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February 4, 1994
NG-94-0323

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 #94-001

Gentlemen:

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

Very truly yours,



David L. Wilson
Plant Superintendent - Nuclear

DLW/JK/eah

cc: Director of Nuclear Reactor Regulation
Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Station PI-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 (MNBE 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
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TITLE (4)
Inadequate Test of the APRM High Flux Scram Trip Setpoint

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
01	07	94	94	001	00	02	04	94		05000
										05000

OPERATING MODE (9) N	POWER LEVEL (10) 100	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
		<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
		<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
		<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER
		<input type="checkbox"/> 20.405(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
		<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME John D. Kerr, Technical Support Specialist	TELEPHONE NUMBER (include Area Code) (319) 851-7492
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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)	<input checked="" type="checkbox"/> NO				

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

On January 7, 1994 while the plant was operating at 100% power, it was determined that the test of the average power range monitor (APRM) high flux scram trip setpoint was inadequate. The test has not been performed at a recirculation flow greater than 100% to assure that the scram setpoint does not exceed 120% rated power, as required by the Technical Specifications.

The APRMs were considered to be inoperable and a 6 hour to Startup mode limiting condition for operation (LCO) was entered. The test was revised and performed with satisfactory results and the LCO was exited. This condition was caused by a lack of awareness of the requirement to test the "clamping" function on the scram trip setpoint. The test results verified that the "clamping" function had been and is set properly. There was no effect on safe operation of the plant.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

EXPIRES: 5/31/95

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 (MNB 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

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TEXT (If more space is required, use additional NRC Form 368A) (17)

I. DESCRIPTION OF EVENT:

On January 7, 1994 the plant was operating at 100% power. The residual heat removal (RHR) system was in day 23 of a 30 day limiting condition for operation (LCO). Ongoing engineering reviews comparing Technical Specification limiting safety system setting nominal values, analytical limits, and surveillance test procedure (STP) limits uncovered a deficiency in the testing of the average power range monitor (APRM) high flux scram trip setpoint.

Technical Specification 2.1.A.1. states that "The APRM scram trip setpoint shall be ... with a maximum setpoint of 120% rated power at 100% rated recirculation flow or greater" STP 42C001-Q does test the APRM scram trip setpoint at 100% flow to assure that it is 120% rated power or less. However, there has been no test at a recirculation flow greater than 100% to assure that the scram setpoint does not exceed 120% rated power.

This condition was identified by plant engineers at 1230 hours on January 7, 1994 and was determined to be reportable pursuant to 10CFR50.73(a)(2)(i)(B). At approximately 1500 hours this condition was also determined to be reportable pursuant to 10CFR50.72(b)(2)(iii)(A) and 10CFR50.73(a)(2)(v)(A) as a condition that could have prevented the fulfillment of the safety function because the APRMs were considered to be inoperable. Subsequent tests showed that this condition did not exist, as discussed below. In accordance with Technical Specification 3.1.A. the plant entered an LCO to be in at least Startup mode within 6 hours, effective at 1230 hours.

Also at 1230 hours on January 7, 1994 a revision to STP 42C001-Q was initiated to add a test of the APRM scram trip setpoint at a simulated 125% rated recirculation flow. Following procedure approval, the revised test of all 6 APRMs was begun. By 1810 hours 2 APRMs in each of the 2 trip systems had been tested with satisfactory as-found results and the LCO was exited. By 1900 hours the remaining 2 of the total of 6 APRMs had also been satisfactorily tested.

II. CAUSE OF EVENT:

The cause of this event (condition) was a lack of awareness of the requirement to test the flow biased APRM scram trip setpoint at a recirculation flow greater than 100%. This test confirms that the "clamping" function on the scram trip setpoint is set properly to limit the scram trip setpoint at 120% rated power or less when recirculation flow exceeds 100%. When this condition was identified it was agreed that the current STP was inadequate to test the "clamping" function.

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TEXT CONTINUATION

EXPIRES 5/31/85

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TEXT (If more space is required, use additional NRC Form 388A) (17)

A factor that contributed to the lack of awareness was that two sections of the Technical Specifications, 1.1 Fuel Cladding Integrity and 3.1 Reactor Protection System Instrumentation, must be used together to understand all the test requirements.

III. ANALYSIS OF EVENT

The STP as-found test results on January 7, 1994 were all acceptable. This verified that the "clamping" function on the flow biased scram trip setpoint had originally been and still is set properly. Therefore, the condition that existed before the revised STP was run had no effect on safe operation of the plant. The condition was only that the "clamping" function had not been tested. The APRM scram trip setpoint has been routinely tested at 100% rated recirculation flow. Recirculation flow and reactor power are monitored and controlled to prevent reactor power from exceeding the 100% licensed power level.

IV. CORRECTIVE ACTIONS

During the time that the APRMs were considered to be inoperable, the reactor recirculation flow control system was locked in position to prevent a recirculation flow rate increase, and subsequent power increase, due to an electrical malfunction or manual initiation.

As discussed above, the STP for testing the flow biased APRM scram trip setpoint was revised to add a test of the "clamping" function by testing at a simulated 125% rated recirculation flow. The revised STP was sufficiently completed with satisfactory results to exit the LCO within the specified 6 hours. The remainder of the STP was successfully completed within another hour. The STP revision is permanent and will be used for future testing.

A review of Technical Specification tables was performed to look for references, notes, or other requirements that may not have been included in surveillance tests. No more were found. The discovery of this deficiency serves as a reminder, to those conducting the ongoing engineering reviews, of the need to carefully read the Technical Specification requirements and to carefully consider both the content and the intent of all references and footnotes.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

EXPIRES 5/31/95

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 (MNB 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

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

V. ADDITIONAL INFORMATION

A. Previous Similar Events

A review of DAEC LERs since 1984 identified LERs 93-02, 91-11, 85-32 as reporting inadequate surveillance tests but none of these concern the APRM scram trip.

B. EIIS System and Component Codes

RHR--BO Reactor Recirculation--AD
APRM--IG Reactor Power Control--JD

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