



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W., SUITE 2900  
ATLANTA, GEORGIA 30323-0199

Report Nos.: 50-321/94-24 and 50-366/94-24

Licensee: Georgia Power Company  
P.O. Box 1295  
Birmingham, AL 35201

Docket Nos.: 50-321 and 50-366 License Nos.: DPR-57 and NPF-5

Facility Name: Hatch Nuclear Plant

Inspection Conducted: September 4 - September 30, 1994

Inspectors: *D.A. Jones* 10-26-94  
for Bob L. Holbrook, Sr. Resident Inspector Date Signed

*D.A. Jones* 10-26-94  
for Edward F. Christnot, Resident Inspector Date Signed

Accompanying Inspector: James A. Canady

Approved by: *Pierce H. Skinner* 10-26-94  
Pierce H. Skinner, Chief, Date Signed  
Project Section 3B  
Division of Reactor Projects

SUMMARY

Scope: This routine resident inspection involved inspection on-site in the areas of operations, surveillance testing, review of maintenance activities, refueling activities and review of open items.

Results: One unresolved item was identified for fuel movement errors. The errors occurred when two fuel bundles were moved out-of-sequence from the reactor core to the spent fuel pool. The refueling crew operators failed to properly identify and conduct second person verification of the bundles prior to movement (paragraph 3b).

The inspectors identified a strength in control room operations during the shutdown of Unit 1. Operators demonstrated a heightened awareness for monitoring shutdown cooling (paragraph 2b).

The inspectors reviewed documentation and walked down systems in preparation for Unit 1 refueling activities. This review included containment integrity (paragraph 2C), fuel pool cooling (paragraph 3c), and the Decay Heat Removal System (paragraph 3d). The inspectors did not identify any discrepancies.

## REPORT DETAILS

### 1. Persons Contacted

#### Licensee Employees

- \*J. Anderson, Unit Superintendent
- \*C. Coggin, Training and Emergency Preparedness Manager
- \*P. Fornel, Maintenance Manager
- \*G. Goode, Engineering Support Manager
- \*W. Kirkley, Health Physics and Chemistry Manager
- \*C. Moore, Assistant General Manager - Operations
- \*J. Payne, Nuclear Safety and Compliance - Engineer
- \*D. Read, Assistant General Manager - Plant Support
- \*K. Robuck, Manager, Modifications and Maintenance Support
- \*H. Sumner, General Manager - Nuclear Plant
- \*S. Tipps, Nuclear Safety and Compliance Manager
- \*P. Wells, Operations Manager

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

#### NRC Resident Inspectors

- \*B. Holbrook
- \*E. Christnot

#### Accompanying Inspector

- \*J. Canady

NRC management/officials on site during inspection period:

- H. Berkow, Director, Project Directorate, II-3, NRR
- K. Jabbour, Senior Project Manager, Project Directorate II-3, NRR

- \* Attended exit interview

Acronyms and abbreviations used throughout this report are listed in the last paragraph.

### 2. Plant Operations (71707)

#### a. Operations Status and Observations

Unit 1 began the report period at 100% RTP. On September 10, the unit began decreasing in power due to end of cycle fuel depletion. On September 21, a manual scram was initiated to begin the fifteenth refueling outage. The unit entered cold shutdown on September 22.

Unit 2 began the report period at 98% RTP and achieved 100% RTP on September 6. The unit operated at that power level for the report

period with the exception of scheduled power reductions for routing testing.

Activities within the control room were routinely monitored. Inspections were conducted on day and on night shifts, during weekdays and on weekends. Observations included control room manning, access control, operator professionalism and attentiveness, and adherence to procedures. Instrument readings, recorder traces, annunciator alarms, operability of nuclear instrumentation and reactor protection system channels, availability of power sources, and operability of the SPDS were monitored.

Control Room observations also included ECCS system lineups, containment and secondary containment integrity, reactor mode switch position, scram discharge volume valve positions, and rod movement controls.

