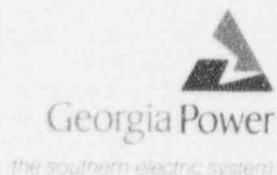


Georgia Power Company
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201
Telephone 205 877-7279

J. T. Beckham, Jr.
Vice President - Nuclear
Hatch Project



November 14, 1994

Docket No. 50-321

HL-4737

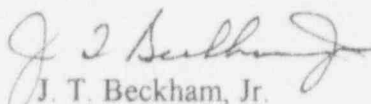
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Edwin I. Hatch Nuclear Plant
Licensee Event Report
Incorrect Component Assembly Results in an
Engineered Safety Features Actuation

Gentlemen:

In accordance with the requirements of 10 CFR 50.73 (a)(2)(iv), Georgia Power Company is submitting the enclosed Licensee Event Report (LER) concerning an incorrect component assembly which resulted in the closure of a small-bore primary containment isolation valve. This event occurred at Plant Hatch - Unit 1.

Sincerely,


J. T. Beckham, Jr.

JKB/et

Enclosure: LER 50-321/1994-12

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U.S. Nuclear Regulatory Commission
November 14, 1994

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cc: Georgia Power Company

Mr. H. L. Sumner, General Manager - Nuclear Plant
NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.

Mr. K. Jabbour, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II

Mr. S. D. Ebnetter, Regional Administrator

Mr. B. L. Holbrook, Senior Resident Inspector - Hatch

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB87714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)

Edwin I. Hatch Nuclear Plant - Unit 1

DOCKET NUMBER (2)

5 0 0 0 3 2 1

PAGE (3)

1 OF 5

TITLE (4)

Incorrect Component Assembly Results in Engineered Safety Features Actuation

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | | |
|--|-------|-----|-------------------|-------------------|-----------------|------------------|-----|------|---|------------------|--|
| YEAR | MONTH | DAY | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER(S) | |
| 1 0 2 5 9 4 | 9 4 | | 0 1 2 | 0 0 | | 1 1 1 4 9 4 | | | | 0 5 0 0 0 | |
| THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 7: (Check one or more of the following) (11) | | | | | | | | | | | |
| OPERATING MODE (9) 5 | | | 20.402(b) | | | 20.405(c) | | | <input checked="" type="checkbox"/> 50.73(a)(2)(iv) | | |
| POWER LEVEL (10) 0 0 0 | | | 20.405(a)(1)(i) | | | 50.36(c)(1) | | | 50.73(a)(2)(v) | | |
| | | | 20.405(a)(1)(ii) | | | 50.36(c)(2) | | | 50.73(a)(2)(vi) | | |
| | | | 20.405(a)(1)(iii) | | | 50.73(a)(2)(i) | | | 50.73(a)(2)(vii)(A) | | |
| | | | 20.405(a)(1)(iv) | | | 50.73(a)(2)(ii) | | | 50.73(a)(2)(vii)(B) | | |
| | | | 20.405(a)(1)(v) | | | 50.73(a)(2)(iii) | | | 50.73(a)(2)(ix) | | |

OTHER (Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME

Steven B. Tipps, Nuclear Safety and Compliance Manager

TELEPHONE NUMBER (include area code)

AREA CODE

9 1 2 3 6 7 - 7 8 5 1

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|
| | | | | | | | | | |
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SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED

MONTH DAY YEAR

SUBMISSION

DATE (15)

YES (If yes, complete EXPECTED SUBMISSION DATE)

☒ NO

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-space typewritten lines) (16)

On 10/25/94 at 1327 EDT, Unit 1 was in the Refuel mode with the core fully loaded, the reactor pressure vessel head removed, and water level above the reactor vessel flange. At that time, contract personnel were performing planned maintenance on the Main Turbine Electro-Hydraulic Control (EHC) system. During assembly of a portion of the hydraulics hardware, a bias spring was mistakenly installed on the wrong end of a hydraulic control spool piece. When the EHC pump was later turned on for a system flush, EHC fluid was misdirected by the control spool into the hydraulic actuators for the Main Turbine Stop Valves (TSVs). This caused three of four TSVs to drift full open as the EHC fluid pressure increased. When the TSVs opened with no condenser vacuum present, a partial Group 1 Primary Containment Isolation System (PCIS) trip was initiated per design. At the time of the event, only one small-bore Group 1 valve was open and in service. It closed per design. There was no other plant response to the signal nor should there have been. The cause of this event was incorrect assembly of an EHC control spool bias spring by a maintenance contractor. With the bias spring installed on the incorrect end of the control spool, the EHC system was set up to direct the working fluid to the TSVs, which opened as pressure increased. Corrective action for this event included correcting the installation of the spool bias spring. In addition, the involved personnel have been made aware of the consequences of the incorrect assembly of the control spool bias spring. These actions have been completed.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB87714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (6)

