



**CENTERIOR  
ENERGY**

**PERRY NUCLEAR POWER PLANT**

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**Michael D. Lyster**  
VICE PRESIDENT - NUCLEAR

March 1, 1991  
PY-CEI/NRR-1327 L

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

Perry Nuclear Power Plant  
Docket No. 50-400  
LER 91-006

Dear Sir:

Enclosed is Licensee Event Report 91-006 for the Perry Nuclear Power Plant.

Sincerely,

Michael D. Lyster

MDL:TSH:njc

Enclosure: LER 91-006

cc: NRC Project Manager  
NRC Sr. Resident Inspector

U.S. Nuclear Regulatory Commission  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Operating Companies  
Cleveland Electric Illuminating  
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65-9103050416 910301  
PDR ADOCK 05000440  
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LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-830), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Perry Nuclear Power Plant, Unit 1 DOCKET NUMBER (2) 0 5 0 0 0 4 4 0 1 PAGE (3) 1 OF 0 3

TITLE (4) High Differential Flow Reactor Water Cleanup Isolation While Securing a Filter from Service

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)
02	02	91	91	006	00	03	01	91		050000
										050000

OPERATING MODE (9) 1 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following): (11)

20.402(b)	<input type="checkbox"/>	20.408(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(vi)	<input type="checkbox"/>	73.71(b)	<input type="checkbox"/>
20.408(a)(1)(i)	<input type="checkbox"/>	50.38(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>	73.71(c)	<input type="checkbox"/>
20.408(a)(1)(ii)	<input type="checkbox"/>	50.38(c)(2)	<input type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	OTHER (Specify in Abstract below and in Test NRC Form 366A)	<input type="checkbox"/>
20.408(a)(1)(iii)	<input type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(vii)(A)	<input type="checkbox"/>		
20.408(a)(1)(iv)	<input type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(vii)(B)	<input type="checkbox"/>		
20.408(a)(1)(v)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
<u>Henry L. Hegrat, Compliance Engineer, Extension 6855</u>	<u>216 259-3737</u>

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On February 2, 1991, at 1230, Reactor Water Cleanup (RWCU) Inboard Isolation Valves closed on a RWCU Delta Flow High signal during removal of a RWCU filter from service.

The root cause of this event is personnel error, inadequate knowledge. The System Operating Instruction specified that the operator throttle the bypass valve to maintain the appropriate RWCU inlet flow during filter shutdown operations. While attempting to follow the instruction, the operator was monitoring other related instrumentation in addition to the RWCU inlet flow and the bypass valve was opened too far. When flow exceeded the calibrated range of the instrument, the Leak Detection system could no longer accurately determine differential flow, and an artificial differential flow signal was initiated. Because the instruction did not provide appropriate limitations for system flow during this operation, procedural inadequacy is considered to be a contributing factor.

To prevent recurrence, the System Operating Instruction is being revised to provide the necessary guidance for control of system flow during filter operations. The Instrument and Controls support engineer is discussing this event and the associated procedural changes with all onshift operators. Additionally this event will be discussed with all licensed operators during their requalification training.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-430), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20548, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Perry Nuclear Power Plant, Unit 1	05000440	91	006	910	2	OF	13

TEXT IS ONLY REPORTED AS REQUIRED, USE ADDITIONAL NRC FORMS 388A-3 (17)

On February 2, 1991, at 1230, Reactor Water Cleanup (RWCU) [CE] Inboard Isolation Valves [ISV] closed on a RWCU Delta-Flow High signal from the Division II Leak Detection System [IJ]. At the time of this event the plant was in Operational Condition 1 (Power Operation) and the Reactor Pressure Vessel [RPV] was at saturated conditions with a reactor pressure of 1026 psig.

On February 2, operators were attempting to remove RWCU A filter [FLT] from service in accordance with System Operating Instruction (SOI-G33) "Reactor Water Cleanup System (Unit 1)". The Plant Operator was decreasing flow for the A filter at the local panel; while the Control Room Operator was throttling the bypass valve, 1G33F044, to maintain system flow with two pumps running. When the "RWCU Delta Flow High Timer Run" alarm came in, the differential flow on the Division II Leak Detection indicator was reading approximately 70 gpm, while the Division I indicator was reading approximately 60 gpm. The Control Room operator was instructed to close the isolation valves and did so with three seconds remaining on the timer. However, the valves did not sufficiently reduce the flow differential in time to reset the timer and at 1230 a Division II isolation signal on high differential flow was initiated. In accordance with approved operating instruction, the Control Room Operator restored the system following the isolation. At 1335 RWCU B pump was started and at 1340 RWCU A pump was started.

The root cause of this event is personnel error, inadequate knowledge. SOI-G33 directs the operators to maintain RWCU flow within normal parameters while removing the filter from service. This is accomplished by throttling open the filter bypass valve from the control room to compensate for decrease in system flow as the filter is locally removed from service. In this event, the operator was attempting to follow the approved instruction; however, he initially over-compensated for the reduction in filter flow, increasing system flow to above the maximum indicated range on control panel instrumentation, while waiting for further reduction of filter flow. With the flow instruments sensing flow above their normal calibrated range, a false differential flow signal was generated, resulting in a system isolation. Procedural inadequacy is considered to be a contributing factor for this event, in that SOI-G33 did not provide appropriate limitations for system flow during this operation.

The RWCU system is used to control reactor water chemistry, reduce reactor water inventory during the startup and shutdown, and minimize temperature gradients when the recirculation pumps are not operating. A RWCU containment isolation occurring at high reactor power will allow reactor coolant conductivity to slowly increase until the system is returned to service. The differential flow portion of the Leak Detection System compares RWCU suction flow to both the flow returning to the reactor vessel and blowdown flow to radwaste or the main condenser. All three flows are summed to generate an indication of differential flow. A RWCU high differential flow signal indicates the suction flow entering the system is not being discharged via normal flow paths. This could be the result of a line break in the RWCU system. High differential flow of greater than 68 gpm for a duration of 45 seconds generates an isolation signal from the Leak Detection System. The 45 second time delay normally allows for system flow

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P&30), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555 AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)  Perry Nuclear Power Plant, Unit 1	DOCKET NUMBER (2)  0500044091	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (if more space is required, use additional NRC Form 388A's) (17)

transients when changing operational configurations. Since no RWCU high differential flow existed due to a leak, and because the systems did respond to the high indicated differential flow as designed, the February 2, 1991 event is not considered to be safety significant.

Other events involving RWCU system containment isolations due to high differential flow have been discussed in LER's 89-025, 88-039, 88-013, 88-002 and 87-074. No RWCU isolations have been experienced at steady state power while removing a filter.

To prevent recurrence, SOI-C33 is being revised to provide the necessary guidance for control of system flow during filter operations. The Instrument and Controls support engineer is discussing this event and the associated procedural modifications with all onshift operators during shift briefings. Additionally this event will be discussed with all licensed operators during their requalification training.

Energy Industry Identification System Codes are identified in the text as [XX].