Plant tours were taken throughout the reporting period on a routine basis. The areas toured included the following:

|                           |                    |
|---------------------------|--------------------|
| Reactor Building          | Intake Structure   |
| Diesel Generator Building | Fire Pump Building |
| Station Yard Zone         | Turbine Building   |
| Refuel Floor              |                    |

During the tours, the inspectors noted that extensive maintenance activities were conducted to improve house keeping in the intake structure. The activity included sand blasting and painting of structures and components in the lower pump suction pit area. The inspectors concluded the house keeping condition of this areas was greatly improved.

b. Operator Performance During Shutdown Activities (71707) (60705)

The inspectors observed operator performance during some of the activities in preparation for the refueling outage. The activities included reactor power reduction, and system and component operation and alignments to achieve unit cold shutdown conditions. The inspectors verified procedures were used and adequate management oversight was provided. The inspectors also verified the unit cooldown and depressurization procedures were performed in accordance with TS.

The inspectors reviewed several of the administrative and procedural controls that licensee management initiated to preclude the loss of a SDC event. This included a review of the ARP for RHR low flow associated with the loss of SDC. The alarm was installed to assist operators in the detection of a loss of SDC event. The inspectors discussed the alarm function and required operator actions with control room operators. The inspectors verified that the low flow alarm was tested satisfactorily.

The inspectors reviewed recently issued Operating Order Number 00-01-0994S, Potential for Loss of Shutdown Cooling During the Unit 1 Outage. The Operating Order discussed the procedural and administrative controls initiated to preclude the possibility of a loss of SDC event. The inspectors noted the controls listed in the operating order were items that the licensee discussed with NRC following a previous loss of SDC event. The inspectors concluded the controls were appropriate, and comprehensive. The licensee demonstrated a proactive safety consciousness to prevent a loss of SDC.

The inspectors verified that the outage safety assessment placard used to indicate color coded safety conditions was used. The placard will display either green, yellow, or red depending on the availability and condition of key safety functions.

The inspectors did not identify any concerns during these observations.

c. Secondary Containment Modified Mode (71707) (61715)

The inspectors reviewed and observed the licensee's activities involved with placing Unit 1 containment in the modified mode of operation. This mode is used during Unit 1 refueling outage and isolates the Unit 1 SBT system from the Unit 1 reactor building, drywell and torus. The inspectors reviewed procedures 34SO-T46-001-1S: Standby Gas Treatment System, and 34SV-T46-004-1S: Secondary Containment Test. Switch alignment, valve and damper positions, clearance boundaries, LCO requirements and maintenance activities were verified to be in accordance with the procedure requirements. The inspectors concluded that the secondary containment modified mode was adequately established.

No violations or deviations were identified.

3. Unit 1 Refueling Observations (60710) (71707)

a. Refuel Floor Activities

The inspectors toured the refueling floor and observed initial refueling activities. The inspectors observed part of the activities associated with the shield block, DW head, and reactor vessel head removal. The inspectors discussed log keeping functions with the RFTD. The inspectors reviewed the logs and discussed with the RFTD the logs that were maintained on the computer. The work activities were performed in a controlled manner. The inspectors did not identify any concerns during these observations.

b. Unit one Fuel Movement Errors

On September 24, operators were conducting a core offload for Unit 1. Two fuel bundles were moved out-of-sequence from the reactor core to the SFP. Step 17 of the fuel move sheet required the fuel bundle in core location 23-02 be moved to the SFP. However, the SRO misread the core map location and instructed the RO to move an incorrect bundle. The RO and SRO failed to conduct proper verification prior to the fuel move. The incorrect bundle was positioned in the SFP. A second mistake was made when the next bundle, the diagonal bundle, was moved to the SFP. Movement of the diagonal bundle was the next logical fuel bundle to be moved, but was not the next in sequence. Again, the RO and SRO failed to properly verify the correct bundle prior to the fuel move.

