

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 (T-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) Clinton Power Station		DOCKET NUMBER (2) 05000461	PAGE (3) 1 OF 4
--	--	-------------------------------	--------------------

TITLE (4)
Failure to Document Effect of Degraded Coatings in Containment on ECCS Pump NPSH and Properly Control Flexible Materials Leads to Potential Failure of ECCS Pumps Under Accident Conditions

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
07	15	97	97	020	00	08	13	97	None	05000
									None	05000

OPERATING MODE (9) 4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)				
POWER LEVEL (10) 000	20.2201(b)	20.2203(a)(2)(v)	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 366A	
	20.2203(a)(2)(iv)	50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)
 NAME: N. R. Keen, Engineering, Nuclear Station Engineering Department
 TELEPHONE NUMBER (Include Area Code): (217) 935-8881, Extension 3252

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)				EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO							

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

On July 15, 1997, Illinois Power (IP) personnel were reviewing the effect of degraded protective coatings in containment on the ability of the emergency core cooling system (ECCS) pumps to have the required net positive suction head (NPSH). IP personnel could not determine that these protective coatings would not fail during an accident and deposit on the ECCS pump suction strainers causing the pumps to not meet their design NPSH requirements. Also, the quantity of non-qualified flexible materials in the containment may have had similar effects during accident conditions on the ECCS NPSH. The cause of this event was the failure to recognize the impact of the degraded protective coatings on the ECCS pumps NPSH and the failure to implement better controls on the use of flexible material in the containment. Corrective actions include: removal of degraded coatings, periodic inspection and evaluation of the remaining protective coatings, testing of existing coatings, and providing additional procedural controls and training on the use of flexible materials in the containment building. In addition, excess flexible materials were removed.

9708190130 970813
 PDR ADOCK 05000461
 S PDR

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Clinton Power Station	05000461	97	020	00	2 OF 4

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

DESCRIPTION OF EVENT

On July 15, 1997, the plant was in Mode 4 (Cold Shutdown), and reactor [RCT] coolant temperature was being maintained between 140 and 150 degrees Fahrenheit. The reactor was at atmospheric pressure. The sixth refueling outage was in progress. Engineering personnel were reviewing concerns with the condition of the protective coatings applied to the walls and equipment in the containment building. These protective coatings are applied to the containment walls and equipment to protect the substrate and enhance ability to decontaminate exposed surfaces in the containment building. The concern under review was whether under accident conditions these protective coatings could fail and be transported to the suppression pool. Once in the suppression pool the failed protective coatings could reduce flow through the suction strainers [STR] for the emergency core cooling system pumps[P]. This could create a condition where the minimum net positive suction head requirements for the emergency core cooling system pumps are not met. This review was conducted after significant removal of degraded protective coatings in the containment had been completed.

During this review, Illinois Power (IP) personnel could not determine that if the degraded protective coatings in the containment failed, they would not be transported to the suppression pool during an accident, causing a reduction in the net positive suction head of the emergency core cooling system pumps. Also, in a separate review, IP personnel noted that the use of flexible material such as signs, paper, stickers and tape, in the containment building, may cause a similar reduction in net positive suction head available for the emergency core cooling system pumps if they were transported to the suppression pool during an accident.

In 1990, during a plant material condition walkdown degradation of the protective coatings in the containment was noted. Condition report 1-90-03-021 was issued to track corrective actions for the identified conditions. The degraded protective coatings areas that needed repair were identified, and the necessary repairs were initiated in accordance with the protective coatings maintenance program. Also, because of an increase in concern for the condition of containment protective coatings, an inspection program to identify degraded containment protective coatings was established. This inspection program involved an inspection and evaluation of the containment coatings by a level III inspector. This inspection has been conducted each refueling outage since that time. The results of this inspection were documented, but an evaluation of the effect of the degraded protective coatings on the emergency core cooling system pump net positive suction head was not documented.

