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**John G. Cook**  
Vice President

U-602487  
L45-95(09 - 05)LP  
2C.220  
JGC-362-95  
September 5, 1995  
10CFR50.73

Docket No. 50-461

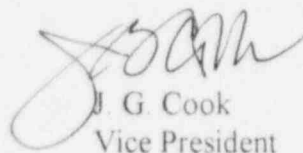
Document Control Desk  
Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Clinton Power Station - Unit 1  
Licensee Event Report No. 95-006-00

Dear Sir:

Enclosed is Licensee Event Report No. 95-006-00: Lack of Appropriate Post Maintenance Testing Due to Personnel Errors Results in Inoperable Reactor Recirculation Flow Control Valve. This report is being submitted in accordance with the requirements of 10CFR50.73.

Sincerely yours,



J. G. Cook  
Vice President

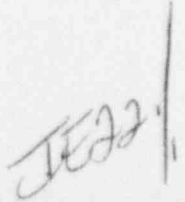
MRS/csm

Enclosure

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

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## LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS  
INFORMATION COLLECTION REQUEST: 50.0 HRS.  
FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE  
INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB  
7714), 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)

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DOCKET NUMBER (2)

05000461

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TITLE (4) Lack of Appropriate Post Maintenance Testing Due to Personnel Errors Results in Inoperable Reactor  
Recirculation Flow Control Valve

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
08	01	95	95	006	00	09	05	95	None	None
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		100	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	
			20.405(a)(1)(iii)		X 50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)	
			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

R. A. Matthews, Maintenance Project Engineer

TELEPHONE NUMBER (Include Area Code)

(217) 935-8881, Extension 3188

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

On August 7, 1995, the plant was in Mode 1 power operation at about 100% reactor power. The reactor recirculation (RR) system engineer discovered that corrective maintenance work performed on the "B" RR hydraulic power unit (HPU) had the potential to affect the operability of the "B" RR flow control valve (FCV) stroke time. This work had been previously identified as requiring a unit outage to perform. The flow control valve is required by the Technical Specifications to be operable during Modes 1 and 2. However, following completion of the corrective maintenance, the "B" RR HPU was returned to service without performing the required post maintenance testing. The cause of this event is the failure of plant personnel to effectively communicate the limitations identified during the work planning and authorization process on the performance of the scheduled work. Corrective action for this event include: replacing the components removed during the maintenance work with the original components, discussing this event with appropriate plant personnel, evaluating the method of communicating changes on the ability to perform maintenance with the unit operating, and submitting a change to the Technical Specifications for the RR FCV's.

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

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

**DESCRIPTION OF EVENT**

On July 31, 1995, at 1350 hours the plant was in Mode 1 and operating at about 100% reactor [RCT] power when the Operations staff assistant shift supervisor approved safety tagout 95-1039 for subloop B1 of the reactor recirculation (RR) [AD] hydraulic power unit (HPU) in preparation for scheduled preventive and corrective maintenance work. The work included Maintenance Work Request (MWR) D50420 which contained job steps to replace both the relief valves [RV] and servo valves [V] in each subloop of the "B" RR HPU. On August 1, 1995, utility mechanical maintenance personnel replaced both the servo valve and relief valve on subloop B1 of the RR HPU in accordance with the MWR. Later that day, at about 1407 hours operations personnel shifted from the RR HPU B2 subloop to the B1 subloop. The only post maintenance test (PMT) that was performed prior to placing subloop B1 of the RR HPU inservice was a check for external leaks on the components that had been replaced. Utility mechanical maintenance personnel then replaced the servo valve and rebuilt the relief valve on the RR HPU subloop B2. On August 2, 1995, operations personnel placed subloop B2 of the RR HPU in standby and performed a leak check of the components that were replaced.

On August 7, 1995, the RR system engineer was reviewing work performed on the "B" RR HPU during the previous week. The review discovered that the servo valves in both subloops of the "B" RR HPU had been replaced. These servo valves respond to a control signal to open and close the "B" RR FCV. Replacement of the servo valves can affect the rate at which the RR FCVs move open and closed. Technical Specification (TS) 3.4.2 requires that each RR FCV shall be operable during Modes 1 and 2. TS Surveillance Requirement (SR) 3.4.2.2 requires the average rate of FCV movement be less than or equal to 11% of stroke per second for opening and closing. Further, SR 3.0.1 requires surveillance requirements be met during the Modes or other conditions specified in the Applicability for the Limiting Conditions for Operation (LCO). The Bases for SR 3.0.1 states that "upon completion of maintenance, appropriate post maintenance testing is required to declare equipment operable. This includes ensuring applicable surveillances are not failed . . ." The system engineer identified that the appropriate post maintenance testing to demonstrate operability of the "B" RR FCV had not been performed following the replacement of the servo valves on the "B" RR HPU (i.e., the average rate of FCV movement was not verified to be less than or equal to 11% of stroke per second). The plant is required to be shutdown in order to verify the rate of FCV movement. Since the operability of the RR "B" FCV was potentially affected by the maintenance that had been performed, the valve could not be declared operable without performing the required PMT. The Required Action by TS 3.4.2 when a flow control valve is inoperable is to lock up the FCV within four hours. Since the "B" FCV was not locked up within four hours, TS 3.4.2 was not met. Condition report 1-95-08-009 was initiated to track an evaluation of the cause and the corrective action for this issue.

On August 7, 1995, at about 1330 hours, the Operations shift supervisor was informed by the system engineer of the failure to perform appropriate PMT on the "B" RR HPU. The shift supervisor immediately declared the "B" RR FCV inoperable. At about 1519 hours, the "B" FCV was locked up as required by TS 3.4.2 Required Actions.