The licensee's investigation identified several problems that contributed to the event. During previous core move activities bundle verifications were performed using two verifiers. This was in addition to the operator assigned to manipulate the refueling bridge. During this event only two operators were assigned to fuel movements duties. The operator assigned to manipulate the bridge was also signing as the second verifier. Following the event the licensee assigned a third person to fuel movement activities. The third person will perform second person verifications. The operator manipulating the refueling bridge will not perform official verification duties.

The inspectors noted that a similar event occurred during the Unit 2 refueling activities in April, 1994. The three examples cited in the violation were caused by personnel error and were reported as VIO 50-366/94-08-01: Insufficient Verification of Bundle Location During Fuel Movement. The details of this event are contained in IR 50-321,366/94-08.

Additional detailed review will be necessary to evaluate the licensee's immediate and long term corrective actions. This item is identified as Unresolved Item 50-321,366/94-24-01: Unit 1 Fuel Movement Error.

One URI was identified.

c. Walkdown of Spent Fuel Pool Cooling and Cleanup System (86700)

The inspectors conducted a walkdown of the Unit 1 and Unit 2 FPC&C Systems. NRC Bulletin 94-01, Potential Fuel Pool Draindown Caused by Inadequate Maintenance Practices at Dresden Unit 1, identified concerns regarding the quality of the FPC&C system, shielding for fuel or equipment stored in the SFP, and the proper maintenance of necessary structures and support systems. NRC IN 94-38, Results of a Special Inspection of Service Water Inside Containment, also provides additional information concerning the issue.

The inspectors reviewed the applicable operating procedures, P&IDs, past work history, and conducted an in-plant walkdown of the system. The inspectors also verified system line-up and status from the MCR panels. The system performance and completed and planned DCRs were also discussed. The inspectors concluded the FPC&C and support systems were being adequately maintained. Water quality was satisfactory. Abandoned equipment was not observed. The inspectors did not identify any concerns during the observations.

d. DHR System (86700)

The inspectors reviewed procedures and observed activities in progress associated with the DHR system. The activities observed included electrical lead connections and initial testing of the stand-by diesel generator, initial lineup and starting of the primary and secondary loop, and system operating parameter verification.

The inspectors reviewed the DHR system operating procedure and noted that the procedure indicated the stand-by diesel generator would be operated in accordance with a vendor supplied procedure. The inspectors verified the availability of the procedure (a locally posted placard) and confirmed that specific instructions for starting the stand-by diesel generator were appropriate.

The inspectors noted there were no cautions concerning the use hearing protection during the operation of the stand-by diesel. This was brought to the attention of operations for resolution. On a subsequent visit to the stand-by diesel, a placard that cautioned the operators to wear hearing protection when operating the diesel was displayed. The inspectors did not identify any additional concerns during the observations.

One URI was identified.

e. Surveillance Testing (61726) (61701)

a. Surveillance Observations

Surveillance tests were reviewed by the inspectors to verify procedural and performance adequacy. The completed tests reviewed were examined for necessary test prerequisites, instructions, acceptance criteria, technical content, authorization to begin work, data collection, independent verification where required, handling of deficiencies noted, and review of completed work. The tests witnessed, in whole or in part, were inspected to determine that approved procedures were available, test equipment was calibrated, prerequisites were met, tests were conducted according to procedure, test results were acceptable and systems restoration was completed.

