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HL-3015
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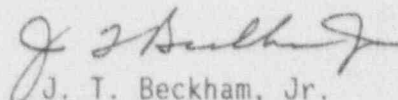
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

PLANT HATCH - UNIT 2
NRC DOCKET 50-366
OPERATING LICENSE NPF-5
LICENSEE EVENT REPORT
DRAWING ERROR AND PERSONNEL ERRORS
RESULT IN ENGINEERED SAFETY FEATURE 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 a drawing error and personnel errors which resulted in an Engineered Safety Feature actuation. This event occurred at Plant Hatch - Unit 2.

Sincerely,



J. T. Beckham, Jr.

JKB/cr

Enclosure: LER 50-366/1992-021

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. Ebner, Regional Administrator
Mr. L. D. Wert, Senior Resident Inspector - Hatch

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) PLANT E. I. HATCH, UNIT 2										DOCKET NUMBER (2) 05000366		PAGE (3) 1 OF 5		
TITLE (4) DRAWING ERROR AND PERSONNEL ERRORS RESULT IN ENGINEERED SAFETY FEATURE ACTUATION														
EVENT DATE (5)			LER NUMBER (6)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)				
MONTH	DAY	YEAR	YEAR	SEQ NUM	REV	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)			
10	11	92	92	021	00	11	10	92			05000			
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)												
N		20.402(b)				20.402(c)				X 50.73(a)(2)(iv)		73.71(b)		
POWER LEVEL		000				20.405(a)(1)(i)				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)		
		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 STEVEN B. TIPPS, MANAGER NUCLEAR SAFETY & COMPLIANCE, HATCH										TELEPHONE NUMBER AREA CODE 912 367-7851				
COMPLETE ONE LINE FOR EACH FAILURE DESCRIBED IN THIS REPORT (13)														
CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORT TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORT TO NPRDS				
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO				
ABSTRACT (16)														

On 10/11/92, at 1030 CDT, Unit 2 was in a refueling outage with all fuel removed from the reactor vessel. At that time, a full Reactor Protection System (RPS) actuation signal and a Group 2 outboard Primary Containment Isolation System (PCIS) actuation signal were received. The control rods were already fully inserted prior to the RPS actuation. Two outboard PCIS valves closed as a result of the actuation: 2G11-F020 (Primary Containment Equipment Drain System isolation valve) and 2D11-F052 (Fission Product Monitoring System isolation valve). The other Group 2 outboard PCIS valves were already closed as a result of the plant being in a refueling outage. An investigation revealed that the actuations were caused by the backfilling of reactor pressure transmitter 2B21-N127B, which was being installed under Design Change Request (DCR) 91-134. The backfilling caused a momentary pressure perturbation in the sensing line for reactor water level instruments 2B21-N080C and D. This resulted in a false low reactor water level signal being generated by the level instruments, further resulting in the RPS actuation and the Group 2 PCIS isolation. Subsequently, the actuations were reset and valves 2G11-F020 and 2D11-F052 were opened using their control switches.

The causes of the event were a less than adequate drawing and personnel error on the part of the designer and the implementation engineer for the DCR. These errors resulted in instrument 2B21-N127B being installed on the wrong sensing line and subsequently resulted in pressurizing the sensing line serving transmitters 2B21-N080C and D. Corrective actions included reinstalling the instrument on the correct sensing line, correcting the drawing and counseling individual.

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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 10/11/92, at 1030 CDT, Unit 2 was in a refueling outage with all fuel removed from the reactor vessel. Backfilling of pressure transmitter 2B21-N127B was in progress. This pressure transmitter had been installed during the outage under Design Change Request (DCR) 91-134. It is one of four new transmitters designed to provide an actuation signal to the Main Steam (EIIS Code SB) Safety Relief Valves (SRVs) on high reactor pressure. This design change was developed as a corrective action for the SRV setpoint drift problem experienced throughout the industry.

