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March 24, 1997
NG-97-0587

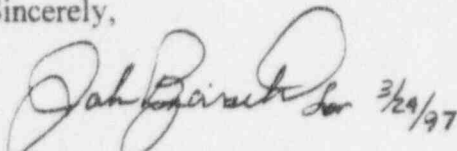
Mr. A. Bill Beach
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
801 Warrenton Road
Lisle, IL 60532

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Licensee Event Report #97-04
File: A-118a

Gentlemen:

Please find attached a copy of the subject Licensee Event Report in accordance with 10CFR50.73. There are no new commitments made in this letter.

Sincerely,



Gary Van Middlesworth
Plant Manager - Nuclear

cc: Director of Nuclear Reactor Regulation
Document Control Desk
U. S. Nuclear Regulatory Commission
Mail Station P1-37
Washington, D. C. 20555-0001

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NRC Resident Inspector - DAEC
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EXPIRES 04/30/98

LICENSEE EVENT REPORT (LER)

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

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), 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)

Three of four Main Steam Line Low Reactor Pressure Isolation instrumentation not in agreement with the preferred direction of the numerical values in the Technical Specifications.

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 NAME	DOCKET NUMBER
02	23	97	97	-- 04	-- 00	03	24	97	FACILITY NAME	05000-331
									FACILITY NAME	05000-331
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)							
POWER LEVEL (10)		100	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(ii)		50.73(a)(2)(viii)	
			20.2203(a)(1)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		50.73(a)(2)(x)	
			20.2203(a)(2)(i)		20.2203(a)(3)(iii)		50.73(a)(2)(iii)		73.71	
			20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		<input checked="" type="checkbox"/> OTHER	
			20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form	
			20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)			

LICENSEE CONTACT FOR THIS LER (12)

NAME

Tony Browning, Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

319-851-7750

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

YES

(If yes, complete EXPECTED SUBMISSION DATE).

☒ NO

MONTH

DAY

YEAR

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

On February 23, 1997 with the plant operating at 100% power, it was determined that three (3) out of four (4) of the instruments that initiate the isolation of the Main Steamlines (MSL) on low Reactor pressure (< 850 psig in Run mode) had their as-left settings from their most-recent calibration not in agreement with the numerical value, in the preferred direction, as given in Technical Specifications (TS) Table 3.2-A for Isolation Actuation Instrumentation.

The TS Actions for the MSL isolation instruments were conservatively entered to place the Trip System with the most "inoperable" channels in the tripped condition within one (1) hour and to place the Reactor in Startup mode within six (6) hours. Although the instruments were considered to be Operable per the plant engineering setpoint calculations, the plant calibration procedures were revised to recalibrate the instruments' as-left settings to be in verbatim compliance with the preferred direction of the TS numerical value. The instruments were subsequently recalibrated and the TS Actions exited. This condition was caused by the DAEC TS being "custom" in nature and having a unique definition of Limiting Safety System Setting that allows the Limiting Trip Point For Operation to be controlled outside the TS. There was no effect on safe operation of the plant.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Duane Arnold Energy Center	05000-331	97	-- 04	-- 00	2	OF 4

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

I. DESCRIPTION OF EVENT:

On February 23, 1997 with the plant operating at 100% power, it was determined that three (3) out of four (4) of the instruments that initiate the isolation of the Main Steamlines (MSL) on low Reactor pressure (< 850 psig in Run mode) had their as-left settings from their most-recent calibration not in agreement with the numerical value, in the preferred direction, as given in TS Table 3.2-A for Isolation Actuation Instrumentation.

The TS Actions for the MSL isolation instruments were conservatively entered to place the Trip System with the most "inoperable" channels in the tripped condition within one (1) hour and to place the Reactor in Startup mode within six (6) hours. Although the instruments were considered to be Operable per the plant engineering setpoint calculations, the plant calibration procedures were revised to recalibrate the instruments as-left settings to be in verbatim compliance with the preferred direction of the TS numerical value. The instruments were subsequently recalibrated and the TS Actions exited. This condition was caused by the DAEC TS being "custom" in nature and having a unique definition of Limiting Safety System Setting that allows the Limiting Trip Point For Operation to be controlled outside the TS. There was no effect on safe operation of the plant.

	Channel A1 (PS - 1014)	Channel A2 (PS - 1016)	Channel B1 (PS - 1015)	Channel B2 (PS - 1017)
As-left Setting (Prior to 2/23/97)	850.03 psig	843.99 psig	844.22 psig	842.81 psig

In order to preclude any potential concerns with verbatim compliance with the TS numerical values, the TS Actions were conservatively entered at 19:28, which consisted of:

- 1) Placing the Trip System with the most "inoperable" channels in the tripped condition within one (1) hour (ref. TS 3.2.A.1.b); and,
- 2) Placing the Reactor in Startup mode within six (6) hours (ref. Table 3.2 - A, Action 22); and,
- 3) Placing an "inoperable" channel/Trip System in the tripped condition within 24 hours for trip functions not common to the Reactor Protection System instruments (ref. 3.2.A.1.a.2)b)).

