U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-321 and 50-366

License Nos.: DPR-57 and NPF-5

Report Nos.: 50-321/99-03 and 50-366/99-03

Licensee: Southern Nuclear Operating Company, Inc. (SNC)

Facility: E. I. Hatch Plant, Units 1 & 2

Location: P. O. Box 2010
Baxley, Georgia 31515

Dates: April 18 - May 29, 1999

Inspectors: J. Munday, Senior Resident Inspector
J. Canady, Resident Inspector
T. Fredette, Resident Inspector

Approved by: P. Skinner, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Enclosure

EXECUTIVE SUMMARY

Hatch Nuclear Plant, Units 1 & 2
NRC Inspection Report 50-321/99-03, 50-366/99-03

This integrated inspection included aspects of licensee operations, engineering, maintenance, and plant support. The report covers a six-week period of resident inspection activities.

Operations

- The inspectors concluded that the activities during Unit 1 power uprate testing were analytical, methodical, and thorough. (Section O1.2)

- The inspectors concluded that the licensee properly responded to the reactor scram of Unit 2 on May 5, determined the root cause of the main generator trip, and took effective corrective actions. (Section O2.1)

Maintenance

- The licensee demonstrated a conservative decision making process by removing the main generator from service and repairing a hydrogen leak. (Section M.2.3)

Report Details

Summary of Plant Status

Unit 1 began this inspection period in a refueling outage. Plant startup commenced on April 24. The unit automatically scrammed on May 7 when the electro-hydraulic control (EHC) system was inadvertently isolated. The unit was restarted that same day. Rated thermal power (RTP) was achieved on May 20.

Unit 2 began the inspection period at 100% maximum operating power (MOP). On May 5, the unit automatically tripped due to a main generator electrical fault. The unit was restarted on May 9 and achieved 100% MOP on May 13. On May 21, a power reduction began to repair a main generator hydrogen leak. The main generator hydrogen leak was repaired and the unit returned to 100% MOP on May 25.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

Using Inspection Procedure 71707, the inspectors conducted frequent reviews of ongoing plant operations. In general, the conduct of operations was professional and safety-conscious. Specific events and observations are discussed in the following sections.

O1.2 Unit 1 Startup, Power Ascension, and Extended Power Uprate Testing Following Refueling Outage

a. Inspection Scope (71707) (37551)

The inspectors observed portions of the startup, power ascension, and extended power uprate testing. The inspectors reviewed the procedures and Technical Specifications (TS) relevant to the observed activities and interviewed operations, engineering, and vendor personnel.

b. Observations and Findings

Between April 24 and May 20, the inspectors observed various portions of power ascension from startup to 100% RTP. The inspectors observed the presence of additional supervisors and control board operators as well as reactor engineering and turbine-generator vendor support. The extended power uprate team held pre-job briefings for each test plateau. Plant response predicted for various test conditions closely approximated the actual results.

Prior to unit startup, the inspectors examined selected control room back panels to verify the appropriateness of temporary modification tags which identified lifted leads or jumpers. The inspectors verified that these tags were properly installed.

c. Conclusions

The inspectors concluded that the activities during Unit 1 power uprate testing were analytical, methodical, and thorough.

O2 Operational Status of Facilities and Equipment

O2.1 Unit 2 Reactor Trip Due to Main Generator Trip (71707, 93702)

On May 5, the Unit 2 reactor automatically tripped from 100% MOP as a result of a main generator trip. The inspectors observed the operators respond to the event. Procedure usage and annunciator response were in accordance with licensee procedures and plant equipment operated as designed. The licensee's troubleshooting determined that a turning vane, designed to aid air flow inside the isophase bus duct, became detached and contacted the generator output bus. Subsequently, the licensee determined that the turning vanes were not necessary and removed all turning vanes from the bus duct. The licensee reported this event in Licensee Event Report (LER) 50-366/99-005. The plant was restarted on May 9.

The inspectors concluded that the licensee properly responded to the event, determined the root cause, and took effective corrective actions.

