UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report Nos. 50-321/79-24 and 50-366/79-28

Licensee: Georgia Power Company
270 Peachtree Street, N. W.
Atlanta, Georgia 30303

Facility Name: Hatch 1 and 2

Docket Nos. 50-321 and 50-366

License Nos. DPR-57 and NPF-5

Inspection at Hatch Site near Baxley, Georgia

Inspector: R. F. Rogers for — 8/1/79
R. F. Rogers, Resident Inspector, RONS Branch — Date Signed

Approved by: H. C. Dance — 8/2/79
H. C. Dance, Section Chief, RONS Branch — Date Signed

SUMMARY

Inspection on June 2 - July 3, 1979

Areas Inspected

This inspection involved 28 inspector-hours onsite of the Unit 1 refueling outage, Unit 2 startup testing, technical specification compliance, reportable occurrences, and security procedures.

Results

Of the five areas inspected, no apparent items of noncompliance or deviations were identified. An example to a previous item of noncompliance involving failure to provide a written report within 24 hours was noted (paragraph 10).

DETAILS

1. Persons Contacted

   Licensee Employees

   *M. Manry, Plant Manager
   *T. Moore, Assistant Plant Manager
   *T. Greene, Assistant Plant Manager
   S. Baxley, Superintendent of Operations
   R. Nix, Superintendent of Maintenance
   C. Coggins, Superintendent of Engineering Services
   W. Rogers, Health Physicist/Radiochemist
   C. Bellflower, QA Site Supervisor

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

   *Attended exit interview

2. Licensee Action on Previous Inspection Findings

   Not inspected.

3. Unresolved Items

   None.

4. Exit Interview

   The inspection scope and findings were summarized on June 7, 15, 28 and July 3, 1979 with those persons indicated by an asterisk in Paragraph 1 above. The examples to the previous item of noncompliance on timeliness of facsimilie reports was discussed with the licensee on June 7, 1979.

5. Tours of the Plant (Units 1 and 2)

   The inspector conducted plant tours periodically during the inspection interval to verify that monitoring equipment was recording as required, equipment was properly tagged, operations personnel were aware of plant conditions and were alert, and plant housekeeping efforts were adequate. Some tours were conducted on backshifts and on weekends.

6. Review of Nonroutine Events Reported by the Licensee (Units 1 and 2)

   The following licensee event reports (LERs) were reviewed for potential generic problems, to detect possible 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 that the public health and safety was of utmost consideration.

LER No.	Report Date	Subject
50-321/79-35	6/7/79	Inability of 1A D/G to carry full load
50-321/79-39	7/6/79	Cardox initiation in cable spreading room
50-366/79-20	2/8/79	Low day tank level on 2A D/G
50-366/79-38	5/30/79	Radiation Monitoring System lines not siesmically qualified
50-366/79-39	5/30/79	Valve seat leakage excessive
50-366/79-40	6/4/79	Feed water flow differential pressure elements piped incorrectly
50-366/79-43	6/11/79	MSIV auto bypass switches set high
50-366/79-45	6/11/79	HPCI failure to start due to water in oil
50-366/79-46	6/11/79	RCIC failure to start due to broken check valve
50-366/79-49	6/21/79	HPCI condensate pump trip
50-366/79-50	6/21/79	HPCI suction valve failed to open
50-366/79-53	6/26/79	Main steam line radiation trip set high

7. High Pressure Coolant Injection and Reactor Core Isolation Cooling Malfunctions and Test Programs (Units 1 and 2)

June 3, 1979 Event

On June 3, 1979, a condensate system malfunction resulted in a reactor trip from a low water level in the reactor vessel. The High Pressure Coolant Injection (HPCI) and the Reactor Core Isolation Cooling (RCIC) systems failed to perform as designed following the reactor trip. The following is a detailed description of the initiating event and the failure of the HPCI and RCIC systems.

