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ILLINOIS POWER

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10CFR50.73

Docket No. 50-461

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

Subject: Clinton Power Station - Unit 1
Licensee Event Report No. 91-005-00

Dear Sir:

Please find enclosed Licensee Event Report No. 91-005-00: Inoperable Leak Detection Fission Product Particulate Sample Panel Due to an Out-of-Adjustment Tensioner Preventing Filter Paper Advancement. This report is being submitted in accordance with the requirements of 10CFR50.73.

Sincerely yours,

S. Paige Hall for

F. A. Spangenberg, III
Manager, Licensing and Safety

JDP/alh

Enclosure

cc: NRC Clinton Licensing Project Manager
NRC Resident Office, V-690
NRC Region III, Regional Administrator
Illinois Department of Nuclear Safety
INPO Records Center

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NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Clinton Power Station	0 5 0 0 0 4 6 1	1 OF 0 7

TITLE (4): Inoperable Leak Detection Fission Product Particulate Sample Panel Due to an Out-of-Adjustment Tensioner Preventing Filter Paper Advancement

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)
1 0	1 5	9 1	9 1	—	0 0 5	— 0 0				None	0 5 0 0 0
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OPERATING MODE (9)	POWER LEVEL (10)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
1	0 5 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
	AREA CODE
S. E. Rasor, Director - Plant Maintenance, extension 3204	2 1 7 9 3 5 - 8 8 8 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	I J	M O N	G 0 8 0	N							

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 1	1 5	9 2

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

On October 15, 1991, with the plant in POWER OPERATION, a technician performing scheduled preventive maintenance discovered the moving filter paper in the Leak Detection System fission product particulate sample panel 1E31-P002 had stopped advancing. The filter paper had not advanced since the last preventive maintenance task had been completed on October 3, 1991. The Operations Shift Supervisor determined that the failure of the filter paper to advance constituted an inoperable drywell atmosphere particulate radioactivity monitoring system and directed the drywell atmosphere to be manually sampled and analyzed at least once per 24 hours as required by the Technical Specifications. Operating the plant with an inoperable drywell atmosphere particulate radioactivity monitoring system without entering and complying with the required action statement is a condition which is prohibited by Technical Specification 3.4.3.1. Troubleshooting of 1E31-P002 identified that the capstan tensioner was out of adjustment. This caused the filter paper to stop advancing. Corrective actions include obtaining and analyzing drywell atmosphere grab samples at least once every 24 hours until the sample panel is modified to enable external verification of filter paper movement or until reliability of the sample panel has been demonstrated.

DESCRIPTION OF EVENT

At approximately 0930 hours on October 15, 1991, with the plant in Operational Condition 1 (POWER OPERATION) at approximately 50 percent reactor [RCT] power, a utility Control and Instrumentation (C&I) technician performing scheduled preventive maintenance task PC1LDW001 discovered the moving filter [FLT] paper in the Leak Detection System [IJ] fission product particulate sample panel [PL] 1E31-P002, was not advancing. The sample panel monitors air particulates of the drywell atmosphere for radioactivity. This monitoring is accomplished by drawing a representative sample of gaseous and effluent particulates from the drywell atmosphere and trapping the particulate matter on the moving filter paper. The filter paper is designed to retain the particulates as it passes in front of a scintillation detector [DET] where any radiation is detected. The panel provides continuous indication and activates alarms [ALM] in the Main Control Room. Since the filter paper was not advancing, the drywell air particulate sample panel was not performing its intended design function. Therefore, the drywell atmosphere particulate radioactivity monitoring system was not operable as required by Technical Specifications. The ACTION statement of Technical Specification 3.4.3.1. was not met; therefore, this event constituted operation prohibited by the Technical Specifications. The Reactor Coolant System Leakage Detection System is required to be Operable in Operational Condition 1, Operational Condition 2 (STARTUP) and Operational Condition 3 (HOT SHUTDOWN).

On October 15, 1991, C&I technicians started to implement preventive maintenance task PC1LDW001. This task is performed at two-week intervals for the purpose of replacing the used roll of filter paper with an unused roll of filter paper. The task frequency of biweekly was established based on the length of the filter paper roll and the speed of the slow speed motor. Upon removal of the spool covers of panel 1E31-P002 by the C&I technicians on October 15, the technicians observed that the filter paper had not advanced since the previous preventive maintenance task was completed on October 3, 1991. The fission product particulate sample panel contains no external indication of filter paper movement. Therefore, based on the current configuration of this panel, it is necessary to remove the covers from the take-up and feed spools to verify paper movement. The technicians removed the previously-installed roll of filter paper from 1E31-P002. Additionally, as required by corrective actions for Licensee Event Report (LER) 90-009, the drive mechanism was removed from the panel housing and inspected for loose gears or set screws. No additional anomalies were noted. The Operations Shift Supervisor was notified of the failure of the filter paper to advance. Subsequently, the alternate grab sample requirement of Technical Specification 3.4.3.1 was initiated and the appropriate Limiting Condition for Operation was entered.

