

Iowa Electric Light and Power Company

November 18, 1992
NG-92-5188

Mr. A. Bert Davis
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
729 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License DPR-49
Licensee Event Report #92-016

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 P1-137
Washington, D. C. 20555

NRC Resident Inspector - DAEC

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NRC Form 256A (2-89)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED OMB NO 3150-0154	
LICENSEE EVENT REPORT (LER)				EXPIRES 4-30-92	
FACILITY NAME (1): Duane Arnold Energy Center				DOCKET NUMBER (2): 0 5 0 0 0 3 3 1 1 0 F 0 4	
				PAGE 1	
TITLE (4): Loss of Control Building Air Conditioning Due to Inoperability of Both Control Building Chillers Caused by Air Intrusion Into The Chilled Water Piping					
EVENT DATE (5):		LER NUMBER (6):		REPORT DATE (7):	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER
10	22	92	92	046	001
OTHER FACILITIES INVOLVED (3):		FACILITY NAMES			
None		DOCKET NUMBERS:			
0 5 0 0 0 0 0 0 0 0		0 5 0 0 0 0 0 0 0 0			
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11):					
OPERATING MODE (8): N		20 402(a)		20 406(a)	
POWER LEVEL (10): 100		20 406(a)(1)(i)		20 406(a)(1)(ii)	
		20 406(a)(1)(iii)		20 406(a)(1)(iv)	
		20 406(a)(1)(v)		20 406(a)(1)(vi)	
		20 406(a)(1)(vii)		20 406(a)(1)(viii)	
		20 406(a)(1)(ix)		20 406(a)(1)(x)	
		20 406(a)(1)(xi)		20 406(a)(1)(xii)	
		20 406(a)(1)(xiii)		20 406(a)(1)(xiv)	
		20 406(a)(1)(xv)		20 406(a)(1)(xvi)	
		20 406(a)(1)(xvii)		20 406(a)(1)(xviii)	
		20 406(a)(1)(xix)		20 406(a)(1)(xx)	
LICENSEE CONTACT FOR THIS LER (12):					
NAME				TELEPHONE NUMBER	
John D. Kerr, Technical Support Specialist				AREA CODE: 319 NUMBER: 851-7492	
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13):					
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	
X	KM	FS	D270	NO	
SUPPLEMENTAL REPORT EXPECTED (14):					
YES (If yes, complete expected submission date):				EXPECTED SUBMISSION DATE (15):	
X NO				MONTH: YEAR:	
ABSTRACT (16) (100-400 words) (A - approximately fifteen single spaced typewritten lines) (18):					
<p>On October 22, 1992, while the plant was at 99.9% power and with the "A" control building chiller out of service for maintenance, the "B" control building chiller tripped and could not be promptly restarted. The inoperability of both chillers caused a loss of control building air conditioning whose safety function is to control temperature to ensure control room habitability and equipment operability. After three restarts and subsequent trips, the "B" chiller was successfully restarted and operated with no further problems. An air bubble is suspected to have caused an erroneous low chilled water flow trip. Air was purged from the system and the control circuitry was verified to be operating normally. The plant was in a 72 hour administrative LCO during the approximately two hour period that both chillers were inoperable. There was no significant increase in control building temperatures and no effect on personnel safety or safe operation of the plant.</p>					

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

EXPIRES: 4-30-97

ESTIMATE BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENT'S REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		STAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Duane Arnold Energy Center	05000331	92	- 016	- 00	2	OF	4

TEXT (If more space is required, use additional NRC Form 365A's) (17)

I. DESCRIPTION OF EVENT:

On October 19, 1992 the plant entered a 30 day administrative limiting condition for operation (LCO) due to the "A" control building chiller being out of service for maintenance. This LCO is not required by the Technical Specifications but is required by plant procedures. The "B" control building chiller was in service to supply chilled water for the cooling coils of its associated air conditioning unit. The chilled water system and air conditioning units provide temperature control to maintain a comfortable working environment for plant operators and to maintain an acceptable temperature for control building equipment.

