P. Holmes-Ray  
\*J. Menning  
\*R. Musser

NRC management personnel on site during inspection period:

L. Crocker, Project Directorate II3, NRR/DRP  
L. Boyes, Director, Division of Reactor Projects, Region II  
M. Sinkule, Chief, Project Section 3B, Region II

\*Attended exit interview

### 2. Exit Interview (30703)

The inspection scope and findings were summarized on April 25, 1988, with those persons indicated in paragraph 1 above. The inspectors described the areas inspected and discussed in detail the inspection findings listed below. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection. The licensee acknowledged the findings and took no exception.

<u>Item Number</u>	<u>Status</u>	<u>Description/Reference Paragraph</u>
321,366/88-11-01	Opened	VIOLATION - Design of Test Solenoid Valves (paragraph 5)

(cont'd)

<u>Item Number</u>	<u>Status</u>	<u>Description/Reference Paragraph</u>
366/88-07-01	Closed	UNRESOLVED ITEM* (URI) - Design and Installation of Vacuum Breaker Air Test Lines (paragraphs 3.a and 5)
366/88-07-02	Closed	URI - Post Maintenance Leak Rate Testing (paragraphs 3.b, 5, and 12)
321,366/88-05-02	Closed	URI - Leak Testing of Test Solenoid Valves (paragraphs 3.c and 5)

## 3. Licensee Action on Previous Enforcement Matters (92702)

- a. (Closed) URI 366/88-07-01, Design and Installation of Vacuum Breaker Air Test Lines

This URI was opened following the licensee's discovery that portions of the Unit 2 torus to drywell vacuum breaker air test lines had not been designed and installed as described in the Final Safety Analysis Report (FSAR). As discussed in paragraph 5, this matter was determined to be a licensee-identified deviation, and the deviation was not cited.

(Closed) URI 366/88-07-02, Post Maintenance Leak Rate Testing

This URI was opened to track two instances in which primary containment penetrations had not been local leak rate tested following maintenance. As discussed in paragraph 5, this matter was determined to be a licensee-identified violation after further review. The violation was not cited because the requirements specified in 10 CFR Part 2, Appendix C, Section V, were satisfied.

- c. (Closed) URI 321,366/88-05-02, Leak Testing of Test Solenoid Valves

This URI was opened following the licensee's discovery that torus to drywell vacuum breaker test solenoid valves T48-F342A-L would not hold pressure during local leak rate testing when pressurized on the accident side. As discussed in paragraph 5, this matter has been determined to be a violation of technical specification requirements and will now be tracked as violation 321,366/88-11-01.

\*An unresolved item is a matter about which more information is required to determine whether it is acceptable or may involve a violation or deviation.

#### 4. Unresolved Items

No URI's were identified during this reporting period.

#### 5. Operational Safety Verification (71707) Units 1 and 2

The inspectors kept themselves informed on a daily basis of the overall plant status and any significant safety matters related to plant operations. Daily discussions were held with plant management and various members of the plant operating staff. The inspectors made frequent visits to the control room. Observations included instrument readings, setpoints and recordings, status of operating systems, tags and clearances on equipment, controls and switches, annunciator alarms, adherence to limiting conditions for operation, temporary alterations in effect, daily journals and data sheet entries, control room manning, and access controls. This inspection activity included numerous informal discussions with operators and their supervisors. Weekly, when on site, selected Engineering Safety Feature (ESF) systems were confirmed operable. The confirmation was made by verifying the following: access valve flow path alignment, power supply breaker and fuse status, instrumentation, major component leakage, lubrication, cooling, and general condition.

General plant tours were conducted on at least a weekly basis. Portions of the control building, turbine building, reactor building, and outside areas were visited. Observations included general plant/equipment conditions, safety related tagout verifications, shift turnover, sampling program, housekeeping and general plant conditions, fire protection equipment, control of activities in progress, radiation protection controls, physical security, problem identification systems, missile hazards, instrumentation and alarms in the control room, and containment isolation.