The following surveillances were reviewed and witnessed in whole or in part:

1. 42SV-R42-003-0S: Battery Inspection
2. 42SV-R42-007-0S: Battery Changer Capacity Test
3. 34SV-E41-002-2S: HPCI Pump Operability
4. 34SV-SUV-018-1S: EFCV Operability
5. 34SV-C41-002-1S: SLC Pump Operability
6. 57SV-LRI-003-0S: Seismic Instrumentation  
Functional Test and Celebration
7. 57SV-SUV-004-1S: Reactor Coolant Instrumentation  
Lines Excess Flow Check Valve  
Operability

During the observations, the inspectors noted that personnel consistently used procedures and strong communications. The proficiency observed during some of the testing indicated that detailed preparation had been conducted prior to the work.

b. 42SV-R42-007-0S: Battery Changer Capacity Test

The inspectors noted during the station battery and battery charger surveillances that the internal circuit breaker for battery charger 1F failed. The licensee initiated LCO 1-94-294 to track the out-of-service condition and a MWO to replace the breaker. Unit 1 is equipped with six station service battery chargers, three per battery 1A and 1B respectively. Each battery requires only two chargers, with one charger serving as a spare. The 1F charger circuit breaker is expected to be replaced by October 2, 1994.

The inspectors did not identify any specific concerns during this observation and will continue to monitor the licensee's corrective actions.

c. 34SV-E41-002-2S: HPCI Pump Operability

The inspectors reviewed and observed the performance of the HPCI pump operability surveillance. The inspectors verified that past industry experiences and previous problem identified at this site were addressed. The inspectors attended the pre-job briefing. During the briefing the operations supervisors emphasized good communication, specific job assignments, system parameter monitoring and discussed shutting down the equipment prior to exceeding a required system shutdown condition.

The inspectors observed that the system was operated in accordance with the requirements of the procedure. The system parameters were constantly monitored in the control room by the operators and supervisors. Access to the torus area, the location of the HPCI turbine exhaust steam rupture discs, was strictly controlled. Communications between the control room and the HPCI room was constantly and effectively maintained.

The inspectors concluded that the surveillance was conducted properly. Lessons learned from past experiences were demonstrated. The inspectors did not identify any concerns during this observation.

d. RHR Surveillance Testing and Procedure Review

The inspectors conducted a review of both units RHR operating and surveillance testing procedures, including portions of the abnormal and emergency operating procedures. The applicable sections of TS and the FSAR were also reviewed. Testing frequency, system flow and valve closure time requirements were verified to be in accordance with the TS and FSAR. The inspectors reviewed testing of the suppression pool cooling mode of the RHR to verify testing was performed in accordance with TS.

The inspectors concluded that the RHR systems in both units were tested as required. The testing frequency, system flow, and valve closure time requirements were accurately identified in the procedure acceptance criteria and were met. System modes of operation and operating performance parameters were adequately addressed in the operating, abnormal and emergency procedures. No discrepancies were identified.

No violations or deviations were identified.

5. Maintenance Activities (62703)

a. Maintenance Observations

Maintenance activities were observed and/or reviewed during the reporting period to verify that work was performed by qualified personnel and that approved procedures in use adequately described work that was not within the skill of the trade. Activities, procedures, and work requests were examined to verify proper authorization to begin work, provisions for fire hazards, cleanliness, exposure control, proper return of equipment to service, and that LCOs were met.

The following maintenance activities were reviewed and witnessed in whole or in part:

1. MWO 1-94-4250: Trouble Shoot and Repair 1F  
EDG Switchgear Feeder Breaker

2. MWO 1-94-4125: Replace Battery Charger 1F Circuit Breaker
  3. MWO 1-94-3503: Grind and Polish RR MG Set Rings
  4. MWO 1-94-0689: Emergency Diesel Generator 1A 18 Month PM and Outage Activities
  5. MWO 1-94-0809: VOTES Testing and Inspection of RCIC Valve 1E51-F013
  6. MWO 1-94-4608: 1E EDG Relay 1R43-43AIX Replacement
  7. MWO 1-94-3636: Repair 1A EDG End Turns
- b. MWO 1-94-42505: Trouble Shoot and Repair 1F EDG Switchgear Feeder Breaker

On September 7, the output breaker from the 1B EDG to the 1F 4160 VAC switchgear failed to close. Maintenance activities were initiated and the applicable LCO was entered. The inspectors reviewed the MWO and work package associated with the breaker failure. Part of the maintenance trouble shooting activities included racking out the breaker and exercising the breaker using the test connection. The breaker was racked back in and closed properly. However, operations declared the 1B EDG inoperable for Unit 1 only, and entered the applicable LCO.