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

Tr. eshooting of 1E31-P002 resulted in the identification that the cap. .en tensioner was out of adjustment. This prevented the filter paper from advancing. It should be noted that the vendor service manual associated with 1E31-P002 does not provide detailed guidance, neither quantitative nor qualitative data, on proper capstan tensioner adjustment. Upon the reinstallation of the gearing assembly and drive motor of sample panel 1E31-P002 and adjustment of the capstan tensioner within the guidance of preventive maintenance task PC1LDW001, verification of proper operation was performed by running the sample panel in both fast and slow speeds. The sample panel failed to operate in fast speed. The sample panel was disassembled a second time to examine the drive mechanism. As a result of this examination, it was determined that the fast speed gears were jammed, probably as a result of reinstallation from the current inspection cycle. The fast speed gears were freed and the drive mechanism was reinstalled. After final adjustment to the capstan tensioner, the sample panel operated satisfactorily in fast speed. Operation of the sample panel in slow speed was verified on October 16, 1991. On October 16, C&I technicians verified, by observation with the supply and take-up spool covers removed, proper paper movement and proper capstan operation in slow speed. Again on October 18, 1991, C&I technicians verified that filter paper had been advancing in the sample panel. The sample panel was restored to service on October 18, 1991 at 1200 hours.

During the evaluation of this event to determine reliability of the fission product particulate sample panel, numerous previously completed preventive maintenance tasks were reviewed. The specific preventive maintenance tasks reviewed were those that had been completed since April 27, 1990, the event date of the most recent Licensee Event Report (90-009) on this subject. This evaluation concluded:

- Clinton Power Station has had difficulty in maintaining the fission product particulate sample panel operable. From April 27, 1990, to October 2, 1991, completed documentation of preventive maintenance task PC1LDW001 shows that on six different occasions, the filter paper in the sample panel was not advancing or not in need of changing. This data was recorded in the preventive maintenance work request packages performed July 11, 1990; July 31, 1990; April 22, 1991; June 25, 1991; August 26, 1991; and October 2, 1991.

- During performance of preventive maintenance task PC1LDW001, the C&I technicians returned the sample panel to service by ensuring that the filter paper was advancing in both fast and slow speeds. Preventive maintenance task PC1LDW001 did not provide adequate direction as to the importance of ensuring that the filter paper had been advancing. No qualitative or quantitative criteria were provided to the C&I technicians

nor did the technicians have knowledge that the failure of the filter paper to advance constituted an inoperable drywell atmosphere particulate radioactivity monitoring system. Additionally, operations personnel failed to associate the absence of filter paper movement with an inoperable fission product particulate sample panel on certain occasions.

The evaluation also showed that anomalies exist concerning implementation of preventive maintenance task PCILDW001 within established frequencies and within the limitations of the sample panel. Based on the speed of the filter paper advancement (approximately one and one half inch per hour in slow speed) and the length of the roll of filter paper (approximately 60 feet), the filter paper at normal operation would be exhausted in approximately 20 days. On March 1, 1991, preventive maintenance task PCILDW001 was performed and a new roll of filter paper was installed. The next preventive maintenance task performed to replace the filter paper was not accomplished until April 22, 1991. On April 22, the technicians, upon removal of the spool covers of the sample panel, noted that the paper drive had not been turning and that the new filter paper had not been used. However, had the sample panel been operating correctly, the filter paper supply would have been exhausted long before the filter paper roll would have been replaced. This condition would have resulted in an inoperable fission product particulate sample panel.

CAUSE OF THE EVENT

The cause of the event is attributed to equipment failure. The filter paper did not advance properly in the fission product particulate sample panel due to the capstan tensioner which was found to be out of adjustment. Therefore, the panel was not performing its intended function.

Additionally, the fission product particulate sample panel provides no external means to verify that the filter paper is advancing. Currently, the only method to verify that the filter paper is advancing is to remove the covers on the supply and take-up spools and visually verify paper movement.

The lack of clarification in the preventive maintenance task concerning the criteria that constituted operability of the fission product particulate sample panel contributed to this condition. Additionally, emphasis appeared to have been placed on adjusting the drive mechanisms and returning the equipment to service rather than aggressively troubleshooting the problem with the sample panel and effecting a complete long-term fix.

The lack of clarification associated with the criteria to be utilized to ensure the fission product particulate sample panel was operable also

affected the decision-making process of both operations and maintenance personnel in determining operability of the sample panel. The failure to associate a lack of paper movement with an inoperable sample panel resulted in the operation of the facility, on several occasions, while in a condition prohibited by plant Technical Specifications.

