Commonwealth Edison
Dresden Nuclear Power Station
R.R. #1
Morris, Illinois 60450
Telephone 815/942-2920

January 3, 1990

EDE LTR #89-926

U.S. Nuclear Regulatory Commission
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Washington, D.C. 20555

Attached please find Licensee Event Report #89-028-1, Docket #050237, which was prepared in accordance with Technical Specification 6.6 and NUREG 1022. This revised report is submitted to provide an update concerning corrective actions in progress, and to correct an error regarding the report number in the original report, which was incorrectly listed as 89-124-00/050237. We apologize for any inconvenience this may have caused.

E. D. Eenigenburg
Station Manager
Dresden Nuclear Power Station

EDE/jmt

Enclosure

cc: A. Bert Davis, Regional Administrator, NRC Region III
File/NRC
File/Numerical

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Dresden Nuclear Power Station, Unit 2/3	0 5 0 0 0 2 3 7	1 of 0 5

Title (4) Containment Cooling Service Water Pump Suction Bay Water Level Reduction Due to Intake Structure Flow Blockage

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 Names	Docket Number(s)
0 9	0 5	8 9	8 9	0 2 8	0 1	0 1	0 3	9 0	Dresden Unit 3	0 5 0 0 0 2 4 9
										0 5 0 0 0

OPERATING MODE (9): N

POWER LEVEL (10): 0 9 9

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

___ 20.402(b)	___ 20.405(c)	___ 50.73(a)(2)(iv)	___ 73.71(b)
___ 20.405(a)(1)(i)	___ 50.36(c)(1)	___ 50.73(a)(2)(v)	___ 73.71(c)
___ 20.405(a)(1)(ii)	___ 50.36(c)(2)	___ 50.73(a)(2)(vii)	X Other (Specify in Abstract below and in Text) Voluntary
___ 20.405(a)(1)(iii)	___ 50.73(a)(2)(i)	___ 50.73(a)(2)(viii)(A)	
___ 20.405(a)(1)(iv)	___ 50.73(a)(2)(ii)	___ 50.73(a)(2)(viii)(B)	
___ 20.405(a)(1)(v)	___ 50.73(a)(2)(iii)	___ 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER AREA CODE
Lance Jacobsen, Technical Staff System Engineer Ext. 2363	8 1 5 9 4 2 - 2 9 2 0

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)

___ Yes (If yes, complete EXPECTED SUBMISSION DATE)

X NO

Expected Submission Date (15): Month | Day | Year

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

At 0910 hours on September 5, 1989, with Unit 2 at 98.6% power and Unit 3 at 88.1% power while attempting to run the 2A Containment Cooling Service Water (CCSW) pump in preparation for Dresden Operating Surveillance (DOS) 1500-6, Low Pressure Coolant Injection (LPCI) System Pump Operability Test, CCSW flow oscillations were observed. Immediate investigation found that a large amount of debris had accumulated in the cribhouse intake canal, resulting in lowering of the CCSW suction bay water level. The Unit 2 and Unit 3 CCSW pumps were then declared inoperable as a conservative measure. The 2A Circulating Water pump was secured to reduce the water head differential across the intake structure bar racks, and intensive efforts were initiated to remove the debris, which had resulted from heavy rains and flooding in the Kankakee River basin area. The Unit 2 CCSW pumps were functionally tested operable at 1325 hours, and the Unit 3 CCSW pumps were tested operable at 1800 hours. Safety significance was minimal due to immediate actions to ensure adequate CCSW suction bay water level. This was the first occurrence of intake canal debris resulting in significant reduction of CCSW pump suction bay level.

PLANT AND SYSTEM IDENTIFICATION:

General Electric Boiling Water Reactor - 2527 MWt rated core thermal power.

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX).

EVENT IDENTIFICATION:

Containment Cooling Service Water Pump Suction Bay Water Level Reduction Due to Intake Structure Flow Blockage.

