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UTILITIES INC.

August 12, 1994
NG-94-3042

Mr. John B. Martin
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License DPR-49
Licensee Event Report #94-011

Gentlemen:

In accordance with 10 CFR 50.73 please find attached a copy of the subject Licensee Event Report.

There was one new commitment made in this LER.

Discuss this event and the written communication in the upcoming operator requalification training by December 15, 1994.

Very truly yours,



David L. Wilson
Plant Superintendent - Nuclear

DLW/HT/eah

cc: Director of Nuclear Reactor Regulation
Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D. C. 20555

NRC Resident Inspector - DAEC

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LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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 (MNBB 7714), 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)

Duane Arnold Energy Center

DOCKET NUMBER (2)

05000 331

PAGE (3)

1 OF 4

TITLE (4) Missed Surveillance of The 'A' Channel Rod Block Monitor Due to a Failure to Recognize The Surveillance Requirement

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	18	94	94	011	00	08	12	94		05000
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
1			20.402(b)			20.405(c)			50.73(a)(2)(iv)	
POWER LEVEL (10)			20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)	
64			20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)	
			20.405(a)(1)(iii)			X 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)	
(Specify in Abstract below and in Text, NRC Form 366A)										

LICENSEE CONTACT FOR THIS LER (12)

NAME

Hai Tran, Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

(319) 851-7491

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)

YES

(If yes, complete EXPECTED SUBMISSION DATE)

X

NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

On July 18, 1994, at 0530 hours, during plant startup with reactor power at 63.9%, it was recognized that a surveillance test requirement to demonstrate the operability of the 'A' channel Rod Block Monitor (RBM) had not been performed as required by the Technical Specifications. Section 4.3.C.3 requires that when one RBM channel is inoperable and a Limiting Control Rod Pattern (LCRP) exists, an instrument functional test of the operable RBM channel shall be performed within 24 hours prior to rod withdrawal. The cause of this event is personnel error due to a failure to recognize the surveillance test requirement. The required surveillance test was performed and completed satisfactorily when the error was discovered. A written communication was sent to the control room to inform the Operations personnel of this event and criteria for thorough review of the limiting conditions for operation (LCOs) and surveillance requirements.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

EXPIRES: 5/31/95

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER(S)			PAGE(S)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 386A) (17)

I. DESCRIPTION OF EVENT:

On July 17, 1994, during plant startup with reactor power at 49.8%, control rod withdrawal was in progress. At 2021 hours, the 'B' channel Rod Block Monitor (RBM) was declared inoperable due to receipt of system alarms. Technical Specification Section 4.3.C.3 requires that when one RBM channel is inoperable and a Limiting Control Rod Pattern (LCRP) exists, an instrument functional test of the operable RBM channel shall be performed within 24 hours prior to rod withdrawal. The bases for Technical Specification Sections 3.3 and 4.3 state that a LCRP for Rod Withdrawal Error (RWE) exists when a) core thermal power is greater than or equal to 30% of rated and less than 90% of rated and the Minimum Critical Power Ratio (MCPR) is less than 1.70, or b) core thermal power is greater than or equal to 90% of rated and the MCPR is less than 1.40.

At the time that the 'B' RBM channel was declared inoperable, a LCRP did not exist because the MCPR value (1.988) was above the value (1.70) specified in the Technical Specifications. Therefore, control rod withdrawal was continued.

At 0150 hours, on July 18, 1994, a set of four control rods was withdrawn to notch position 36, resulting in the core condition changing from a non-limiting to a limiting control rod pattern condition (MCPR value was lowered to 1.690). Although the control room crew on shift at the time of this event recognized the core condition change, they did not recognize the functional test requirement of Technical Specification Section 4.3.C.3 and continued control rod withdrawal to notch position 40. This was a violation of Technical Specification Section 4.3.C.3, since the operability test had not been performed on the 'A' channel RBM prior to rod withdrawal.