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

Shortly thereafter, utility mechanical maintenance personnel removed the servo valve installed on subloop B1 of the RR HPU and replaced it with the one that was inservice prior to August 1, 1995. The B1 subloop of the RR HPU was returned to service at about 1615 hours and declared operable by the shift supervisor at about 1650 hours.

No automatic or manually initiated safety system responses were necessary to place the plant in a safe and stable condition. No other 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 this event was the failure by plant personnel to effectively communicate the limitations identified during the work planning and authorization process of MWR D50420. There were several places during the work authorization and work performance process where this failure to communicate is evident. During the two week look ahead meeting attended by operations, scheduling, maintenance craft supervisors, and maintenance planners they discussed the fact that the servo valve replacement portion of MWR D50420 could not be performed while the unit was operating. The schedule for MWR D50420 noted that only the relief valves were to be replaced. A caution was inserted at the beginning of the job steps for MWR D50420 which stated that the servo valves were only to be replaced when the flow control valve could be stroked and that servo valve replacement could affect the stroke rate of the RR FCVs. The caution also listed two procedures that are required to be performed if the servo valves are replaced. These procedures require a plant outage to perform. However, the fact that an outage was required to replace the servo valves was not specifically identified in the caution statement in the work document. The MWR was marked on the front that it was "Priority 5" which means an outage is required to perform the work contained in the MWR. Also, during the work authorization process, the Operations Department personnel did not identify any restrictions on performing any of the work contained in the MWR. Further, modification RR-30 was installed during the fifth refueling outage. This modification caused the replacement of the servo valve on the RR HPU to potentially affect the stroke rate of the RR FCV. Prior to the installation of modification RR-30, the affects of the removal and replacement of a RR HPU servo valve on the maximum rate of FCV movement were compensated for by active feedback controls. The affect of modification RR-30 on maintainability of the RR HPU's was not well communicated to the operations and maintenance staff during the modification process.

Several other items contributed to this event. Block 70 of MWR D50420 should have described the post maintenance testing required when the servo valves were replaced but did not. The Technical Specification Surveillance Requirement remained unchanged after the installation of modification RR-30, even though the changes to the control system by the modification made it unnecessary to continue testing the flow control valve stroke rate to the limit identified in the Technical Specifications Surveillance Requirements. The limit given in the Technical Specifications is now unnecessary because the bases for that Technical Specification Surveillance



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Requirement assumed a single failure in the RR flow control system would cause simultaneous movement of both RR FCVs. After the installation of Modification RR-30 multiple failures are required for simultaneous movement of both RR FCVs.

**CORRECTIVE ACTION**

Upon discovery that the required post maintenance testing for the "B" RR FCV was not performed, the shift supervisor declared the "B" RR FCV inoperable and locked up the "B" RR FCV per Required Action A.1 of Technical Specification 3.4.2.

At 1650 hours on August 7, 1995, the servo valve on subloop B1 of the RR HPU had been replaced with the one that had been in service prior to August 1, 1995, and was declared operable by the shift supervisor. At about 2145 hours on August 8, 1995, the servo valve on the B2 subloop of the RR HPU had been replaced with the one that had been in service prior to August 1, 1995. The causes of this event will be reviewed by appropriate maintenance planners, shop work coordinators, maintenance and operations personnel. Also, maintenance planners will be briefed on the need to effectively communicate the limitations associated with performing the work or the PMT in the MWR package. A change to eliminate or revise Technical Specification Surveillance Requirement 3.4.2.2 will be submitted to the NRC so that the Surveillance Requirements more closely reflect plant design. The impact assessment process for modifications will be reviewed to determine if additional guidance should be given to communicate changes to plant design that affect the ability of maintenance to be performed with the plant operating.

**ANALYSIS OF EVENT**

This event is reportable under the provisions of 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the plant's Technical Specifications. The Actions of Technical Specification 3.4.2 which requires RR FCVs be operable during Modes 1 and 2 were not met.

Analysis of the safety consequences and implications of this event identified that this event was not nuclear safety significant. Modification RR-30 was installed during the fifth refueling outage. This modification made changes to the RR FCV control system. These changes removed the master, flux and loop flow control modes of operation of the RR flow control system. Removal of these modes of operation made it possible that only multiple failures on the RR flow control system would be able to cause the simultaneous opening or closing of both RR FCVs. The

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simultaneous movement of the RR FCVs was the bases for the Technical Specification Surveillance Requirement 3.4.2.2 to limit the average rate of FCV movement to less than or equal to 11% per second. The analysis in sections 15.3.2 and 15.4.5 of the Updated Safety Analysis Report (USAR) contains information on single RR FCV movement. The assumptions in this analysis are that the RR FCV will move no faster than 30% per second in the opening direction and 60% per second in the closing direction.

The speed of the movement of one RR FCV in the fast opening and fast closing events in the accident analysis is not affected by the replacement of the servo valves but is limited by system hydraulics. The servo valve is not relied upon to limit the RR FCV stroke rate to the 30% per second opening or the 60% per second closing stroke rate. However, replacement of the servo valve may affect the 11% per second stroke rate required by Technical Specification 3.4.2.2.

**ADDITIONAL INFORMATION**

No equipment failed during this event.

Clinton Power Station Licensee Event Report (LER) 95-003 was similar to this event in that appropriate PMT was not performed prior to placing equipment in service. However, the cause of LER 95-003 was not related to the maintenance planning and work authorization process.

For further information regarding this event, contact R. A. Matthews, Maintenance Department Project Engineer, at (217) 935-8881, extension 3188.