At 1030 CDT, a full Reactor Protection System (RPS, EIIS Code JC) actuation and a Group 2 outboard Primary Containment Isolation System (PCIS, EIIS Code JM) actuation occurred as evidenced by annunciators alarming in the Main Control Room. The control rods were already fully inserted and remained so after the actuation. Two outboard PCIS valves automatically closed as a result of the actuation: 2G11-F020 (Primary Containment Equipment Drain System (EIIS Code BD) isolation valve) and 2D11-F052 (Fission Product Monitoring System (EIIS Code IL) isolation valve). The other Group 2 outboard PCIS valves were already closed with the plant being in a refueling outage.

Based on the annunciators that had alarmed, the actuations were apparently caused by a low reactor water level signal. Per design, this signal is generated when the level decreases to 12.5 inches above instrument zero. The reactor vessel was "flooded up" at the time to support refueling activities. In this condition, the reactor water level is in excess of 400 inches above instrument zero. It was therefore concluded that the signal was not valid. Further investigation revealed that the backfilling of transmitter 2B21-N127B had caused a momentary pressure perturbation in the instrument sensing line for reactor water level instruments 2B21-N080C and D. This perturbation resulted in a false low reactor water level signal being generated by the level instruments. With both of the transmitters generating the signal, a sufficient number of channels tripped, causing the RPS actuation and the Group 2 PCIS actuation.

The false low level condition existed only momentarily. Consequently, when the immediate cause of the actuations was determined, the actuations were reset and valves 2G11-F020 and 2D11-F052 were opened using their control switches.

CAUSE OF EVENT

The immediate cause of this event was the installation of pressure transmitter 2B21-N127B on the wrong reactor pressure instrument sensing line during implementation of DCR 91-134. The transmitter was supposed to have been installed on the 2B21-D003A condensing chamber sensing line. However, it

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mistakenly was installed on the 2B21-D004A condensing chamber sensing line which is routed adjacent to the 2B21-D003A sensing line. The 2B21-D004A sensing line serves as a reference leg for reactor water level transmitters 2B21-N080C and D as well as other instruments.

Subsequent to installation of the transmitter, it and the newly installed tubing had to be backfilled in order to purge any air from the line. The procedure used for the backfilling activity was that for backfilling the 2B21-D003A sensing line since the transmitter was intended to have been installed on this line. The instruments served by the 2B21-D003A sensing line were removed from service in order to preclude any unnecessary actuations, as required by the procedure. Since transmitters 2B21-N080C and D were not served by the 2B21-D003A sensing line, they were not addressed in the procedure and, therefore, were not removed from service. Consequently, when pressure transmitter 2B21-N127B and the associated instrument tubing were backfilled, the 2B21-D004A sensing line, as opposed to the 2B21-D003A sensing line, was pressurized, resulting in transmitters 2B21-N080C and D sensing a false low reactor water level condition.

The root causes of this event were a less than adequate isometric drawing, cognitive personnel error on the part of the designer of DCR 91-134, and cognitive personnel error on the part of the engineer implementing the DCR. First, the drawing used to show the location of the tie-in of the transmitter to the existing sensing line did not accurately reflect the as-built location of the 2B21-D003A and D004A sensing lines. In particular, the 2B21-D004A condensing chamber sensing line was shown to be located where the 2B21-D003A condensing chamber was actually located, and vice versa. In the plant, four instrument sensing lines are routed parallel to each other. The 2B21-D003A sensing line at the instrument rack on which the transmitter was to be installed is the northern most line of the four, with the 2B21-D004A line located immediately south of it. However, the isometric drawing showed the reverse of the actual plant configuration. The 2B21-D004A sensing line was shown as being the most northern line with the 2B21-D003A sensing line located immediately south of it.

The designer, in developing the design change, walked down the instrument lines using the drawing and failed to identify the drawing discrepancy. In modifying the drawing to reflect the design change, the designer depicted the transmitter being connected to the sensing line that was second from the north. He identified this sensing line as being that for the 2B21-D003A condensing chamber based on its functional relationship to other instrumentation depicted on the drawing. However, in the plant, the reference leg second from the north was that for the 2B21-D004A condensing chamber.