At 0429 hours, rising xenon concentration lowered reactor power and increased the MCPR value to 1.708, thereby removing the LCRP condition. At 0530 hours, the four rods at notch position 40 were further withdrawn to position 48. The MCPR value further increased to 1.754. At this time, the 'B' Operations Shift Supervisor (OSS) re-confirmed the Technical Specification requirement for the inoperable 'B' channel RBM and then noticed the missed surveillance requirement. A functional test on the 'A' channel RBM was initiated immediately and completed satisfactorily at 0558 hours.

Throughout this event (from 0149 hours to 0429 hours), the lowest MCPR value was 1.675. The MCPR operating limit for the plant during this time was conservatively calculated to be 1.39. The MCPR operating limit was not challenged, thereby maintaining a margin to the MCPR safety limit (1.07).

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TEXT (If more space is required, use additional NRC Form 386A) (17)

II. CAUSE OF THE EVENT:

The root cause of this event is personnel error in that the surveillance requirement of Technical Specification Section 4.3.C.3 was not performed in a timely manner. Section 4.3.C.3 requires that when a LCRP exists and one RBM channel is inoperable, an instrument functional test of the operable RBM channel shall be performed within 24 hours prior to rod withdrawal. The causal factor which led to this event is inattention to detail (not reviewing the Technical Specifications thoroughly).

III. ANALYSIS OF EVENT:

The RBM system prevents violation of the MCPR safety limit from an inadvertent withdrawal of a single control rod from a LCRP. This is accomplished by inserting a control rod block if the RBM signal exceeds a predetermined limit during withdrawal of any non-peripheral control rod. The reactivity worth of a peripheral control rod has been determined to be low enough such that use of the RBM rod block function is not needed. The RBM system consists of two essentially identical channels and only one of them is required to trip to prevent rod withdrawal. The RBM functions are required when the core thermal power is greater than 30% of rated and a LCRP exists per the Technical Specification Section 3.3.C.3.

Throughout the event, the 'A' channel RBM was operable. This was demonstrated by performing the functional test after the discovery of the error. Therefore, had a control rod block been required during the event, the 'A' channel RBM would have provided the trip function. In addition, the Rod Worth Minimizer (RWM) was in effect at the time of the event. This system blocks movement of rods not within the rod group for which withdrawal is planned. Therefore, had a control rod not within the applicable rod group been inadvertently selected, rod movement would have been prevented by the RWM.

Also, when the LCRP existed (MCPR value lower than 1.70), the four rods selected for rod movement were at position 36. Withdrawal of these rods to position 48 did not cause violation of the MCPR limit. In fact, after the rods were withdrawn to position 48, the MCPR value went from 1.690 to 1.754 due to the lowering of power in the upper portion of the reactor core.

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Throughout the event, the lowest MCPR value was 1.675. The MCPR operating limit for the plant during this time was 1.39. The operating limit was not challenged, thereby maintaining a margin to the MCPR safety limit. The MCPR safety limit is 1.07 per the Technical Specification Section 1.1.A and the Supplemental Reload Licensing Report for the current cycle.

IV. CORRECTIVE ACTIONS:

As mentioned above, a functional test was performed on the 'A' channel RBM and completed satisfactorily upon the discovery of the error. A written communication was sent to the control room on July 19, 1994 to inform the Operations personnel of this event and the criteria for thorough review of the limiting conditions for operation (LCOs) and surveillance requirements. This event and the written communication will be discussed in the upcoming Operator Regualification training (September thru October, 1994).

On July 19, 1994, after a faulty rod select switch in the Reactor Manual Control System (RMCS) was replaced, the 'B' channel RBM was tested satisfactorily and declared operable. This switch feeds the RBM system.

V. ADDITIONAL INFORMATION:

A. Previous Similar Events

A review of DAEC LERs since 1984 identified LERs 94-08, 94-05, 94-01, 93-02, 91-11, 85-32 as missed or inadequate surveillances required by the Technical Specifications, but none of these are related to the RBM system.

B. EIIIS System and Component Codes

JD - Reactor Power Control System

This report is being submitted pursuant to 10CFR50.73(a)(2)(i)(B).