A. Conditions Prior To Event:

Unit: 2/3 Event Date: September 5, 1989 Event Time: 0910 hours

Reactor Mode(s): N (N) Mode Name(s): Run (Run) Power Level(s): 98.6% (88.1%)

Reactor Coolant System (RCS) Pressure(s): 1002 (995) psig

B. DESCRIPTION OF EVENT:

On September 5, 1989 at 0910 hours with Unit 2 at 98.6% power and Unit 3 at 88.1% power while attempting to run the 2A Containment Cooling Service Water (CCSW) pump in preparation for Dresden Operating Surveillance (DOS) 1500-6, LPCI System Pump Operability Test with Torus Available, CCSW flow oscillations were observed in the control room. A Shift Supervisor was immediately dispatched to the cribhouse to investigate this problem. The water level in the CCSW pump suction bay was then discovered to be approximately four feet below the intake canal level. All the Unit 2 and 3 CCSW pumps were then declared inoperable at 0910 hours on 9/5/89 due to concern that adequate CCSW pump suction head may not have been available, and a 24 hour Limiting Condition for Operation (LCO) was entered in accordance with Technical Specification (TS) 3.5.A.8.

Corrective actions were immediately initiated to remove debris from the bar racks. The trash rake was operated in combination with manual efforts to remove larger debris. The cribhouse traveling screens were operated continuously to remove smaller debris. Further support was supplied by Mechanical Maintenance personnel who removed objects circulating in front of the cribhouse bar racks and special contract personnel were retained to remove objects accumulating at the entrance to the intake canal. Also, the 2A Circulating Water pump was secured to help reduce the differential head across the bar racks. Upon restoration of normal water levels in the CCSW suction bays, the Unit 3 CCSW pumps were tested and verified operable at 1325 hours on 9/5/89, and the Unit 2 CCSW pumps were tested and verified operable at 1800 hours on 9/5/89.

Also, at 0258 hours on 9/5/89, while performing Dresden Fire Protection Procedure (DFPP) 4123-5, Unit 2/3 Diesel Fire Pump Weekly Operability, the Unit 2/3 Diesel Fire Pump was manually tripped due to increasing temperature indications. Work Request 87056 was initiated to investigate and repair the engine. Additionally, at 0302 hours on 9/5/89, Unit 3 received a main steam line tunnel area high temperature alarm from the main steam header east wall temperature element (TE 261-22C). An operator was dispatched to the main steam line tunnel area where he reported the main steam line tunnel area coolers differential pressure (dP) to be approximately 70 psi. He was directed to reverse service water flow through the coolers, and the dP was reduced to approximately 30 psi. At 0335 hours, a Channel "A" main steam tunnel high temperature alarm (half Primary Containment Group I isolation) was received. After a 25 MWe load decrease, the half Group I isolation reset; however, at 0347 hours another Channel "A" half Group I isolation was received. Another 25 MWe load decrease was initiated to reset this half Group I isolation. A further load decrease of 25 MWe was then initiated as a precautionary measure in order to prevent further half isolation signals from occurring. The increasing main steam line tunnel temperatures were not believed to be directly related to this event because the Reactor Building Ventilation System was secured for planned maintenance at this time, and increased cooler dPs had been observed previously. The maintenance work being performed on the Unit 3 Reactor Building ventilation system was then stopped to allow the ventilation system to be started to assist in cooling the main steam line tunnel area.

C. APPARENT CAUSE OF EVENT:

Operations Management did not interpret this event as reportable under 10CFR 50.72(B)(2)(iii) or 10CFR 50.73(A)(2)(v) (e.g., "Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat or mitigate the consequences of an accident") or 10CFR 50.73(A)(2)(vii) (e.g., "Any event where a single cause or condition caused two independent trains to become inoperable in a single system designed to remove residual heat or mitigate the consequences of an accident") because immediate corrective actions were implemented to ensure adequate CCSW pump suction head. These actions included securing the 2A Circulating Water pump and intensive efforts to remove the debris. The Unit 2 and Unit 3 CCSW pumps were logged as inoperable pending completion of operability testing. However, subsequent review of this event with the Operations Staff indicated that prompt securing of the 2A Circulating Water pump had insured adequate suction head for the remaining CCSW pumps. Upon further review of this event, it was decided that this event should be submitted as a voluntary LER due to its potential significance and generic applicability. A summary of this event was also documented and distributed in accordance with Nuclear Operations Directive NOD-OP.10, Potentially Significant Event Screening Criteria.

The root cause of this event was abnormally high amounts of debris entering the intake canal from the Kankakee River. The increased amounts of debris in the river were a result of high winds and heavy rains that had recently occurred upstream of Dresden Station in the Kankakee River basin. A floating log boom is provided at the entrance to the intake canal to prevent entry of large debris. However, large amounts of debris collecting at the log boom caused the log boom sections to open slightly, allowing increased amounts of debris to enter the intake canal and obstruct flow through the cribhouse intake structure. Additionally, the excessive amount of floating debris at the log boom resulted in objects passing under the log boom. Objects that had collected in front of the cribhouse bar racks included boards, large tree branches, plastic bottles, a picnic table, trash such as old tires, and agricultural debris. Although the buildup of debris was recognized, and corrective actions were immediately initiated, the rapid decrease in CCSW suction bay level was not immediately recognized during routine operator rounds of the cribhouse due to a lack of procedural guidance in this area.