On October 22, 1992 the reactor was at 99.9% power and the "A" chiller remained out of service for maintenance. At 1256 hours the "B" chiller tripped. Three attempts to restart the "B" chiller were successful but it tripped each time after running for a few minutes. At 1321 hours, since "B" chiller operation could not be maintained, it was declared inoperable and a 72 hour administrative LCO was entered. This LCO requires plant shutdown or a justification for continued operation if at least one chiller cannot be restored within 72 hours. Investigation by operations, maintenance, and engineering personnel determined that the trips had not generated any trouble alarms in the control room and verified that all system parameters were within normal specifications. At 1510 hours, after the compressor motor had been allowed to cool, the "B" chiller was restarted without any problems or trips. At 1603 hours the "B" chiller was declared operable and the 72 hour administrative LCO was exited. The 30 day administrative LCO for the "A" chiller remained in effect.

This event was determined to be reportable under 10CFR50.72(b)(2)(iii)(D), and appropriate notifications were completed within four hours of the event.

II. CAUSE OF EVENT

Limited troubleshooting immediately following the successful restart of the "B" chiller did not determine a cause for the trips. On October 26, 1992, after maintenance had been completed on the "A" chiller, the "A" chiller was in service and the "B" chiller was in standby. The chilled water piping of the "B" chiller was then vented and air was found to be present. If an air bubble makes its way to the chilled water low flow switch, the switch will momentarily read it as a "low flow" condition and trip the chiller. By design, if this condition lasts for less than 15 seconds, no trouble alarm will be received in the control room because the problem corrected itself. The chiller is designed to restart automatically after a 20 minute anti-recycle period. It is believed that the trips experienced on October 22, 1992 were due to air in the system. The cause of the air intrusion into the chilled water piping is unknown at this time. See discussion under corrective actions.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

EXPIRES: 4-30-92

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TEXT (If more space is required, use addition - 7C Form 366A 4) (17)

III. ANALYSIS OF EVENT

This event had no effect on personnel safety or the safe operation of the plant. Plant administrative controls require that the control building chillers be operable at all times when Standby Filter Unit(SFU) system operability is required. These administrative controls also provide for 30 day and 72 hour LCOs as previously discussed. The two completely redundant chillers provide temperature control to ensure control room habitability and equipment operability during and after accident conditions as well as during normal operation.

The Updated Final Safety Analysis Report(UFSAR) lists the maximum temperature for normal control building equipment operation as 104 degrees F. Operation above this temperature will not affect system operation but may reduce the expected life of the equipment. There is no temperature limit in the UFSAR for continued control room habitability, but there is a need to maintain the control room temperature at a comfortable level for operations personnel. The air conditioning system is designed to maintain the control room air at 75 degrees F. The control room temperature is recorded daily between 1500 hours and 2100 hours. The recorded temperature on October 22, 1992 was 73.5 degrees F. The temperatures for several days before and after were all between 70 degrees F and 74 degrees F. No uncomfortable control room temperatures were reported.

If both chillers had been out of service for a longer period of time and if the control room temperature had increased to uncomfortable levels, further actions would have been taken as specified in plant procedures. These actions include using the adjacent computer room air conditioner to cool the control room, opening doors, and using fans to increase air circulation. These actions were taken as a precaution during this event. Further supplemental actions can include implementation of the plant heat stress prevention policy and consideration of shift duration reduction. The LCO conditions require plant shutdown or a justification for continued operation if at least one chiller cannot be restored within 72 hours. None of these actions were necessary during this event.

IV. CORRECTIVE ACTIONS

The air was purged from the "B" chilled water piping and the control circuitry was verified to be intact and operating normally. In late November, 1992, the "B" chiller will undergo an inspection and calibration. Included in this maintenance activity will be electrical and mechanical work to ensure that there are no leaks or undetected electrical deficiencies.

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

V. ADDITIONAL INFORMATION

A. Previous Similar Events

A review of DAEC LERs since 1984 identified no previous submittals concerning chiller inoperability. Previous issues concerning chiller operability are discussed in Inspection Report 90-03.

B. EIIIS System Codes

Chilled Water System	KM
Control Building HVAC	VI

This event is being reported pursuant to 10CFR50.73(a)(2)(v)(D).