The inspectors reviewed the Unit 1 TS and noted that the LCO was seven days. The action statement indicated that breaker alignments were to be checked, and within 24 hours, the 1A and 1C EDG run to verify operability. The licensee performed these runs and both were operable. The inspectors did not identify any concerns during these observations.

The inspectors observed additional maintenance, trouble shooting and repair activities. This included removal of the breaker from its cubicle; partial dismantling to check the closing and tripping mechanisms; and using bluing to verify breaker travel distance into its cubicle. The inspectors were informed that the breaker was replaced in 1993. Part of the trouble shooting included looking for dissimilarities between the old breaker and the new breaker. Maintenance personnel exchanged the racking mechanism and the breaker appeared to travel slightly further into the cubicle, approximately 1/8 inch. Maintenance personnel also changed-out and adjusted the mechanical actuator arms, and verified adequate clearance between the trip plunger and the trip arm.

Following these maintenance activities, the breaker closed properly. Following the post maintenance testing, the breaker was declared operable and the LCO was terminated. Licensee management stated that appropriate procedures would be reviewed for possible inclusion of guidance to evaluate or test changed-out breakers.

The inspectors noted that all activities were performed in a controlled manner with supervision and engineering support present. The inspectors will follow-up on licensee actions concerning this activity.

No violations or deviations were identified.

6. Unit 2 Torus High Oxygen Concentration (61726)

On September 28, the inspectors were informed by the licensee that an 8 hour shutdown LCO was initiated at 2:45 p.m. due to the Unit 2 torus oxygen concentration being greater than the TS allowable limit of 4%. TS action statement 3.6.6.4 requires the Unit to be in at least Startup within eight hours. At approximately 7:30 p.m. the inspectors were informed that containment was being inerted with nitrogen, and, as a precautionary measure, a power reduction was initiated. At approximately 8:30 p.m. the inspectors were informed that containment oxygen concentration was verified to be within TS limits.

The licensee initiated an ERT to investigate the event. The inspectors will continue to investigate the event and report the findings in a future report.

No violations or deviations were identified.

7. Modifications (37700) (37828) (71707)

The inspectors continued to review and observe the ongoing modification activities.

The inspectors reviewed DCR packages and observed DCR implementation activities. These reviews included 10 CFR 59.59 review, unreviewed safety question criteria, required testing, and job task activities. The observed work included work process procedures, installation activities, and required testing activities. Among the DCRs reviewed and installation activities observed were:

| DCR                  | DESCRIPTION  |
|----------------------|--|
| 89-145 and<br>92-138 | Modify RHRSW Piping for Pump Removal and Install New Air Release Valve |
| 91-039               | HPCI Steam Discharge Drain Pot Level Switch and Piping Changes.        |

|        |  |
|--------|--|
| 92-120 | Reactor Water Level Instrumentation Keep Filled Modification.                                |
| 93-55  | Additional Supporting to Selected Control Panels for Seismic Margin Assessment Discrepancies |
| 94-005 | Modify MOV Actuators for PSW Valves.   |
| 94-006 | Install New Spacers in Generator End Turns for 1A and 1C EDGs                                |
| 94-19  | Install Unit 1 Core Shroud Stabilizer System.  |

The inspectors did not identify any specific concerns during the reviews and observations.

No violations or deviations were identified.