On April 4, 1988, the licensee predicted that continued operation of Unit 1 would cause the drywell floor drain leakage to exceed the rate of 5 gpm specified in the Unit 1 Technical Specifications. Therefore, at 2204 on April 4, 1988, the licensee commenced a controlled reactor shutdown. At 0908 on April 5, 1988, the main generator was removed from the line and at 1103 the reactor was manually scrammed. During this outage, the licensee repaired leaking valves in the drywell, replaced the "F" and "K" Safety/Relief Valves (SRV), and visually inspected certain areas inside

the torus. As discussed in NRC Inspection Report Nos. 50-321/87-26 and 50-366/87-26, unusual sounds were noted coming from the Unit 1 torus in the vicinity of the "K" SRV discharge line and T-quencher on September 26, 1987. Because the sounds stopped when torus spray was operating, the Residual Heat Removal (RHR) system was operated continuously in the torus spray mode subsequent to that time. The team investigating these sounds recommended inspections of the "K" SRV discharge line vacuum breaker, discharge line, and neighboring torus internals during the next Unit 1 shutdown of sufficient duration. These recommended inspections were conducted during the shutdown that commenced on April 4, 1988. An NRC inspector accompanied licensee personnel on the torus inspections. No damage was observed. The replacement of the "K" SRV obviated the need for continued operation of RHR in the torus spray mode. Criticality was again achieved in Unit 1 at 0705 on April 11, 1988. Rated power was achieved on April 15, 1988.

On April 15, 1988, the licensee experienced difficulties returning the Unit 2 "A" hydrogen recombiner system to operable status prior to the expiration of a 30-day limiting condition for operation (LCO). Repair work on this system had required cutting and rewelding of a line. The licensee realized that required radiographic examination of the weld and system pressure and functional testing could not be completed prior to 1500, when a 30-day LCO associated with Technical Specification 3.6.6.2.a was due to expire. Discretionary enforcement action was requested from Region II to provide additional time to complete these required activities. Region II subsequently granted an additional 72 hours for return of the system to operable status. The required examination and testing were satisfactorily completed and the "A" hydrogen recombiner system was declared operable at 0135 on April 17, 1988.

As discussed in NRC Inspection Report Nos. 50-321/88-05 and 50-366/88-05, URI 321,366/88-05-02 was opened following the licensee's discovery that torus to drywell vacuum breaker test solenoid valves T48-F342A-L would not hold pressure during local leak rate tests (LLRT) when pressurized on the accident side. Testing prior to February 1988 had been performed with pressure applied on the side of the F342 valves away from accident pressure. These test solenoid valves are considered outboard containment isolation valves. Investigation by the licensee revealed that the valves in Unit 1 would remain closed up to an accident side pressure of 35 psig. The valves in Unit 2 had weaker springs and would open at a lower level of accident side pressure. Since the licensee is required to LLRT these valves at 59 and 57.5 psig for Units 1 and 2, respectively, the design of the valves was inadequate. Criterion 57 of Appendix A of 10 CFR Part 50 requires that each line that penetrates primary reactor containment and is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote operation. The inadequate design of valves T48-F342A-L is a violation of this requirement in that the valves were incapable of performing a containment isolation function as demonstrated by required LLRT. Accordingly, URI 321,366/88-05-02 is closed, and this matter will now be tracked as violation 321,366/88-11-01, Design of Test Solenoid Valves.

As discussed in NRC Inspection Report Nos. 50-321/88-07 and 50-366-88-07, URI 366/88-07-02 was opened to track two instances in which primary containment penetrations had not been LLRTd following maintenance. More specifically, High Pressure Coolant Injection system turbine exhaust line penetration number 214 and electrical penetration 2T52-X105C had not been LLRTd following maintenance during the recent Unit 2 outage. Subsequent LLRTs on these penetrations yielded acceptable results. In responding to these discrepancies, the licensee entered appropriate LCOs and made required reports to the NRC. The licensee also reviewed 400 Maintenance Work Orders (MWO) that had been worked during the Unit 2 outage and affected primary containment penetrations. No additional LLRT discrepancies were identified in this review. Investigation has shown that both discrepancies were caused by weaknesses in the administrative control system that enforces review of LLRT components and ensures that all LLRTs are performed.

