NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Millstone Nuclear Power Station Unit 2	0 5 0 0 0 3 3 6	1 OF 0 3

TITLE (4)
Unrecoverable Dropped CEA Due to Upper Gripper Coil Failure

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 6	0 7	8 8	8 8	— 0 0 9	— 0 0	0 7	0 7	8 8		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 7 0	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)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 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
Keith D. Deslandes, Electrical Engineer X4421	AREA CODE 2 0 3 — 4 4 7 - 1 7 9 1

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	
X	A A	C L	C 4 9 0	Y							

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

The unit was at 100% power on June 7, 1988. At 0422 hours, Control Element Assembly #23 dropped. Plant power was reduced to 70% power in accordance with Technical Specifications 3.1.3.1.e., 3.2.2, 3.2.3 and 3.2.4. At 0530 hours it was determined by the Instrumentation and Control personnel that CEA #23 could not be recovered and the CEA was declared inoperable. As the condition of CEA #23 would no longer meet the action requirements of Limiting Condition for Operation (LCO) 3.1.3.1.e, Limiting Condition for Operation 3.0.3 was entered. Operations continued the plant shutdown reaching Mode 2 at 0715 hours and logged out of LCO 3.2.4 and reached Mode 3 at 0743 hours and logged out of LCO 3.0.3, 3.2.2 and 3.2.3. In Mode 3, LCO 3.1.3.1.e is no longer applicable.

The cause of CEA #23 dropping into the core was the failure of its upper gripper coil. The cause of the failed coil was related to the condition reported in LER 88-08. It is felt that the overheating condition experienced at that time by the coils, degraded the coil insulation and resulted in coil failure.

There was one similar event, LER 88-08-00.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

I. Description of Event

On June 7, 1988, the unit was at 100% power, 573 degrees F (Temperature Average) and a pressure of 2260 psia. At 0422 hours, CEA #23 dropped and power was reduced to 70% complying with Technical Specifications Action Statement (TSAS) 3.1.3.1.e, 3.2.2, 3.2.3 and 3.2.4 and the guidance of procedure OP 2556, Dropped CEA Recovery. At 0530 hours, it was determined by the Instrumentation and Control technicians investigating the dropped CEA that the Control Element Drive System (CEDS) for CEA #23 could not be recovered within the time requirements of Technical Specification Action Statement 3.1.3.1.e and the CEA was declared inoperable. At this time reactor power was at 70% power and Reactor Coolant System conditions were normal for the power level (560 degrees F Temperature Average and 2260 psia). As the conditions of CEA #23 would no longer meet the action requirements of Limiting Condition for Operation 3.1.3.1.e, limiting condition 3.0.3 was entered and operators continued the shutdown. At 0715 hours the plant entered Mode 2 and logged out of LCO 3.2.4. At 0743 hours the plant entered Mode 3 and logged out of LCO 3.0.3, 3.2.2 and 3.2.3. In Mode 3, LCO 3.1.3.1.e is no longer applicable.

II. Cause of Event

The cause of CEA #23 dropping into the core was coil failure due to overheating of the upper gripper coil which is used to hold the rod in place during operation. The overheating caused the varnish on the coil winding to peel off leaving exposed windings which shorted together decreasing the total resistance thus increasing the current draw from the CEDM power supply and tripping the supply breaker. Once power is removed from the coil the rod falls into the core.

The overheating occurred in May due to reduced air flow from the CEDM coolers. The air flow was reduced when Boric Acid collected on the coolers reducing the air flow thus increasing the temperature. Though this situation was corrected, it is apparent that sufficient coil insulation degradation had occurred. During the May outage CEA #14 coil stack was removed and a new coil stack installed. The upper gripper coil was removed from the coil stack (#14) and was inspected by Combustion Engineering and Plant Engineering. It was the determination of both parties after the inspection, the upper gripper coils on the remaining CEA's should last until the next refueling outage if the temperature remained within the parameters of the CEDM cooling profile.

The boric acid was the product of a primary leak which was located at the head "O" ring area. The head "O" ring was damaged and allowing primary coolant which contained boric acid to spray into the containment environment. The boric acid then collected on th_ CEDM coolers which was the root cause of the overheating of the upper gripper coils. This condition was previously reported in LER 88-08. The root cause of the failure has been attributed to the head "O" ring leak.

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

III. Analysis of Event

This event is being submitted pursuant to 10CFR50.73(a)(2)(i)(A), the completion of any nuclear plant shutdown required by the plant Technical Specifications.

The event had no adverse safety consequence. The failure of the coil causes the CEA to fully insert into the core, a condition covered by plant procedures. Plant operation was performed in accordance with operating procedures for the conditions present.

IV. Corrective Action

Due to the failures of upper gripper coils on CEA #4, #22 in April and #23 during this occurrence, it was decided to replace each upper gripper coil on the head with the exception of CEA #14 which was replaced during the head "O" replacement in May. A total of 60 upper gripper coils were either replaced or a complete new coil stack was installed.

The unit was restored to service and synchronized at 0803 hours on June 15, 1988 and reached 100% power on June 16, 1988 at 1130 hours.

The head "O" ring was replaced in May. This corrected the root cause problem of the high temperature.

V. Additional Information

The CEDM Coil Stack assemblies were supplied by Combustion Engineering, Model Number N5700. The Upper Gripper coils were supplied by Combustion Engineering, Model Number N0005 Revision 0.

EIIS Code: AA Component Code: CL

The CEDM heat exchangers were manufactured by American Air Filtration, Inc. and are Model Number 23-108-4CWS-11.

EIIS Code: CD Component Code: CCL

There was one similar event, LER 88-08-00

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

General Offices • Selden Street, Berlin, Connecticut

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July 7, 1988
MP-12028

Re: 10CFR50.73(a)(2)(i)(A)

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Reference: Facility Operating License No. DPR-65
Docket No. 50-336
Licensee Event Report 88-009-00

Gentlemen:

This letter forwards the Licensee Event Report 88-009-00 required to be submitted within thirty days pursuant to paragraph 50.73 (a)(2)(i)(A).

Yours truly,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: Stephen E. Scace
Station Superintendent
Millstone Nuclear Power Station

BY: Carl H. Clement
Unit 3 Superintendent
Millstone Nuclear Power Station

CHC/KDD:mo

Attachment: LER 88-009-00

cc: W. T. Russell, Region 1
W. J. Raymond, Senior Resident Inspector

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