The reactor was operating at full power, conducting power ascension testing following a maintenance outage. A condensate booster pump tripped, on low suction pressure, at approximately 6:50 p.m. on June 3. The low suction pressure appears to have been caused by operation of the condensate demineralizers in manual flow control instead of automatic flow control. Tripping of the condensate booster pump resulted in a decrease in condensate header pressure which caused one of the two operating feedwater pumps to trip on low suction pressure. The remaining feedwater pump continued to operate

but the resulting mismatch between steam flow and feedwater flow resulted in the reactor vessel water level decreasing and a reactor trip occurred on low water level. Approximately five minute after the reactor trip, the reactor vessel water level low low setpoint was reached and an automatic actuation signal for the HPCI and RCIC systems was initiated.

The HPCI steam turbine driven pump received the initiation signal but did not start because the turbine stop valve failed to open. Water was present in the HPCI turbine oil system and the auxiliary oil pump apparently did not develop sufficient control oil pressure to open the turbine stop valve. Investigation has revealed two sources of water that may have entered the turbine oil system. One source of water inleakage was a water cooled oil cooler which, following the event, was identified to be leaking. A second source of water inleakage was from a leak in a seal injection pipe. A closed valve in the HPCI pump seal cooling cavity drain pipe allowed the leaking seal injection pipe to fill the drain cavity to a level above the pump shaft. This allowed water to enter the bearing housing. The drain line valve was not included in the system valve lineup procedure due to an error on the as-built plant drawings. The Unit 1 HPCI system has been verified not to have an isolation valve in the cavity drain pipe.

The RCIC system started as designed and operated for approximately one minute, then tripped due to a failed (ruptured) turbine exhaust diaphragm on the RCI pump turbine. An internal check valve linkage stub broke, which caused the ten-inch check valve disc in the turbine exhaust line to come loose. This disc blocked the valve outlet, cuasing a high pressure in the turbine exhaust line and rupturing the turbine exhaust diaphram.

The reactor remained shutdown until investigation, repair and corrective actions to the HPCI and RCIC systems were completed as follows:

- The leaking HPCI seal injection pipe was repaired by replacing a section of the leaking pipe. The seal injection pipes are being evaluated to determine if additional structural supports are required to prevent vibration induced failure.

- The HPCI oil system was drained, flushed and refilled twice.

- The HPCI oil cooler in the system was identified as a possible source of water inleakage and subsequent testing with nitrogen confirmed the existance of a leak. A study has been initiated by the licensee to identify a method whereby water in the oil systems of the HPCI and RCIC turbines may be readily identified. In the interim, the HPCI oil is being sampled on a weekly scheduled.

- The HPCI turbine bearings were inspected for possible damage. The inspection revealed no deficiencies.

- The valve in the bracket drain pipe was locked open prior to startup and an evaluation was initiated to determine if the valve could be removed. The valve has been added to the system valve lineup procedure.

- The RCIC ten-inch valve was repaired and modified to prevent recurrence. A design engineer and service representative of the valve vendor (Walworth) were onsite to determine the cause of failure and the proper corrective action. The failure was attributed to cycling of the swing check valve disc against its stop and failure of the stub where the stub locking pin is inserted. This was corrected by welding the nut to the replacement disc instead of drilling a hole for pinning. The valve was reassembled and leak tested satisfactorily. The vendor representatives informed the licensee that, to their knowledge, this was the first instance of this particular failure mechanism experienced on this type Walworth check valve. The licensee evaluated the service application of other Walworth check valves utilized in plant safety systems and verified their acceptability.

- The licensee verified that the Unit 1 RCIC turbine exhaust valve was supplied by a different vendor.

- The RCIC turbine exhaust diaphragm was replaced.

- The RCIC and HPCI systems were tested and verified to be fully operational following the maintenance activities.

- The plant safety review board reviewed the occurrence including all investigative actions, repairs and other corrective actions prior to the unit returning to service.

- The confirming written notification of this event was late in arriving at the Regional office as discussed in the letter of transmittal. This is another example of noncompliance regarding reporting transmitted to Georgia Power Company (GPC) in letter dated July 20, 1979. On June 7, 1979, the Regional Director and members of his staff met with a senior GPC representative in Atlanta, Georgia to discuss this occurrence and proposed corrective actions.