PAGE (3)

| YEAR | SEQUENTIAL YEAR | REVISION NUMBER |
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| 94 | -012 | -00 |

Edwin I. Hatch Nuclear Plant - Unit 1

05000321

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TEXT (If more space is required, use additional copies of NRC Form 366A)(17)

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System codes are identified in the text as (EIIS Code XX).

DESCRIPTION OF EVENT

On 10/25/94 at 1327 EDT, Unit 1 was in the Refuel mode with the core fully loaded with fuel, the reactor pressure vessel head removed, and water level above the reactor vessel flange. At that time, contract maintenance personnel were preparing to flush the Main Turbine (EIIS Code TA) Electro-Hydraulic Control (EHC, EIIS Code TG) system following planned maintenance on the EHC system. This planned maintenance involved disconnecting the 125 VDC control power from the Mark 1 Main Turbine control circuitry and the 24 VDC power from certain local control devices. With the control circuitry deenergized, the reactor vessel high water level (Level 8) condition that existed at the time, which would normally have given a trip signal to the Main Turbine, had no effect on the Main Turbine trip circuitry. In addition, the maintenance work on the EHC had resulted in the master mechanical trip device being reset. Thus, there was no trip signal present on the EHC system, either from the manual trip system or from the high water level condition.

The maintenance being performed on the EHC system required some disassembly of the system, including temporary removal of certain fluid restricting orifices to provide more flow during the system flush. When hydraulic components were reconnected after the orifices were removed, a bias spring assembly was installed on the incorrect end of a hydraulic manifold containing a control spool piece. One purpose of the bias spring is to position the control spool to trip the Main Turbine when 24 VDC local control power is lost. In this case, however, since the spring was installed on the wrong end, the control spool was positioned to produce a reset of the Main Turbine rather than a trip.

With the Main Turbine trip logic in the configuration described above, the EHC pump was started and fluid pressure began to increase. With the Main Turbine not tripped and the control spool positioned to produce a Main Turbine reset, EHC fluid pressure was directed to three of the four Main Turbine Stop Valves (TSVs) and the valves began to drift open. The fourth TSV was unaffected because its control logic differs from the other three. When the valves opened greater than 90 percent, a Group 1 Primary Containment Isolation System (PCIS, EIIS Code JM) signal was generated because the TSVs were open with no Main Condenser (EIIS Code SG) vacuum present. Licensed personnel observed annunciation of the Group 1 signal as well as movement on one PCIS valve (described further below).

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION
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0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104),
OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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|--|-----------------------------------|----------------|--------------------|--------------------|----------|----|---|
| FACILITY NAME (1) Edwin I. Hatch Nuclear Plant - Unit 1 | DOCKET NUMBER (2) 05000321 | LER NUMBER (6) | | | PAGE (3) | | |
| | | YEAR | SEQUENTIAL YEAR | REVISION NUMBER | | | |
| | | 94 | 012 | 00 | 3 | OF | 5 |

TEXT (If more space is required, use additional copies of NRC Form 366A)(17)

Since three of the four TSVs opened, only three of the four corresponding logic channels were tripped, with the result that the Group 1 PCIS actuation signal was partial, not complete. Valves affected by the partial Group 1 PCIS signal were the Main Steamline Isolation Valves (MSIVs), the inboard Reactor Water Sample Valve, and the inboard Main Steamline Drain Valve. At the time the signal was received, all the MSIVs were already closed; therefore they did not move in response to the signal. The inboard drain valve was tagged out of service at the time of the event; therefore, it did not move as a result of the Group 1 signal. The inboard Reactor Water Sample Valve was thus the only open valve which closed as a result of the signal. No other valves moved, nor should they have.

