

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9105280069 DOC. DATE: 91/05/15 NOTARIZED: NO DOCKET #
 FACIL: 50-331 Duane Arnold Energy Center, Iowa Electric Light & Pow 05000331
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DAVIS, A.B. Region 3 (Post 820201)

SUBJECT: LER 89-015-01: on 891115, RWCU isolation occurred due to
 high differential flow condition while placing filter
 demineralizer bed in service. RCWU sys reviewed & no further
 problem encountered.

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AO-4

Iowa Electric Light and Power Company

May 15, 1991
DAEC-91-0417

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

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License DPR-49
Licensee Event Report #89-015, Rev. 1

Gentlemen:

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

Very truly yours,



David L. Wilson
Plant Superintendent - Nuclear

DLW/KSP/pwj

cc: Director of Nuclear Reactor Regulation
Document Control Desk
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File A-118a

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

EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS 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) Duane Arnold Energy Center	DOCKET NUMBER (2) 05000331	LER NUMBER(6)			PAGE(3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		89	-015	-01	2	OF	4

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

I. DESCRIPTION OF EVENT:

On November 15, 1989, at approximately 1351 hours, with the plant in cold shutdown (reactor vented to atmosphere), a Primary Containment Isolation System (PCIS, EIIS System Code JM) Group V isolation occurred. Group V is the Reactor Water Cleanup (RWCU) system (EIIS System Code CE) isolation. The system isolated when the "A" filter demineralizer "bed" was placed in service. The "A" bed had just finished being backwashed and precoated.

The "B" bed, which runs in parallel with the "A" bed, was already in service with approximately 75 gallons per minute flowing through it at the time the "A" bed was being placed in service.

The isolation occurred due to a high differential flow condition (RWCU inlet flow greater than outlet flow) of greater than 40 gallons per minute for more than 18 seconds.

II. CAUSE OF EVENT:

It is suspected that the cause for the differential flow condition was a combination of the vessel being at atmospheric pressure combined with an air bubble within the "A" bed (See Corrective Action discussion). The RWCU inlet flow signal is taken upstream of the filter demineralizers and the outlet flow signal is taken downstream.

When placing a bed in service, the inlet valve is opened first. It is suspected that when the "A" bed inlet valve was opened, the air bubble within the bed slowly (due to the reactor being at atmospheric pressure) compressed allowing an increased inlet flow signal without a corresponding increase in the outlet flow signal. Shortly after beginning to open the bed outlet valve, the isolation occurred. Bed outlet flow at the time of isolation was approximately ten gallons per minute.

III. ANALYSIS OF EVENT:

This event had no effect on the safe operation of the plant. The appropriate valves isolated as designed in response to the high differential flow isolation signal. Following the backwash/precoat cycle of the beds on December 7th and 8th, bed outlet conductivity, recirculation dissolved oxygen, and main steam line radiation levels were reviewed. There was no indication that the air bubble which enters the "A" bed during precoating causes a significant change in the above parameters when the bed is placed in service. During any other plant conditions, the effect on the safe operation of the plant would have been the same.

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IV. CORRECTIVE ACTIONS

The RWCU system was unisolated at approximately 1354 hours and placed back in service with both beds in service. No further problems were encountered. A review of the RWCU flow instrumentation with the system in steady state operation did not indicate that the flow instruments were out of calibration in such a way that would contribute to the high differential flow condition.

Review of the computer point for RWCU high differential flow indicated that a differential flow condition existed for a significantly longer time when placing the "A" bed in-service versus placing the "B" bed in-service with the reactor at atmospheric pressure. In addition, it was noted that this effect was only seen when the "A" bed was placed in-service following a backwash and precoat cycle.

For this reason, the automatic backwash/precoat time sequences for both beds were subsequently recorded and compared to determine if the "A" side was malfunctioning. The results of this comparison did not indicate any significant differences between the two sequences, however when the beds were pressurized to 120 psig following the precoat cycle, the "B" bed pressurized almost instantly indicating no air was in the system. When the "A" bed was pressurized, it took approximately 15 seconds to reach pressure. This indicated that there was air in the "A" bed or its associated piping. Further investigation into the possible sources for air entering the system did not provide additional information as to how the air entered. It appears that the air enters the system during the precoat process as review of the fill and vent cycles prior to this process appear to be functioning properly. Although fill and vent cycles for the "A" bed appear to be adequate following review of the bed volume and fill rate, the fill time is somewhat shorter than that of the "B" bed. To provide consistent operation in the two beds, the fill time for the "A" bed will be increased to match that of the "B" bed.

Subsequent to submittal of LER 89-15 Rev. 0, the RWCU high differential flow time delay was increased from 15 to 45 seconds. This change in time delay is within the analyzed value for RWCU leakage. With this change in place, it is extremely unlikely that the RWCU system will isolate on high differential flow when a filter demineralizer is placed in service. The primary purpose for installing hardware to manually vent and fill the RWCU filter demineralizers would be to prevent RWCU isolations when placing the filter demineralizers in service. As the change in the time delay will serve this purpose, the hardware to allow manual venting and filling of the filter demineralizers will not be installed.

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V. ADDITIONAL INFORMATION

A review of plant documentation indicated one similar event where putting a filter demineralizer bed in-service caused the RWCU system to isolate on high differential flow (this occurred on 7-21-83). It was suspected that an air bubble caused this isolation. One difference in this event was that the reactor was fully pressurized and at power.

This LER is being submitted to identify revisions to the original corrective actions.