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The implementation engineer used the drawing to locate the sensing line on which he was to install the transmitter. Based on the drawing, he identified the second most northern line as the 2B21-D003A condensing chamber sensing line and had the transmitter installed. He failed to walk down the design documentation to confirm its accuracy prior to performing the modification. Consequently, the drawing error was not identified, and the instrument was installed on the incorrect sensing line.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This report is required pursuant to 10 CFR 50.73(a)(2)(iv) because an unplanned automatic actuation of an Engineered Safety Feature system (i.e., Group 2 outboard PCIS valves 2G11-F020 and 2D11-F052) occurred. Specifically, these valves automatically closed on a false low reactor water level signal. An unplanned full RPS actuation also occurred during this event; however, this aspect of the event is not reportable because the RPS safety function had been previously completed; that is, the control rods were already fully inserted at the time of the event.

The reactor vessel pressure sensing lines are used for monitoring reactor water level as well as reactor pressure. For reactor water level monitoring, the sensing lines provide a reference value for the reactor water level differential pressure transmitters. The pressure and level instruments served by the instrument lines provide input signals for Engineered Safety Feature (ESF) actuation systems and input to Main Control Room recorders and indicators. The design of the instrument sensing lines incorporates independence and redundancy such that a single failure of a line in and of itself could not prevent an ESF from fulfillment of its intended safety function.

DCR 91-134 added a pressure transmitter to each of four instrument reference legs. Due to the Technical Specifications limiting conditions for operation that have to be entered for this type of work, work of this nature normally would not be performed during power operation.

In this event, a pressure transmitter was installed on the wrong instrument sensing line. During backfilling of the transmitter, a pressure perturbation was introduced into a sensing line of which the instruments had not been removed from service. The perturbation was sensed by reactor water level instruments served by the sensing line resulting in a false low reactor water level signal being transmitted to the RPS and Group 2 outboard PCIS actuation systems. The reactor water level instruments and the RPS and PCIS actuation systems functioned as designed resulting in a full RPS actuation and a Group 2 outboard PCIS actuation. All control rods were fully inserted at the time, therefore, no control rod movement occurred. PCIS outboard valves 2G11-F020 and 2D11-F052 were open at the time of the event and did not automatically close. The remaining Group 2 outboard PCIS valves were already closed due to the plant being in a refueling outage.

Based on the above analysis, it is concluded that this event had no adverse effect on nuclear safety. This analysis is applicable to all modes of operation.

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CORRECTIVE ACTIONS

Pressure transmitter 2B21-N127B was removed and reinstalled on the correct sensing line. The sensing line leg from which it was removed was capped off.

An as-built notice was issued against the drawing of concern to reflect the proper location of the two sensing lines.

The designer was counseled regarding the need for attention to detail in reviewing the as-built configuration of the plant.

The implementation engineer was counseled regarding the need to review design packages to ensure the accuracy of as-built conditions on which the design is based.

Also, implementation engineers have been trained on this event with an emphasis on the need to verify the accuracy of as-built conditions.

ADDITIONAL INFORMATION

No systems other than those previously mentioned in this report were involved in this event.

Similar events occurring in the previous two years in which implementation of a design change resulted in a reportable condition were reported in the following LERs:

50-321/91-26, dated 12/4/91

50-366/91-12, dated 5/21/91

Corrective actions resulting from these events included requiring procedures be developed for back filling or venting instrument lines associated with ESF systems, counseling personnel, revising procedures requiring (whenever possible) that work be completed on a trip system prior to working on a second trip system of the same actuation system, and providing more guidance in developing work process sheets. These corrective actions could not have prevented this event because they had no effect on the design drawing error, on the designer's failure to detect the drawing error, or on the engineer's failure to confirm the accuracy of the design.

No failed components resulted from or contributed to this event.