By 1604 EDT, licensed personnel and an engineer had confirmed that the plant response had been correct given the current plant configuration and the signal introduced by the open TSVs. Therefore, licensed Control Room operators reset the Group 1 PCIS trip and opened the affected Reactor Water Sample Valve. Subsequently, a logic system functional test, which was already scheduled as part of the ongoing refueling outage, was performed on the Reactor Water Sample Valve logic and verified proper operation.

CAUSE OF EVENT

This event occurred because a bias spring assembly was incorrectly installed in the Main Turbine EHC system. This caused a hydraulic control spool to be positioned such that EHC fluid was directed to cause a Main Turbine reset rather than a Main Turbine trip. Therefore, when the EHC pump was started for a post-maintenance system flush, fluid pressure reached the TSVs and opened three of them. With three TSVs open and no condenser vacuum present, a partial Group 1 PCIS signal was generated. The unexpected equipment response resulted in discovering the incorrect installation of the bias spring.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This event is reportable per 10 CFR 50.73 (a)(2)(iv) because an unplanned actuation of an Engineered Safety Feature (ESF) occurred. Specifically, a Group 1 PCIS signal was generated on TSVs being open with no condenser vacuum present. This resulted in closure of the inboard Reactor Water Sample Valve.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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TEXT (If more space is required, use additional copies of NRC Form 366A)(17)

The PCIS is designed to protect against the onset and consequences of accidents involving the release of radioactive materials from the fuel or nuclear process barriers. It accomplishes this by initiating automatic isolation of lines penetrating the primary containment whenever process conditions exceed certain limits. These conditions include indications that a release of radioactive material has occurred (such as certain high radiation signals), and process conditions which might threaten the integrity of the fuel, such as loss of reactor coolant inventory. Group 1 PCIS valves consist of the Main Steamline Isolation Valves, the Main Steamline Drain Valves, and the Reactor Water Sample Valves. Group 1 valves are designed to close in response to the following process conditions:

- reactor water level at Level 1,
- high steamline flow,
- high steam tunnel temperature,
- low main steamline pressure when in the Run mode,
- high Turbine Building (EUIS Code NM) temperature,
- low condenser vacuum when the TSVs are open.

In this event, as previously described, the TSVs were opened while the unit was in the Refuel mode, and thus with no condenser vacuum present. When three of the TSVs reached at least 90 percent open, the Group 1 PCIS isolation logic tripped as designed. The plant response to the trip signal was also per design, given the plant configuration at the time of the event.

If the post-maintenance flush of the EHC system had been done in a configuration which masked the incorrectly installed bias spring, the flush would have been successful and the installation problem would have been discovered later during pre-startup functional testing. This testing is designed to confirm that each Main Turbine trip function can operate independently of the others.

Based on this analysis, it is concluded that this event had no adverse impact on nuclear safety. It should be noted that this event would not occur with the unit at power. When the unit is at power, condenser vacuum is present, and this makes the Group 1 PCIS logic ignore the position of the TSVs. Therefore this analysis applies to all operating conditions in which Group 1 PCIS logic can be actuated by TSV position.

CORRECTIVE ACTIONS

The bias spring assembly has been installed correctly. In addition, involved contract personnel have been made aware of the consequences of this event. These actions have been completed.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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| FACILITY NAME (1) | DOCKET NUMBER (2) | LER NUMBER (6) | PAGE (3) |
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| Edwin I. Hatch Nuclear Plant - Unit 1 | 05000321 | 94-012-00 | 5 OF 5 |

TEXT (If more space is required, use additional copies of NRC Form 366A)(17)

ADDITIONAL INFORMATION

1. Other Systems Affected: No systems other than those already mentioned in this report were affected by this event.
2. Failed Component Identification: No failed components contributed to or resulted from this event.
3. Previous Similar Events: One event was reported in the past two years in which improperly assembled equipment produced an ESF actuation when operated. The event is described in Licensee Event Report 50-366/1992-021, dated 11/10/92. In that event, two instrument lines were found to be reversed from positions shown on a plant drawing. This resulted in a design change being implemented on the wrong line. Subsequently, an ESF actuation occurred when the modified line was being backfilled in preparation for service. Corrective actions included correcting the instrument tubing connections, correcting erroneous information on an instrument line drawing, counseling an individual, and training personnel. Those actions would not have prevented the present event because different plant systems were involved and no design change activities were underway.