The cause of the increasing Unit 2/3 diesel fire pump engine temperatures was attributed to inadequate suction head resulting from the intake structure flow blockage. The half Group I isolations associated with the main steam line tunnel area high temperature alarms were attributed to slight fouling of the main steam line tunnel area coolers. The fouling is not believed to be directly related to this event as increased cooler dPs were observed prior to this event. A contributing factor to the half Group I isolations was the fact that the Unit 3 Reactor Building ventilation was off for scheduled maintenance activity. This ventilation system normally assists in cooling the main steam line tunnel area.

D. SAFETY ANALYSIS OF EVENT:

The purpose of the cribhouse, bar racks, and traveling screens is to remove refuse from the river water before it enters the plant piping as well as provide intake bays for suction to the various pumps. In this event, the cribhouse intake structure and traveling screens were overburdened with excessive debris, resulting in decreased water levels in the CCSW pump intake bays. The decreased water levels in the intake bays is believed to have caused the increasing Unit 2/3 Diesel Fire Pump engine temperatures and the 2A CCSW pump to exhibit flow oscillations because of inadequate suction head. The Service Water Pumps, Circulating Water Pumps, and Diesel Generator Cooling Water Pumps were not affected because of their lower pump suction elevations. Immediate corrective actions were taken to ensure adequate CCSW pump suction bay water level, including securing the 2A Circulating Water pump and debris removal. All the Unit 2 and 3 CCSW pumps were declared inoperable pending completion of operability testing and TS 3.5.A.8. was entered requiring both units to be in cold shutdown within 24 hours. Testing of the Unit 3 CCSW pumps was completed by 1325 hours, and testing of the Unit 2 CCSW pumps was completed by 1800 hours. Intake canal level was never below any Generating Station Emergency Plan Emergency Action Level (GSEP EAL).

The consequence of the increasing Unit 2/3 Diesel Fire Pump engine temperatures was minimized by the fact that it was promptly tripped by an operator performing the surveillance, was returned to service within the allowable seven days, and the redundant Unit 1 Diesel Fire Pump was operable. The half Primary Containment Group I isolations caused by high temperatures in the main steam line tunnel area were reset by a combination of efforts which included: 1) A load decrease of approximately 85 MWe, 2) Restart of the Reactor Building ventilation system, and 3) Flow reversal to reduce dP across the main steam tunnel area room coolers.

For these reasons, the safety significance of this event was minimal.

E. CORRECTIVE ACTIONS:

Immediate corrective actions were to secure the 2A Circulating Water pump, use the trash rake to reduce the level differential across the bar racks and to operate the traveling screens continuously in order to maintain their cleanliness. The removal of the larger debris from in front of the log boom was aided by a contractor, and debris circulating in front of the log boom was removed by Mechanical Maintenance personnel. Mechanical Maintenance personnel also tightened the connections between the log boom sections to prevent further amounts of larger debris from entering the intake canal (237-200-89-12401).

Operability surveillances were then completed on all the Unit 2 and 3 CCSW pumps. All pumps passed their surveillances and were then declared operable. Long term corrective actions are to evaluate a modification that would automatically measure the water level drop across the trash bars (237-200-89-12402). During the interim, a temporary system alteration will be implemented using a chain and buoy arrangement to indicate low water level in the CCSW suction bay. The Technical Staff system engineer will have the temporary system alteration installed (237-200-89-12403). The Operations Staff will amend the operators' daily round book to include periodic verification of water level in the CCSW suction bay via checking the buoy flotation (237-200-89-12404). The Training Department will review this information for inclusion into an upcoming Operator training cycle (237-200-89-12405).

F. PREVIOUS OCCURRENCES:

No previous similar events were found to be documented; however, information obtained from Senior Operations personnel revealed that similar events have occurred in the past. In these events, excessive amounts of needle ice had formed in the Intake Canal restricting flow to the intake bays. Operations personnel took immediate corrective action, such as cleaning the traveling screens and bar racks with fire hoses before loss of CCSW suction occurred.

G. COMPONENT FAILURE DATA:

As this event did not involve component failures, this section is not applicable.