Illinois Power personnel did not believe that it was probable that the containment protective coatings would fail and be transported to the suppression pool in such a manner that the emergency core cooling system pumps net positive suction head would be significantly affected. This was based on information that the protective coatings are significantly more dense than water and so would probably settle at the bottom of the suppression pool instead of plate out on the emergency core cooling system pump strainers. Also, failure of all degraded protective coatings was considered unlikely because in the

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Clinton Power Station	05000461	97	020	00	3 OF 4

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

design basis accident the postulated line break does not occur inside the containment (where a majority of the degraded coatings were), and the debris that would be created would not all have been transported to the suppression pool. However, Illinois Power did not have any information, beyond engineering judgment, to support this conclusion.

In April 1997, Nuclear Regulatory Commission personnel raised concerns with the condition of the protective coatings and the quantity of flexible material in the containment and their potential effects on the emergency core cooling system pumps net positive suction head. These concerns resulted in the removal of degraded protective coatings and testing of remaining protective coatings in the containment, as well as removal and improving the controls on the use of flexible material in the containment.

In response to this event, no automatic or manually initiated safety system responses were necessary to place the plant in a safe and stable condition. Further, no equipment or components were inoperable at the start of this event to the extent that their inoperable condition contributed to this event.

CAUSE OF THE EVENT

The cause of not identifying the significance of the degraded protective coatings was the failure of IP personnel to perform an evaluation of the impact of the degraded protective coatings on the net positive suction head for the emergency core cooling system pumps. The degraded coatings were thought to be acceptable based on engineering judgment, not specific empirical data. The basis for this engineering judgment was not formally documented.

The cause of failing to properly control flexible material in the containment was a weakness in the transient material control program and a lack of focus on the control of small miscellaneous items and their potential impact on the net positive suction head of the emergency core cooling system pumps.

CORRECTIVE ACTION

An evaluation and testing program to confirm that the containment protective coatings would remain intact during a design bases accident was performed. Approximately 8.5 cubic feet of containment protective coating material was removed as part of this activity. From the testing conducted on the remaining containment protective coatings, it was concluded that the remaining containment coatings will not fail, and will not affect the net positive suction head of the emergency core cooling pumps. A preventive maintenance activity will be initiated to require an inspection of protective coatings in the containment building each refueling outage. An evaluation of any degraded protective coatings on the net positive suction head of the emergency core cooling system pumps will be conducted as part of that preventive maintenance task.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Clinton Power Station	05000461	97	020	00	4 OF 4

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

Also, several walkdowns of containment were performed to identify flexible materials that could be transported to the suppression pool under accident conditions and reduce the net positive suction head of the emergency core cooling system below what is required by plant design. All items identified that could affect emergency core cooling system pumps net positive suction head were removed. Materials not removed were evaluated as being acceptable. Also, procedural controls have been strengthened to ensure that transient flexible materials are not introduced into the containment building that may affect the net positive suction head of the emergency core cooling system pumps. Appropriate plant personnel were briefed on the improved procedural controls on the introduction of flexible materials into the containment building.

ANALYSIS OF EVENT

This event is reportable under the provisions of 10CFR50.73 (a)(2)(vii)(D) as a condition where the failure of the containment protective coatings and the transport of other flexible materials during an accident could have caused two independent trains designed to mitigate the consequences of an accident to become inoperable.

This condition is potentially nuclear safety significant. The failure of the emergency core cooling system pumps to have adequate net positive suction head could result in the failure to maintain sufficient reactor coolant inventory during a postulated accident. However, Illinois Power does not believe that this is a probable occurrence. In order for the above condition to occur the protective coatings would have to fail. The failed protective coatings or the flexible material would then have to be transported to the suppression pool and be deposited on the emergency core cooling pumps suction strainers. It is possible that some of the material could be transported to the suppression pool if containment spray were used during an accident. However, it is believed that most of the degraded protective coating material would be deposited on the bottom of the suppression pool because of its high specific gravity (almost 2).

It is indeterminate when, or if, the containment protective coatings or flexible material may have been in a condition to potentially cause insufficient net positive suction head for the emergency core cooling system pumps.

ADDITIONAL INFORMATION

No equipment or components failed during this event.

Illinois Power has not reported in recent history an event involving the failure to evaluate the impact of foreign material on the operability of safety related systems to perform their design basis function.

For further information on this event contact N. R. Keen, Engineer, Nuclear Station Engineering Department, at (217) 935-8881, extension 3252.