O2.2 Unit 1 Reactor Trip Due to Personnel Error (71707, 93702)

a. Inspection Scope

The inspectors observed licensee activities following the trip and assessed the root cause evaluation process.

b. Observations and Findings

On May 7, the Unit 1 reactor automatically tripped due to high reactor pressure when the EHC actuating fluid was inadvertently isolated to the main turbine stop and control valves. The licensee reported this event in LER 50-321/99-003. After determining the root cause of the event, the unit was restarted.

The licensee determined that a plant equipment operator (PEO) isolated the operating EHC pump's discharge while implementing a personal danger tag (PDT) clearance. The PDT clearance served to ease the administrative burden associated with basic operations tasks. By procedure 30AC-OPS-001-0S, "Control of Equipment Clearances and Tags," Revision (Rev.) 18, a qualified individual could tag two valves or breakers and one control switch. In this event, the PEO developed the clearance by observing the field routing of the EHC piping. The PEO had previously used this same clearance

without any adverse effects; however, at that time the unit was shutdown and no EHC pumps were operating.

The Operations Manager immediately suspended the use of PDTs until the process could be reviewed. In addition, the event was also discussed with other operators at the Operations Beginning of Shift (BOST) meetings.

c. Conclusions

The licensee properly evaluated the cause of the reactor scram and began a programmatic review to improve the PDT clearance process.

O2.4 Restoration and Valve Line-up for Unit 1 Systems (71707)

The inspectors reviewed procedures 34SO-C11-005-1S, "Control Rod Drive Hydraulic System," Rev. 19 and 34SO-C41-003-1S, "Standby Liquid Control System," Rev. 10, and conducted a walk down and verification of valve line-ups for the Unit 1 control rod drive (CRD) and standby liquid control (SLC) systems in preparation for unit startup. No valve line-up deficiencies were identified. Valve tags were in place and legible. The inspectors concluded that the system valve line-ups had been properly restored.

O8 Miscellaneous Operations Issues (92901)

O8.1 (Closed) LER 50-321/99-01-00: Drawing Errors Result In Loss Of Scram Valve Air Header Air Pressure And RPS Actuation

This LER was discussed in section O1.3 of NRC Inspection Report (IR) 50-321, 366/99-02. No new issues were identified.

O8.2 (Closed) LER 50-366/99-05-00: Generator Ground Fault Causes Turbine Trip and Reactor Scram

This LER is discussed in section O2.1. No new information was developed in the LER.

O8.3 (Closed) LER 50-321/99-03-00: Incorrect Performance of Equipment Clearance Leads to Scram on High Reactor Pressure

This LER is discussed in section O2.2. No new information was developed in the LER.

O8.4 (Closed) Inspector Followup Item (IFI) 50-321,366/98-09-01: Review of Standby Gas Treatment (SBGT) Flow Conversion Calculation

The inspectors determined that this item was of minor safety significance.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments (62707)

The inspectors observed all or portions of selected maintenance work order activities and found that the work was conducted in a professional and thorough manner. Work packages were present at the work locations and documentation was complete. Workers were knowledgeable of the work scope and applicable precautions to be used in performing tasks. Appropriate radiation protection and safety measures were exercised.

M2 Maintenance and Material Condition of Facilities and Equipment

M2.1 Maintenance Challenges During Unit 1 Startup (62707, 37551)

a. Inspection Scope

The inspectors reviewed work/design change packages, observed work in progress and discussed the work activities with maintenance and engineering personnel concerning Unit 1 startup maintenance challenges.

b. Observation and Findings

The Unit 1 High Pressure Coolant Injection (HPCI) system was declared inoperable on April 29 because the licensee was unable to test the HPCI system as required by TS 3.5.1.8. The barometric condenser vacuum pump was tripping due to increased water level in the barometric condenser. Due to increased personnel safety risks during the performance of the surveillance, the licensee deferred the system surveillance until the barometric condenser was repaired. After extensive troubleshooting, the licensee determined that the condenser condensate pump had low suction pressure. The barometric condenser vacuum was lowered to increase the condensate pump's suction pressure and the system operated correctly. The licensee reported this event in LER 50-321/99-002. The licensee successfully completed the required TS operability test on May 2.

