



Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324
Telephone 319 851 7611
Fax 319 851 7611

February 14, 1997
NG-97-0320

Mr. A. Bill Beach
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 No: DPR-49
Licensee Event Report #97-01
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,

A handwritten signature in cursive script, appearing to read "Gary Van Middlesworth".

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

NRC Resident Inspector - DAEC
DOCU

9702250020 970214
PDR ADOCK 05000331
S PDR

IE221

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 (IT-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 3

TITLE (4)

Failure to Comply with Technical Specification for Main Steam Line Radiation Monitors

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
1	15	97	97	01	00	2	14	97	FACILITY NAME	05000-331
									FACILITY NAME	05000-331

OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)				
1	100	20.2201(b)	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)	50.73(a)(2)(viii)
		20.2203(a)(1)	20.2203(a)(3)(i)		50.73(a)(2)(ii)	50.73(a)(2)(x)
		20.2203(a)(2)(i)	20.2203(a)(3)(ii)		50.73(a)(2)(iii)	73.71
		20.2203(a)(2)(ii)	20.2203(a)(4)		50.73(a)(2)(iv)	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

Robert Murrell, Licensing Specialist

TELEPHONE NUMBER (Include Area Code)

319-851-7900

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).

X

NO

MONTH

DAY

YEAR

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

During Refueling Outage (RFO) 14, the Duane Arnold Energy Center (DAEC) performed Noble Metal Chemical Addition (NMCA). This is a first of a kind process to allow corrosion protection of vessel internals with decreased Hydrogen Water Chemistry (HWC) injection rates and lower radiation dose rates at the facility. On January 15, 1997, following the November 16, 1996 plant startup from RFO 14, it was determined that the DAEC failed to meet the requirement of Technical Specifications (TS) Table 3.2-A, in that the Main Steam Line Radiation Monitors (MSLRMs) were not set to trip at $\leq 3 \times$ Normal Rated Power Background. The MSLRMs were set to trip at a setpoint non-conservative with respect to the TS requirement. Implementation of the post-outage NMCA test failed to establish timely interim re-establishment of "Normal" radiation levels and the corresponding setpoint change.

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	-- 01	-- 00	2 OF 3

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

I. DESCRIPTION OF EVENT:

During Refueling Outage (RFO) 14, the Duane Arnold Energy Center (DAEC) performed Noble Metal Chemical Addition (NMCA). This is a first of a kind process which will provide corrosion protection of vessel internals with decreased Hydrogen Water Chemistry (HWC) injection rates. This will result in lower radiation dose rates at the facility.

On January 15, 1997, it was determined that the DAEC failed to meet the requirement of Technical Specifications (TS) Table 3.2-A, in that the Main Steam Line Radiation Monitors (MSLRMs) were not set to trip at $\leq 3 \times$ Normal Rated Power Background. The MSLRMs were set to trip at a setpoint of 1800 mr/hr from startup from RFO 14 (November 16, 1996) until December 18, 1996. This setpoint corresponded to a Hydrogen Water Chemistry (HWC) injection rate of 15 scfm (previous cycle injection rate). HWC injection rates after startup were approximately 6 scfm from November 20 until December 18, 1996, except for periods of testing. Radiation readings in the vicinity of the MSLs were approximately 150 mr/hr with HWC set at an injection rate of approximately 6 scfm, hence the trip setpoint should have been approximately 450 mr/hr (3x). TS Table 3.2-A states: "If the minimum operable channels per trip system" cannot be met, then follow action statement 21. Action statement 21 requires the plant to be in at least STARTUP with the associated isolation valves closed within 6 hours or be in at least HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours. Although the MSLRM setpoint of 1800 mr/hr was conservative with respect to the design basis, it was non-conservative with respect to TS. DAEC failed to meet this TS requirement between November 24, 1996 (when rated power was reached) and December 18, 1996.

II. CAUSE OF EVENT:

The root cause of this event is less than adequate implementation of the post-outage NMCA test. The test failed to establish provisions for timely interim re-establishment of "Normal" radiation levels and the corresponding setpoint change prior to placing HWC in service for startup from RFO 14. The DAEC staff accepted a definition of "Normal" that had been established based on historical operating parameters. Prior to startup from RFO 14, it was understood that there would be a need to adjust the MSLRM set points to correspond with a different HWC injection rate. The injection rate would be dependent upon a General Electric (GE) evaluation of the results of the post-Noble Metal Chemical Addition test. This test required HWC to be varied to determine the effectiveness of Noble Metal Chemical Addition. It was anticipated that the new value of "Normal" would not be established (by GE) until January, 1997. While the planning recognized that changes were likely to occur in HWC injection rates, the DAEC staff focused on the design basis safety function of the MSLRMs and did not fully recognize the interim operation at lower HWC rates as establishing a new "Normal" value in accordance with TS.

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	-- 01	-- 00	3	OF 3

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

III. ANALYSIS OF EVENT:

The safety objective of the MSLRM system is to monitor for gross release of fission products from the fuel (Control Rod Drop Accident) and, upon indication of such release, to initiate appropriate action to limit fuel damage and contain the released fission products. A trip setting of 3 times normal full-power background is established to close the MSL drain valves, recirculation loop sample valves, and trip the mechanical vacuum pump. Radiation Engineering Calculation 94-014A (performed in 1994) developed an upper bounding value for the MSLRM high radiation trip setpoint of 6000 mr/hr using the source term radiation values for the Control Rod Drop Accident specified in Chapter 15 of the Updated Final Safety Analysis Report. The trip setpoint during the period of TS non-compliance for the MSLRM trip setpoint was 1800 mr/hr. This setpoint was substantially under the bounding value. The small increase in delay time to reach the setpoint was not significant and would not have caused an increased activity release to challenge dose rates governed by 10 CFR 100. Smaller fuel failures, outside the bases of the MSLRMs, would be detected by the Offgas Pretreatment Radiation Monitors and/or the Offgas Stack Radiation Monitors. During the period in question, the main steam line drain valves were closed and the mechanical vacuum pump was not in service. Recirculation loop sample lines were open but would have closed when MSLRM levels reached approximately 1800 mr/hr.

IV. CORRECTIVE ACTIONS:

On December 18, 1996 the HWC injection rate was raised to 15 scfm to ensure that the MSLRM were set in accordance with TS.

On December 21, 1996, Engineering Maintenance Action A27877 lowered the MSLRM set points to match the GE recommended HWC injection rate and HWC injection rate was reduced. Surveillance Test Procedures were revised to reflect the revised setpoints for future calibrations.

DAEC's conversion to Improved Standard Technical Specifications is currently on the docket. The proposed MSLRM set point will be a value consistent with the design basis. This corrective action will eliminate the ambiguity surrounding the word "Normal."

V. ADDITIONAL INFORMATION:

None