- Significance of the Occurrence

Facility Technical Specification requires the RCIC to be operable but it is not part of the emergency core cooling systems. In this particular event, it should be noted that one feedwater pump continued to supply water to the reactor vessel and maintained water level approximately ten feet above the top of the core. The lowest water level reached during the event was minus forty-five inches for a duration of approximately one minute. Had the water level continued to decrease, the low Pressure Coolant Injection System and the Core Spray System would have been automatically actuated.

June 27, 1979 Event

On June 27, 1979, the Main Steam Isolation Valve (MSIV) closure test was conducted from full power and the HPCI and RCIC systems received their initiation signals when reactor water level reached its low low setpoint. Both systems, however, isolated on high steam line differential pressure

and had to be started manually The isolation signals appeared to be transient spikes in the d/p signal associated with a normal start sequence. The isolation signals are designed to protect the reactor in case of a break in the respective steam lines.

This second simultaneous failure of the HPCI and RCIC systems to perform as designed resulted in a hold on either Unit starting up until the NRC was satisfied with the licensees efforts to determine the cause of the failures, reevaluate all previous failures or abnormal performances associated with these systems, evaluate maintenance and repair activities and plant practices which may affect these systems, and to establish a comprehensive retest program to verify the reliability of the HPCI and RCIC systems. The above hold was contained in a confirmation of action letter to GPC from the NRC Region II Director on June 28, 1979.

The inspector met with licensee representatives on July 1 and 2 to review the results of their investigation. Analysis of past failures, changes being made to operating procedures, modifications made and being considered and the planned retest program for the HPCI and RCIC systems were discussed in detail. A comprehensive Unit 2 retest program for both the HPCI and RCIC was developed to assure system operability. The program included twelve quick starts at varying pressures between 150 - 1000 psig and five cold starts at operating conditions. The Unit 1 retest program will reflect the Unit 2 experience. NRC and QA hold points are incorporated into the referenced test procedure. The inspector and the Region II office concurred in the planned retest program, and the corrective action taken. A Confirmation of Concurrence letter was sent to APC on July 5, 1979.

The Resident Inspector will continue to follow this item.

8. Technical Specification Compliance (Units 1 and 2)

During this reporting interval, the inspector verified compliance with selected limiting conditions for operation (LCO's) and results of selected surveillance tests. These verifications were accomplished by direct observation of monitoring insutrmentation, valve positions, switch positions, and review of completed logs and records. The licensee's compliance with selected LCO action statements were reviewed on selected occurrences as they happened.

9. Elevated Tritium Samples (Units 1 and 2)

On June 27, 1979, the Licensee reported additional information relative to its investigation of the tritium leaks to the plant yard. This information was reported as a supplement (revision 3) to the original report on this matter (LER 50-321/1979-021). This report confirms a second source of tritium contamination other than the nitrogen purge line. The source is leakage over a period of time from the condensate storage tank (CST) transfer pumps. Intermittent leakage from this source as well as that from the nitrogen purge line has been terminated.

These leaks have contributed to elevated tritium levels in the outfalls of the surface and subsurface drainage system which discharge above the river near the restricted area boundary but within the property boundary of Georgia Power Company. The tritium levels as previously reported in the outfalls have remained relatively constant. The highest tritium concentration from an outfall is 3.1×10^3 pCi/l. This concentration is 0.1% of the maximum permissible concentration of 3.0×10^6 pCi/l allowed by NRC Regulation 10 CFR 20 for liquid releases to unrestricted areas. The outfalls remain dry a part of the time and, accordingly, there is no flow to the river during such periods.

The State of Georgia is continuing to provide offsite environmental surveillance around the Hatch facility and has found no evidence of elevated tritium levels in the Altamaha River, private water wells in the area, or public drinking water supplies in the near communities.

Additionally, the NRC has conducted independent environmental measurements onsite and offsite. Region II's evaluation of the safety significance of these tritium levels remains unchanged. The levels detected are well within the established limits and present no threat to the health and safety of workers at the facility or members of the general public.