NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
PLANT HATCH, UNIT 1	0 5 0 0 0 3 2 1	1 OF 1 0

TITLE (4)
PERSONNEL ERROR CAUSES AIR INTRODUCTION INTO TURBINE LUBE OIL COOLERS RESULTING IN SCRAM

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
0 4	1 9	8 8	8 8	– 0 0 5	– 0 0	0 5	1 9	8 8		0 5 0 0 0
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OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)					
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)	73.71(b)	
		20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)	73.71(c)	
		20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	
		20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		
		20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
		20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
J. D. Heidt, Nuclear Licensing Manager - Hatch	AREA CODE 4 0 4 5 2 6 – 4 5 3 0

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	

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On 4/19/88 at approximately 0802 CDT, Unit 1 was in the run mode at an approximate power level of 2433 MWt (approximately 100 percent of rated thermal power). At that time, plant operations personnel were exchanging the main Turbine Lubrication Oil Coolers (TLOCs EIIS Code TD). Shortly after the exchange of the TLOCs, a reactor scram occurred.

The root cause of this event is personnel error. Specifically, plant operations supervisory personnel assigned an infrequently performed task without issuing sufficient guidance relative to the performance of the task. Additionally, operations personnel failed to notify operations supervision that they were unfamiliar with the task.

The corrective actions for this event included: 1) counseling of involved operations personnel, and 2) revising plant procedures to provide guidance relative to removing and returning the TLOCs to service. It is anticipated the procedure revisions will be completed by approximately 6/1/88.

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A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73 (a)(2)(iv), because an unanticipated actuation of the Reactor Protection System (EIIS Code JC) and some Engineered Safety Features (ESFs) occurred. The ESFs that actuated were: Primary Containment Isolation System (PCIS EIIS Code JM), and the Safety Relief Valves (SRVs EIIS Code JE). The actuation of the SRVs included the actuation of the Low Low Set (LLS EIIS Code JE) SRVs.

B. UNIT(s) STATUS AT TIME OF EVENT

1. Power Level/Operating Mode

Unit 1 was in steady state operation at an approximate power level of 2433 MWt (approximately 100 percent of rated thermal power). The reactor mode switch was in the run position.

2. Inoperable Equipment

There was no inoperable equipment that contributed to this event.

C. DESCRIPTION OF EVENT

1. Event

On 4/19/88 at approximately 0802 CDT, an operations Plant Equipment Operator (PEO) performed clearance 1-88-335. This clearance was to remove one main Turbine Lubrication Oil Cooler (TLOC EIIS Code TD) from service and place another TLOC into service. The exchanging of the two TLOCs resulted in air being injected into the main Turbine Lubrication Oil System (TLOS EIIS Code TD).

When the sensors in the TLOS sensed the air, these sensors activated as if a low turbine lube oil pressure condition had occurred. A signal was input to the main Turbine Control Logic (EIIS Code IT) to close the main Turbine Stop Valves (TSVs EIIS Code JJ) and the main Turbine Control Valves (TCVs EIIS Code JJ).

The closure of the TSVs and TCVs generates a scram signal input to the Reactor Protection System (EIIS Code JC) logic. A full reactor scram occurred. As required by the plant's Emergency Operating Procedures (EOPs), licensed plant operations personnel inserted a manual scram signal into the RPS circuitry after the automatic scram signal occurred. Also, as a result of the pressure spike that occurred when the valves closed, a high reactor pressure signal was automatically inserted into the RPS logic at approximately 0803 CDT.

As a result of the TSV and TCV closure, reactor pressure increased and caused the voids in the core to collapse. This was an anticipated event sequence. The collapse of the voids resulted in a decrease in sensed reactor water level. When reactor water level reached approximately +12 inches above instrument zero, an automatic reactor scram signal was inserted into the RPS logic.

Additionally, at this level, a partial PCIS valve Group 2 isolation signal was generated and the inboard PCIS valves closed. Plant personnel later determined that the outboard valves did not close because the level instruments that actuate these valves had not actuated. They determined that the level instruments were within instrument tolerances and that the outboard valves would also have closed had water level continued to decrease.

The lowest level reached in this event was approximately 11.5 inches above instrument zero (+11.5" - This level is approximately 176 inches above the Top of Active Fuel [TAF]).

At 0803 CDT, the Reactor Feed Pumps (RFPs EIIS Code SJ) sensed the decrease in the reactor water level and automatically increased their injection flow rate. At 0804 CDT, plant operations personnel manually tripped the A RFP. Reactor water level continued to increase because the B RFP was still injecting into the reactor vessel. At 0805 CDT, reactor water level reached approximately +58 inches and the B RFP tripped off automatically, per design, on a high reactor water level signal. The maximum water level reached in the event was approximately +60 inches.