CORRECTIVE ACTION

The drywell atmosphere will continue to be manually sampled and analyzed at least once every 24 hours until the sample panel can be modified to allow an external verification of filter paper movement or until reliability of the sample panel can be demonstrated. This action is currently being implemented.

Maintenance personnel, maintenance supervisors and operations shift personnel will be briefed on this event. This action is expected to be completed by January 15, 1992.

Preventive maintenance task PCILDW001 will be revised to clarify the significance associated with the failure of the filter paper to advance and to establish acceptance criteria for the verification of filter paper movement. This action is expected to be completed by February 28, 1992.

Additional clarification has been placed in preventive maintenance task PCILDW001 concerning adjustment of the capstan tensioner. This clarification provides guidance in ensuring the roller is not contacting the metal collar on top of the capstan, thus increasing reliability of the sample panel. This action has been completed.

The Nuclear Station Engineering Department (NSED) will evaluate the feasibility of a modification to enable an external verification, at 12-hour intervals, that the filter paper is advancing without requiring disassembly of the sample panel. This action is expected to be completed by January 31, 1992.

Additionally, NSED will evaluate performance of the fission product particulate sample panel and provide IP Management with recommendations concerning the replacement of the fission product particulate sample panel. This action is expected to be completed by May 4, 1992.

The corrective action commitments to LER 90-009 included a commitment to inspect the gear assembly for proper gear engagement and tightness of set screws. Since implementation of this commitment, 24 inspections have been performed with no instances noted where loose gears or set screws would have affected the movement of the filter paper. Therefore, loose gears and set screws do not appear to be a recurring failure mode. The fission product particulate sample panel is not configured in a manner that readily allows for inspection of the drive mechanism gears without

extensive disassembly of the sample panel. Interviews with technicians indicated that performing this inspection requires excessive handling of the gear assembly. Therefore, performing this inspection may be reducing rather than increasing the reliability of the sample panel. Documentation in several completed preventive maintenance tasks associated with gear binding upon reinstallation of the gear assembly supports this conclusion. The inspection of the gears and set screws will be included in a preventive maintenance task that is performed every 18 months and will be deleted from PCILDW001. This action is expected to be completed by February 28, 1992.

Generic implications associated with the failure to identify inoperable Technical Specification equipment are being evaluated. This evaluation will be addressed in the supplemental report which is expected to be submitted on January 15, 1992.

Generic implications associated with the failure to perform required preventive maintenance tasks within the established frequency and limitations established by equipment performance are being evaluated. This evaluation will be addressed in the supplemental report which is expected to be submitted on January 15, 1992.

ANALYSIS OF EVENT

This event is reportable under the provisions of 10CFR50.73(a)(2)(i)(B) because the plant was operated in a condition prohibited by Technical Specification 3.4.3.1.

The length of time the filter paper had not been moving during each of the events cannot be conclusively determined. However, the amount of filter paper on the take-up reel provided indication that the sample panel had been inoperable during some of the times it was required to be operable. Therefore, the sample panel was considered to be inoperable from June 23, 1990 to July 11, 1990; July 11, 1990 to July 14, 1990; July 26, 1990 to July 31, 1990; March 4, 1991 to April 22, 1991; May 31, 1991 to June 25, 1991; August 9, 1991 to August 28, 1991; August 28, 1991 to October 3, 1991; and October 3, 1991 to October 15, 1991. With each event, the fission product particulate sample panel was returned to service by verifying that the filter paper was properly advancing in both fast and slow speed.

During the most recent event, the sample panel was restored to service at 1200 hours on October 18, 1991.

Analysis of the safety consequences and implications of this event indicates this event was not nuclear safety significant. At the times of these events, other instrumentation was available and operable to provide both continuous indication and activate alarms in the Main Control Room

if unidentified reactor coolant leakage had exceeded specified limits. This instrumentation included the drywell air cooler condensate flow rate monitoring system and the drywell sump flow monitoring system. During this event there was no unidentified leakage.

ADDITIONAL INFORMATION

Drywell fission products monitor 1E31-P002 is model number 133D9025G manufactured by General Electric.

LER 88-005-00 discusses a licensed operator failure to recognize an inoperable drywell atmosphere particulate radioactivity monitoring system which resulted in missed particulate grab samples.

LER 90-009-00 discusses a loose set screw on a gear train of the moving filter paper drive mechanism which resulted in the paper not moving and an inoperable leak detection drywell air particulate sample panel.

For further information regarding this event, contact S. E. Rasor, Director - Plant Maintenance at 217-935-8881, Ext. 3204.