The "B" Trip System, the one with the most "inoperable" channels, was placed in the tripped condition at 20:26. Engineering calculations were revised and procedure changes were initiated to change the as-left settings to conform to the numerical value, in the preferred direction, of the TS setting. The instruments were re-calibrated to these new values. TS Table 3.2 - A, Action 22 and LCO 3.2.A.1.b were exited at 22:20 when the A2 channel was returned to service. LCO 3.2.A.1.a.2)b) remained in effect for the B1 and B2 channels, which were still in the tripped condition.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Duane Arnold Energy Center	05000-331	97	-- 04	-- 00	3 OF 4

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

The "B" Trip System was taken out of the tripped condition and all the LCO Actions that had been entered were exited at 00:50 on February 24, 1997, when the last channel (B2) was recalibrated and returned to service. (Note: in order to return all four channels to the same surveillance schedule, Channel A1 was also recalibrated and returned to service at 01:29 on February 24, 1997.)

II. CAUSE OF EVENT:

As more fully discussed in our February 25, 1997 letter (ref. NG-97-0395), the DAEC has "custom" TS, which have a unique definition of Limiting Safety System Setting (LSSS). Per TS Definition 1.0.2:

The limiting safety system settings are settings on instrumentation which initiate the automatic protective action at a level such that the safety limits will not be exceeded. These settings take into consideration the instrumentation tolerances and the instruments are required to be periodically calibrated as specified in these Technical Specifications. *The limiting safety system setting plus the tolerance of the instrument as given in the system design control document gives the limiting trip point for operation.* This additional margin has been established so that with proper operation of the instrumentation the safety limits will never be exceeded. *The inequality sign which may be given merely signifies the preferred direction of operational trip setting.* {emphasis added}

This definition allows the DAEC to control the instrument tolerances (e.g., accuracy, repeatability, drift, etc.) in the "system design control documents" (i.e., engineering setpoint calculations and plant surveillance procedures.) The numerical values given in the DAEC TS instrumentation tables for "Trip Level Setting" are, in fact, nominal values and not the value that determines channel Operability (i.e., Limiting Trip Point for Operation.) This value is referred to as the "Allowable Value" in Standard TS.

III. ANALYSIS OF EVENT:

The DAEC Instrument Setpoint Program (ISP), which calculates the as-found values given in the plant instrument calibration procedures that determine channel Operability (as well as the as-left settings), is based upon an NRC-approved setpoint methodology (General Electric Company (GE) Topical Report, NEDC-31336P-A, "General Electric Instrument Setpoint Methodology"). These calculations are the "system design control documents" given in the TS definition of LSSS quoted in Section II above.

A comparison of the as-left instrument settings prior to February 23, 1997, given in the table in Section I, to the required as-found settings (i.e., Allowable Value) of ≥ 821 psig given in the engineering setpoint calculations, demonstrates that these instruments would have performed their intended safety function, with the margin required by the GE setpoint methodology, prior to reaching the Analytical Limit of 800 psig used in the DAEC transient analysis for this isolation function. Thus, no actual Operability concern existed with these instruments.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Duane Arnold Energy Center	05000-331	97	-- 04	-- 00	4	OF 4

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

IV. CORRECTIVE ACTIONS:

As discussed in our February 25, 1997 letter, to preclude any potential concerns regarding verbatim compliance with our TS, we revised the engineering setpoint calculations and plant calibration procedures and recalibrated the MSL low pressure isolation instrumentation to be in agreement with the TS numerical value, in the preferred direction. During the period of time while the instruments were being recalibrated, the corresponding TS Actions were taken to place the required channels/Trip System in the tripped condition.

As committed in our February 25, 1997 letter, we completed our review of the plant procedures that perform calibrations on TS instrumentation to determine if the specified as-left value would allow an in-plant setting that was not in agreement with the numerical TS value, in the preferred direction. That review determined that one additional instrument function, the Recirculation Flow - Upscale control rod block, had instrument channels not in agreement with the numerical TS value, in the preferred direction. This condition will be reported separately (LER # 97-005). In addition, two other instrument functions, High Pressure Coolant Injection (HPCI) Turbine Exhaust Diaphragm Pressure - High and HPCI Condensate Storage Tank Level - Low, had the *potential* to leave their instrument settings not in agreement with the numerical TS value, in the preferred direction. All of these plant calibration procedures will be revised to eliminate this potential prior to their next scheduled performance.

The long-term corrective action is to replace the nominal values listed in the DAEC TS instrument tables with the Allowable Values calculated in the DAEC ISP. This change has been incorporated into the DAEC TS change request to convert to the Improved Standard TS (i.e., NUREG - 1433). This TS change request was submitted to the NRC for review on October 30, 1996 (ref. NG-96-2322).

In addition, administrative controls have been put into place to ensure that the commitments contained in the February 25, 1997 letter remain in place until the Improved TS are implemented.

V. ADDITIONAL INFORMATION:

A. Previous Similar Events

A review of DAEC LERs since 1986 did not identify any previous reports of the MSL low pressure isolation instrument setpoints not being in compliance with the TS values.

B. EIS System and Component Codes

PCIS - JM

This LER is being submitted as a voluntary report.