After the B RFP tripped, the assistant plant operator began rejecting water through the Reactor Water Clean Up (RWCU EIIS Code CE) system to the main condenser (EIIS Code SG). This was done in order to decrease the reactor water level in the reactor vessel. At approximately 0808 CDT, licensed plant operations personnel manually restarted the B RFP. Plant operations personnel were able to maintain reactor water level within its normal range (+32 to +42 inches) by using the B RFP.

As a result of the closure of the TSVs and TCVs at the start of the transient, reactor pressure increased to approximately 1097 psig. As previously mentioned, the increase in reactor pressure caused a high pressure scram signal to be inserted into the RPS logic. Additionally, Safety Relief Valves (SRV EIIS Code JE) A, C, D, E, F, G, H, J, K and L lifted. The only remaining SRV (the B SRV) did not lift because reactor pressure did not reach the SRV's lift setpoint (approximately 1100 psig). The combination of the high pressure scram and the lifting of the SRVs armed the Low Low Set (LLS EIIS Code JE) logic and the LLS SRVs functioned, per design, to reduce reactor pressure.

Following the initial pressure transient, reactor pressure was controlled by the lifting of the SRVs and by operations personnel using the main Turbine Bypass Valves (TBV EIIS Code JI). Reactor pressure, after the lifting of the SRVs, dropped to approximately 835 psig and the TBVs allowed reactor pressure to be controlled at approximately 930 psig.

At approximately 0812 CDT, the plant was stable and plant operations personnel reset the scram signal. No high pressure emergency core cooling systems were needed to maintain reactor water level in this event.

At approximately 0935 CDT, plant operations personnel informed the NRC of the reactor scram, as required by 10 CFR 50.72.

2. Dates/Times

Date	Time (CDT)	Description
4/19/88	0802	Non-licensed plant operations personnel (PEO) performed clearance 1-88-335 in order to exchange the TLOCs. During the exchange, air was trapped in the system. This allowed the main turbine thrust bearing wear detector to sense a low pressure and initiate a closure of the main TSVs and TCVs. The TSVs and TCVs closures caused a reactor scram. Licensed operations personnel inserted a manual scram signal into the RPS circuitry per the requirements of the EOPs.
	0803	Reactor pressure increased and a high reactor vessel pressure scram signal was inserted into the RPS logic. Additionally, the pressure increase caused the voids in the core to collapse. As a result, reactor water level decreased to approximately +12 inches.

Date	Time (CDT)	Description
4/19/88	0803	A partial PCIS valve Group 2 isolation and reactor scram signal occurred. The RFPs responded to the decrease in rector water level and increased their injection flow
	0804	Plant operations personnel manually tripped the A RFP. Reactor water level continued to increase due to RFP B.
	0805	The B RFP tripped on a high reactor water level signal, per design. Plant operations personnel started to decrease reactor water level by draining some water through the RWCU system to the main condenser.
	0808	Licensed plant operations personnel manually restarted the B RFP and maintained reactor water level in the normal range.
	0812	Licensed plant operations personnel reset the scram signal.
	0935	Licensed plant operations personnel informed the NRC of the scram per the requirements of 10 CFR 50.72.

3. Other Systems Affected

The only systems affected by this event were the RPS, the PCIS valve Group 2, and the SRVs/LLS. The RPS functions to initiate protective actions to prevent damage to the principal safety barriers. The PCIS isolates the primary containment and prevents the release of radioactive materials. The SRVs ensure that sufficient pressure reductions occur to prevent overpressurizing the reactor vessel. The LLS system ensures that sufficient pressure reductions occur to prevent excessive SRV actuations and subsequent loadings on the SRV discharge piping and torus shell. These systems have no secondary functions.

4. Method of Discovery

The scram occurred when a main turbine thrust bearing wear detector sensed a false high wear condition. This sensed condition resulted in a closure signal to the main turbine stop and main turbine control valves and the valves started to close. The closure of these valves is a scram input to the RPS and a reactor scram occurred.

5. Operator Actions

Licensed operations personnel performed the following actions:

1. Responded to the automatic scram in accordance with emergency operating procedures and ensured that the plant was in a stable configuration.

2. Made applicable reports per the requirements of 10 CFR 50.72.

6. Auto/Manual Safety System Response

The only safety systems that actuated in this event were the RPS, the PCIS Valve Group 2, and the SRVs/LLS. All of these safety systems actuated automatically.

D. CAUSE OF EVENT

1. Immediate Cause

The immediate cause of this event was the exchanging of the main TLOCs by a PEO. This resulted in air being introduced into the system.

2. Root/Intermediate Cause

The root cause of this event is personnel error. Specifically, the plant operations shift supervisor assigned a plant operations PEO to perform the exchange of the TLOCs. He did not verify that the PEO had sufficient experience to perform this evolution.