In the case of penetration 214, a MWO (No. 2-87-4342) was processed through the administrative system without being identified as involving LLRT requirements. The MWO was erroneously not marked with a stamp indicating, "Contact LLRT Coordinator before starting any maintenance/adjustment work and again, if required, after work before signing off clearance." In the case of electrical penetration 2T52-X105C, the LLRT requirement was identified on the MWO (No. 2-88-743), but LLRT personnel were not informed to perform the required testing. The licensee has taken the following steps to ensure that all maintenance-related LLRTs are performed as required in the future:

- \* The Nuclear Plant Management Information System (NPMIS) computer data base has been updated to include Unit 2 LLRT components that have Master Parts List (MPL) numbers. This data base is used in the preparation of MWOs.
- \* By letter dated March 28, 1988, the licensee established additional administrative controls to ensure that LLRT requirements are properly addressed on MWOs. An MWO review sheet will be added to MWOs to ensure compliance and proper documentation.
- \* The NPMIS data base for Unit 1 has been checked to ensure that it identifies all LLRT components that have MPL numbers.
- \* The stamp specifying, "Contact LLRT Coordinator before starting any maintenance/adjustment work and again, if required, after work before signing off clearance" was modified to delete the "if required."

The following additional steps are planned to prevent similar LLRT discrepancies:

- \* A new procedure will be issued to provide separate checks for LLRT applicability on initial review of MWOs, and for a method for updating the NPMIS system LLRT component list.

- \* Maintenance procedure 50AC-MNT001-0S, "Maintenance Program," will be revised to improve the LLRT component review form and strengthen the requirements to contact the LLRT coordinator before and after maintenance.
- \* Methods to enter LLRT components without MPL numbers into the NPMIS data base will be investigated.

Technical Specification 3.6.1.2.b specifies a maximum combined leakage rate for penetrations and valves subject to Type B and C tests. The specified leakage rate cannot be exceeded for primary containment integrity to exist. The failure to conduct post maintenance LLRTs on penetration number 214 and electrical penetration 2T52-X105C appears to be a violation of Technical Specification 3.6.1.2.b in that the licensee did not have test data available to demonstrate compliance with the leakage requirement. However, since all the requirements specified in 10 CFR Part 2, Appendix C, Section V, were satisfied, this licensee-identified violation is not being cited. Additionally, URI 366/88-07-02 is closed.

As discussed in NRC Inspection Report Nos. 50-321/88-07 and 50-366/88-07, URI 366/88-07-01 was opened following the licensee's discovery that Unit 2 torus to drywell vacuum breaker air test lines had not been designed and installed as described in the FSAR. The air test lines in question are the individual, stainless steel lines between test solenoid valves 2T48-F342A-L and the air operators for vacuum breakers 2T48-F323A-L. Note 18 of Table 6.2-5 in the Unit 2 FSAR describes these lines as being Seismic Category 1 and Class 2 per Section III of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. The licensee discovered that these lines had in actuality been designed and installed to comply with American National Standards Institute (ANSI) B31.1, "Standard Code for Pressure Piping, Power Piping." These lines were subsequently modified to be Seismic Category 1. The licensee also proposed to the NRC that the subject lines be treated as ANSI B31.1 upgraded to Class 2 for ASME Section III, with Section XI inspection and testing requirements. The licensee's proposal was subsequently approved by the NRC. Failure to design and install the air test lines as described in the FSAR represents a deviation from a licensee commitment. However, in consideration of the safety significance of this matter, the timely reporting and corrective actions taken by the licensee, and the apparent uniqueness of this matter, this licensee-identified deviation is not being cited. Therefore, URI 366/88-07-01 is closed.

The licensee announced on April 19, 1988, that Units 1 and 2 would be voluntarily shutdown for a 30-day period in order to evaluate and correct problems identified as a result of a recent Institute of Nuclear Power Operations (INPO) evaluation. Prior to this announcement, Unit 1 was operating at 100 percent power and Unit 2 was in hot shutdown and preparing to startup after recovering from a reactor scram on April 17, 1988. Unit 1 subsequently scrambled at 0902 on April 19, 1988, following a

turbine trip. This reactor scram is discussed in paragraph 13. Unit 2 achieved cold shutdown at 2240 on April 19, 1988. Unit 1 reached cold shutdown at 1818 on April 20, 1988.

One violation was identified.

6. Maintenance Observations (62703) Units 1 and 2

During the report period, the inspectors observed selected maintenance activities. The observations included a review of the work documents for adequacy, adherence to procedure, proper tagouts, adherence to technical specifications, radiological controls, observation of all or part of the actual work and/or retesting in progress, specified retest requirements, and adherence to the appropriate quality controls. The primary maintenance observations during this month are summarized below:

<u>Maintenance Activity</u>	<u>Date</u>
a. Repair of Reactor Core Isolation Cooling (RCIC) system valve 1E51-F045 per MWO 1-88-1310 (Unit 1)	03/31/88
b. Appendix R equipment sealing in Unit 2 RCIC corner room per MWO 2-88-1780 and Design Change Request 86-223-E002 (Unit 2)	04/13/88
c. Trouble shooting on "A" Hydrogen Recombiner system per MWO 2-88-2027 (Unit 2)	04/14/88

No violations or deviations were identified.