Three unisolable plant service water (PSW) leaks were discovered during the performance of a ten-year Inservice Inspection of the Unit 1 PSW Class III piping in the torus area. The drywell cooler was one of the critical loads connected to the piping. The licensee determined an acceptable code repair with the support of corporate engineering personnel that could be performed with the unit on-line. The inspectors observed the performance of portions of these repairs and identified no deficiencies.

c. Conclusions

Maintenance and engineering related issues during the Unit 1 startup were methodically addressed and resolved.

M2.2 Unit 1 Drywell Tour (62707, 71707)

On April 21, the inspectors toured the Unit 1 drywell and observed that several flexible conduits were observed to be in close proximity to the pilot assemblies of the safety relief valves (SRVs). Also, the insulation on several SRVs was several inches below the top of the pilot assemblies. These observations were reported to the outage drywell coordinator. The inspectors were informed by the inservice testing engineer that the flexible conduit was capable of withstanding the temperatures and vibration that it would be subjected to during power operation. The insulation was corrected by pulling the insulation up to just below the flange at the top of the pilot assembly and fastened securely.

The inspectors concluded that no equipment deficiencies were evident which would impact plant startup and operation.

M.2.3 Unit 2 Main Generator Hydrogen Leak Troubleshooting and Repair (62707)

On May 13, licensee personnel began an investigation for a suspected hydrogen leak due to increased hydrogen makeup to the main generator. The hydrogen was found to be leaking at the penetration of the #1 neutral phase bushing located beneath the main generator. The concentration of hydrogen detected was not explosive. On May 21, the main generator was taken off line and the leak was repaired. The inspectors observed portions of the repair activities and identified no deficiencies. The inspectors concluded that conservative decision making was demonstrated by removing the main generator from service and repairing the hydrogen leak.

M8 Miscellaneous Maintenance Issues (92903)

M8.1 (Closed) Licensee Event Report 50-321/99-02: High Pressure Coolant Injection System Inoperable Due to Problems with Barometric Condenser

This LER is discussed in section M2.1. No new information was developed in the LER.

V. Management Meetings and Other Areas

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on June 2, 1999. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Betsill, J., Assistant General Manager - Operations
Curtis, S., Unit Superintendent
Davis, D., Plant Administration Manager
Dedrickson, R., Unit Superintendent
Fornel, P., Performance Team Manager
Fraser, O., Safety Audit and Engineering Review Supervisor
Hammonds, J., Engineering Support Manager
Kirkley, W., Health Physics and Chemistry Manager
Lewis, J., Training and Emergency Preparedness Manager
Madison, D., Operations Manager
Moore, C., Assistant General Manager - Plant Support
Reddick, R., Site Emergency Preparedness Coordinator
Roberts, P., Outage and Planning Manager
Thompson, J., Nuclear Security Manager
Tipps, S., Nuclear Safety and Compliance Manager
Varnadore, R., Operations Support Superintendent
Wells, P., General Manager - Nuclear Plant

Other licensee employees contacted included office, operations, engineering, maintenance, chemistry/radiation, and corporate personnel.

INSPECTION PROCEDURES USED

IP 37551:	Onsite Engineering
IP 62707:	Maintenance Observations
IP 71707:	Plant Operations
IP 92901:	Operations Followup
IP 92903:	Engineering Followup
IP 93702:	Prompt Onsite Response to Events at Operating Power Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

50-321,366/98-09-01	IFI	Review of SBGT Flow Conversion Calculation (Section O8.4)
50-321/99-01	LER	Drawing Errors Result in Loss of Scram Valve Air Header Air Pressure and RPS Actuation (Section O8.1)
50-366/99-05	LER	Generator Ground Fault Causes Turbine Trip and Reactor Scram (Section O8.2)

50-321/99-03	LER	Incorrect Performance of Equipment Clearance Leads to Scram on High Reactor Pressure (Section O8.3)
50-321/99-02	LER	High Pressure Coolant Injection System Inoperable Due to Problems with Barornetric Condenser (Section M2.1, M8.1)