Additionally, a personnel error occurred on the part of the PEO because he did not inform the shift supervisor that he was unfamiliar with the task. The failure to inform the supervisor is a violation of the existing plant administrative control procedures.

Since the exchange of the main TLOCs is an infrequently performed evolution, a procedure had not been developed to identify all of the steps described in the General Electric Vendors manual for this system.

E. ANALYSIS OF EVENT

The turbine stop and control valves' scrams anticipated the pressure, neutron flux, and heat flux increases that could result from rapid closure of these valves. Closure of the turbine stop and control valves with the reactor at power can result in a significant addition of positive reactivity to the core as the reactor pressure rise collapses steam voids. The turbine stop and control valve scram initiates a scram earlier than either the neutron monitoring system or the reactor high pressure scrams.

Although either the reactor high neutron flux or high pressure scram, in conjunction with the pressure relief system, is adequate to preclude overpressurizing the nuclear system, the turbine stop valve scram provides additional margin to the reactor pressure limit.

The LLS relief logic system is designed to mitigate the thrust loads on the Safety Relief Valve Discharge Lines (SRVDLs) and the resulting loads on the torus shell from subsequent SRV actuations during small and intermediate break Loss of Coolant Accidents (LOCAs). This is accomplished by extending the time between SRV actuations such that the actuation times are long enough to allow the SRVDL water leg to return to its normal level.

The water leg in the SRVDL will rise due to the condensation of the blown down steam in the SRVDL after the SRV is closed. If no further SRV actuations occur, the water leg will then decrease as the water flows, under gravity, back to the suppression pool (torus). The LLS system ensures that subsequent SRV actuations occur after the water leg in the SRVDL stabilizes, at its normal level, by increasing the blowdown range and decreasing the closing and opening setpoints for the four LLS SRVs.

The LLS design involves four non-Automatic Depressurization System (ADS EIIS Code JE) SRVs. The LLS control logic operates the four valves through arming and actuation. The arming function requires concurrent signals of any SRV operating and a high reactor vessel pressure. Once the LLS control logic is armed, the LLS system causes the four LLS valves to actuate. The LLS valves actuate at pressures lower than their respective relief settings and remain open longer (allowing a greater blowdown over a pressure range of approximately 140 psi).

The PCIS provides timely protection against the onset and consequences of accidents involving the gross release of radioactive materials from the fuel and the nuclear system process barrier (such as the reactor vessel). This protection is accomplished by the isolation of process lines that penetrate the primary containment. While the lines that penetrate the primary containment contain two PCIS valves in each line, only one of the valves is required to close in order to satisfy the containment isolation function. By isolating the lines, radioactive materials are prevented from escaping to the environment. In this event the inboard PCIS valves closed and prevented the potential release of any materials from the primary containment.

Based on the above information, it is concluded that this event had no adverse impact on nuclear plant safety. Additionally, since this event occurred at approximately 100 percent of rated thermal power, it is not believed that the consequences of the event would have been more severe at other power conditions.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

F. CORRECTIVE ACTIONS

The corrective actions for this event included:

1. Counseling the involved operations personnel relative to the event and the consequences of the event.

2. Revising plant procedures. Specifically, plant procedure 34SO-N34-008-1N (Turbine Generator Bearing Oil System) for Unit 1 and plant procedure 34SO-N34-008-2N (Turbine Generator Bearing Oil System) for Unit 2 will be revised to include the detailed steps for removing and starting the standby lubrication oil cooler. It is currently anticipated that the procedure revisions will be in place by approximately 6/1/88.

G. ADDITIONAL INFORMATION

1. FAILED COMPONENT(s) IDENTIFICATION

No components failed in this event.

2. PREVIOUS SIMILAR EVENTS

No similar events were noted.

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R. P. McDonald
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May 19, 1988

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

PLANT HATCH - UNIT 1
NRC DOCKET 50-321
OPERATING LICENSE DPR-57
LICENSEE EVENT REPORT
PERSONNEL ERROR CAUSES AIR INTRODUCTION
INTO TURBINE LUBE OIL COOLERS RESULTING IN SCRAM

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 unanticipated actuation of the Reactor Protection System and some Engineered Safety Features. This event occurred at Plant Hatch - Unit 1.

Sincerely,

R. P. McDonald

LGB/lg

Enclosure: LER 50-321/1988-005

c: (see next page)

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c: Georgia Power Company
Mr. J. T. Beckham, Jr., Vice President - Plant Hatch
Mr. L. T. Gucwa, Manager Nuclear Safety and Licensing
GO-NORMS

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Mr. L. P. Crocker, Licensing Project Manager - Hatch

U. S. Nuclear Regulatory Commission, Region II
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