7. Plant Modification (37700) Units 1 and 2

The Design Change Requests (DCR) listed below were reviewed to determine whether the provisions of 10 CFR 50.59 applied or whether changes to the technical specifications or unreviewed safety questions were involved:

DCR No.

80-101  
 83-243  
 86-192 Rev. 1  
 86-208  
 86-283 Rev. 1  
 86-284  
 87-078  
 87-09  
 87-100

The safety evaluations for each of the above DCRs were found to adequately address the questions of:

- \* Does the design change increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety, as previously evaluated in the updated FSAR?



- \* Does the design change create a possibility for an accident or malfunction of a different type than any evaluated previously in the updated FSAR?
- \* Does the design change reduce the margin of safety as defined in the basis for any technical specification?

It was noted that DCRs 86-192 Rev. 1, 86-283 Rev. 1, and 86-284 required changes to the technical specification. The licensee requested such changes in accordance with 10 CFR 50.90, and license amendments were issued by the NRC. It was also noted that all of the DCRs had been reviewed by the Plant Review Board. Each DCR had also been reviewed for impact on the fire protection plan and had received a QA review. The DCRs included reference lists of procedures governing the work to be performed as well as procedures to be used for acceptance testing. Acceptance values or performance requirements were included. Where appropriate, the DCRs included drawings or sketches of the work to be performed. Each of these DCRs was included in a listing of completed DCRs submitted in the licensee's "Annual Operating Report for 1987" on February 29, 1988.

No violations or deviations were identified.

#### 8. Surveillance Testing Observations (61726) Units 1 and 2

The inspectors observed the performance of selected surveillances. The observation included a review of the procedure for technical adequacy, conformance to technical specifications, verification of test instrument calibration, observation of all or part of the actual surveillances, removal from service and return to service of the system or components affected, and review of the data for acceptability based upon the acceptance criteria. The primary surveillance testing observations during this month are summarized below:

<u>Surveillance Testing Activity</u>	<u>Date</u>
a. Core Spray system Pump Operability testing per procedure 34SV-E21-001-2S (Unit 2)	03/31/88
b. Standby Liquid Control Pump Operability testing per procedure 34SV-C41-001-1S (Unit 1)	04/03/88
c. Diesel Generator 2C Monthly Test per procedure 34SV-R43-003-2S (Unit 2)	04/19/88
d. Average Power Range Monitor Instrument Functional Test and Calibration testing per procedure 34SV-C51-002-1S (Unit 1)	04/21/88

No violations or deviations were identified.

## 9. ESF System Walkdown (71710) Unit 1

The inspectors routinely conducted partial walkdowns of ESF systems. Valve and breaker/switch lineups and equipment conditions were randomly verified both locally and in the control room to ensure that lineups were in accordance with operability requirements and that equipment material conditions were satisfactory. Accessible portions of the Plant Service Water system in the Unit 1 reactor building were walked down in detail.

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

## 10. Radiological Protection (71709) Units 1 and 2

The resident inspectors reviewed aspects of the licensee's radiological protection program in the course of the monthly activities. The performance of health physics and other personnel was observed on various shifts to include: involvement of health physics supervision, use of radiation work permits, use of personnel monitoring equipment, control of high radiation areas, use of friskers and personal contamination monitors, and posting and labeling.

No violations or deviations were noted.

## 11. Physical Security (71881) Units 1 and 2

In the course of the monthly activities, the resident inspectors included a review of the licensee's physical security program. The performance of various shifts of the security force was observed in the conduct of daily activities to include: availability of supervision, availability of armed response personnel, protected and vital access controls, searching of personnel, packages and vehicles, badge issuance and retrieval, escorting of visitors, patrols, and compensatory posts.

The inspector verified the absence of obstructions in the isolation zone area on each side of the protected area fence that could conceal an unauthorized entry or interfere with the capability of the detection/assessment system. The adequacy of illumination in the protected area was also verified. On April 14, 1988, the inspector visited the central and secondary alarm stations and determined that surveillance equipment was functioning properly.