8. Inspection of Open Items (92700) (92701)

The following items were reviewed using licensee reports, inspections, record reviews, and discussions with licensee personnel, as appropriate:

- a. (Closed) LER 50-321/93-12: Instrument Isolation Valve Packing Leak Results in an Automatic Reactor Scram. This LER addressed an event which occurred when a technician attempted to close an instrument sensing line valve. A loose packing nut on an instrument sensing line isolation valve came off the valve bonnet and partially depressurized the line. This resulted in an automatic reactor scram due to a false low reactor water level indications. Details of the event are documented in IR 50-321,366/93-11. As part of the corrective action the licensee inspected these types of valves on both units. The tightness of the packing nuts were confirmed. Based on the licensee's activities and the inspectors review of the inspection data this LER is closed.
- b. (Closed) URI 50-321,366/94-01-03: Necessity for an RHRSW Radiation Monitor. This issue was identified during the Service Water System Operational Performance inspection and details are contained in IR 50-321,366/94-01. The NRC's SER indicated that a radiation monitor should be installed on the discharge lines of the RHRSW system. The licensee's FSAR did not mention the existence of this radiation monitor and a monitor was not installed. After further review and deliberation on the RHRSW system's licensing bases, the inspectors concluded that the NRC SER contained a typographical error. The radiation monitor discussed in the SER should have been for the PSW system. Therefore, this matter is considered closed.
- c. (Closed) VIO 50-321/94-15-01: Inadequate Procedure for Testing of Control Room Habitability Filter Trains. This violation was

issued due to an inadequate testing procedure and purchase order involving the MCREC system charcoal filter bed testing depth and Unit 2 charcoal bed efficiency. Details of the violation are documented in IR-50-321,366/94-15. As part of the corrective actions the licensee revised the purchase order for testing the charcoal filter bed and surveillance procedure 42SV-Z41-002-0S: Testing of Control Room Habitability Filter. The inspectors review of the surveillance procedure and purchase order revealed that the revisions were made. Based upon the completion of these revisions and the inspectors review, this violation is closed.

#### 9. Exit Interview

The inspection scope and findings were summarized on October 4, 1994, with those persons indicated in paragraph 1 above. The licensee did not identify as proprietary any of the material provided to or reviewed by the inspectors during this inspection.

| Item Number         | Status | Description and Reference                              |
|---------------------|--------|--|
| URI 50-321/94-24-01 | Open   | Inadequate Corrective Actions for Fuel Movement Error. |

#### 10. Acronyms and Abbreviations

ARP - Alarm Response Procedure  
 CFR - Code of Federal Regulations  
 DCR - Design Change Request  
 DHR - Decay Heat Removal  
 DW - Drywell  
 ECCS - Emergency Core Cooling System  
 EDG - Emergency Diesel Generator  
 EFCV - Excess Flow Check Valve  
 ERT - Event Review Team  
 FPC&C - Fuel Pool Cooling and Cleanup  
 FSAR - Final Safety Analysis Report  
 HPCI - High Pressure Coolant Injection System  
 IN - Information Notice  
 IR - Inspection Report  
 LCO - Limiting Condition for Operation  
 LER - Licensee Event Report  
 MCR - Main Control Room  
 MCREC - Main Control Room Environmental Control  
 MG - Motor Generator  
 MOV - Motor Operated Valve  
 MWO - Maintenance Work Order  
 NRC - Nuclear Regulatory Commission  
 NRR - Nuclear Reactor Regulation  
 P&ID - Piping and Instrumentation Drawing  
 PM - Preventive Maintenance  
 PSW - Plant Service Water System

RCIC - Reactor Core Isolation Cooling System  
RFTD - Refueling Floor Technical Director  
RR - Reactor Recirculation  
RHR - Residual Heat Removal  
RHRSW- Residual Heat Removal Service Water System  
RO - Reactor Operator  
RTP - Rated Thermal Power  
SAER - Safety Audit and Engineering Review  
SBGT - Standby Gas Treatment  
SDC - Shutdown Cooling  
SER - Safety Evaluation Report  
SFP - Spent Fuel Pool  
SLC - Standby Liquid Control  
SPDS - Safety Parameter Display System  
SRO - Senior Reactor Operator  
TS - Technical Specifications  
URI - Unresolved Item  
VAC - Volts Alternating Current  
VIO - Violation