No violations or deviations were noted.

## 12. Reportable Occurrences (90712 &amp; 92700) Units 1 and 2

A number of Licensee Event Reports (LER) were reviewed for potential generic impact, to detect trends, and to determine whether corrective actions appeared appropriate. Events which were reported immediately were also reviewed as they occurred to determine that technical specifications

were being met and the public health and safety were of utmost consideration.

Unit 1: 88-03 Spurious Ground Fault Trips Main Turbine and Generator Resulting in Reactor Scram.

The events of this LER concern the Unit 1 reactor scram on February 26, 1988. This matter was discussed in NRC Inspection Report Nos. 50-321/88-07 and 50-366/88-07, and this LER is closed.

Unit 2: 88-06 Procedure Deficiency Causes Scram and One Valve Fails to Close on Group 1 Isolation.

The events of this LER were discussed in NRC Inspection Report Nos. 50-321/88-07 and 50-366/88-07 and resulted in the identification of violation 366/88-07-05. This LER is closed.

88-09 Personnel Errors Cause Missed Tests Resulting in Condition Prohibited by Technical Specifications.

The events of this LER were initially identified as URI 366/88-07-02. As discussed in paragraph 5, this matter is now considered a licensee-identified violation. This LER is closed.

### 13. Operating Reactor Events (93702) Units 1 and 2

The inspectors reviewed activities associated with the below listed reactor events. The review included determination of cause, safety significance, performance of personnel and systems, and corrective action. The inspectors examined instrument recordings, computer printouts, operations journal entries, and scram reports and had discussions with operations maintenance and engineering support personnel as appropriate.

At 0255 on April 17, 1988, Unit 2 automatically scrambled during the performance of procedure 34SV-C71-005-2S, "Turbine Control Valve Fast Closure Instrument Functional Test." The No. 2 Control Valve had been closed, giving the anticipated trip of Reactor Protection System (RPS) channel A. An apparently spurious trip of RPS channel B then occurred, resulting in the full reactor scram. No annunciator or computer alarms associated with the RPS channel B trip were received. Following the scram, the reactor feed pumps restored vessel water level which decreased to a low point of approximately minus 20 inches indicated. Both recirculation pump motor-generator (MG) set scoop tubes were locked at the time of the scram due to previous MG set controller problems. Both scoop tubes were unlocked following the scram to allow recirculation pump runbacks to occur. The "A" recirculation pump failed to run back as

anticipated. Following verification that run back did not take place, the "A" recirculation pump was manually tripped. Control room personnel also noted that scram discharge volume isolation valve 2C11-F035A did not close on the reactor scram as expected.

Investigation of the cause of the RPS channel B trip involved testing of the nuclear instrumentation associated with the channel, reperforming procedure 34SV-C71-005-2S, and testing each channel B input. Since these efforts did not reveal the source of the trip signal, the licensee decided to monitor all RPS channel B inputs with a recorder to identify the source(s) of any future spurious trips. Investigation into the "A" recirculation pump runback problem showed that the MG set scoop tube was binding up at the upper and lower ends of its range, requiring mechanical repairs. The improper functioning of valve 2C11-F035A was found to be caused by deteriorated packing, requiring change out of the packing. As noted in paragraph 5, Unit 2 restart was delayed in view of the licensee's decision on April 19, 1988, to shut down both Hatch units for a 30-day period.

At 0902 on April 19, 1988, Unit 1 automatically scrambled due to a turbine trip. The turbine trip, in turn, was caused by a thrust bearing wear detector trip. At the time of the scram, Unit 1 was operating at 100 percent power. Plant personnel were performing a clearance to switch turbine lube oil cooling from cooler "A" to cooler "B" so that maintenance could be performed on the "A" cooler. Reactor vessel level decreased to a minimum level of plus 11.5 inches indicated following the scram. The turbine trip caused an instantaneous spike in reactor pressure to 1085 psig, which resulted in 10 of the 11 SRVs opening. Initial review of this event indicates that plant systems functioned properly. It was determined that the turbine trip was caused by an air bubble in the lube oil system which caused low lube oil pressure to be sensed by the thrust bearing wear detector pressure switch. It appears that the air bubble was present in the "B" lube oil cooler and entered the lube oil system when that cooler was placed in service. Unit 1 was brought to cold shutdown following this scram, consistent with the licensee's decision on April 19, 1988, to shut down both Hatch units for a 30-day period.

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