



**CENTERIOR  
ENERGY**

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**PERRY NUCLEAR POWER PLANT**

10 CENTER ROAD  
PERRY, OHIO 44081  
(216) 259-3737

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

January 13, 1992  
PY-CEI/NRR-1436 L

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

Perry Nuclear Power Plant  
Docket No. 50-440  
LER 91-025

Dear Sir:

Enclosed is Licensee Event Report 91-025 for the Perry Nuclear Power Plant.

Sincerely,

Michael D. Lyster

MDL:CRE:ss

Enclosure: LER 91-025

cc: NRC Project Manager  
NRC Sr. Resident Inspector  
NRC Region III

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Operating Companies  
Cleveland Electric Illuminating  
Trust Company

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LICENSEE EVENT REPORT (LER)

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-530), 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)	DOCKET NUMBER (2)	PAGE (3)
Perry Nuclear Power Plant, Unit 1	0 5 0 0 0 4 4 0	1 OF 0 3

TITLE (4)  
Cracked Weld on Valve Appendage Results in High Pressure Core Spray System Inoperability

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		
11	21	1991	1991	025	00	01	11	1992	DOCKET NUMBER(S)		
									0 5 0 0 0		

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

OPERATING MODE (9)	20.402(a)	20.406(a)	50.73(a)(2)(a)	73.71(b)
POWER LEVEL (10)	20.406(a)(1)(i)	50.38(a)(1)	50.73(a)(2)(a) <input checked="" type="checkbox"/>	73.71(b)
1,0,0	20.406(a)(1)(ii)	50.38(a)(1)	50.73(a)(2)(a)	OTHER (Specify in Abstract, Draw and in Text, NRC Form 368A)
	20.406(a)(1)(iii)	50.73(a)	50.73(a)(2)(a)(i)	
	20.406(a)(1)(iv)	50.73(a)(2)(a)	50.73(a)(2)(a)(ii)	
	20.406(a)(1)(v)	50.73(a)(2)(a)	50.73(a)(2)(a)(iii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Henry L. Hegrat, Compliance Engineer, Extension 5185	AREA CODE: 2 1 6 2 5 9 - 3 7 3 7

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

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

ABSTRACT (Limit to 7400 spaces - i.e. approximately fifteen single-spaced typewritten lines) (16)

On December 12, 1991, at 1100, liquid penetrant testing revealed a crack in a weld upstream of the high point vent valve on the High Pressure Core Spray (HPCS) system test return line. The control room was contacted and HPCS, which had been in standby readiness, was declared inoperable on December 13, 1991, at 1542. The cracked weld was reworked to specifications and HPCS was declared operable on December 15, 1991, at 0510.

The weld failure is attributed to a combination of factors. The inspected welds were being checked under a plant initiative to inspect welds as a result of a previous LER. This weld was chosen due to being located in an area subject to relatively high vibration. The weld was at the branch connection between the vent piping and test return piping. The appendage had two 3/4 inch vent valves supported solely by this branch connection. Additionally, field inspection of the appendage by engineering personnel determined that the cracked weld did not fully meet the specifications required by the design drawings, having insufficient weld metal and contour.

The schedule to inspect other welds identified by the activities resulting from the previous LER has been accelerated. Engineering personnel are in the process of monitoring the reworked weld on the HPCS system for vibration to determine if additional corrective actions may be required. Additionally, engineering personnel will perform a design review to identify applications involving welds with similar profiles. Those identified in the design review will be inspected to ensure compliance with design requirements. As part of the established requalification training program, all plant licensed operators will be instructed on the lessons learned from this event.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 300 HRS. FORM, NO COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530) U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20545, 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 (3)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	VISION NUMBER		
		91	025	010	02	OF 03

TEXT IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC FORM 868A (1/77)

I. Introduction

On December 13, 1991, at 1542, the High Pressure Core Spray [BG] (HPCS) system was declared inoperable due to a crack in a weld on a high point vent valve [VTV] on the HPCS test return line. At the time of the event, the plant was in Operational Condition 1 (Power Operation) at 100 percent of rated thermal power, with the Reactor Pressure Vessel [RPV] at saturated conditions at approximately 1025 psig.

II. Description of Event

On December 12, 1991, at 1100, liquid penetrant testing revealed a crack in a weld upstream of the high point vent valve on the HPCS test return line. Control room personnel were contacted and they requested an engineering disposition to the nonconforming condition. The crack was external and did not propagate completely through the pipe. The crack was approximately 5/8 inches in length, but the depth could not be determined by non-destructive examination methods due to the weld's sloped/contoured shape. The weld was on an appendage on a section of the test return line that could not be isolated from the HPCS pump discharge flow path in the event that HPCS was required. In the event that the weld cracked completely through and HPCS was in use, it was conservatively assumed that the loss of fluid through the break could have caused flooding of the HPCS pump room. The control room was contacted and HPCS, which had been in standby readiness, was declared inoperable on December 13, 1991, at 1542. The cracked weld was reworked to specifications and HPCS was declared operable on December 15, 1991, at 0510.

III. Cause of Event

The weld failure is attributed to a combination of factors. The inspected welds were being checked under a plant initiative to inspect welds as a result of LER 91-010. This weld was chosen due to being located in an area subject to relatively high vibration. The weld was at the branch connection between the vent piping and the test return piping. The 3/4 inch Nominal Pipe Size vent piping had two 3/4 inch vent valves supported solely by this branch connection. Additionally, field inspection of the appendage by engineering personnel determined that the cracked weld did not fully meet the specifications required by the design drawings, having insufficient weld metal and contour.

IV. Analysis of Event

The HPCS system pumps water through a peripheral spray ring sparger mounted above the reactor core. Coolant is supplied over the entire range of system operating pressures. The primary purpose of HPCS is to maintain reactor vessel inventory after small breaks which do not depressurize the reactor vessel. HPCS also provides spray cooling heat transfer during leaks in which core uncover is calculated. During the period of time the HPCS system was declared inoperable, the Automatic Depressurization System and Low Pressure Core Spray, as well as the Low Pressure Coolant Injection System were operable ensuring adequate cooling as described in

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-530) U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20546 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	LER NUMBER (8)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
		91	025	0	013	OF 03

TEXT (if more space is required, use additional NRC Form 2684's) (17)

Chapter 15 of the Updated Safety Analysis Report; therefore, this event is not considered to be safety significant.

A similar event of a cracked weld on a similar pipe appendage was documented in LER 91-010 when a weld on a Reactor Recirculation System line cracked resulting in increased drywell leakage. The failed weld had a unique profile, which was not believed to be used in applications other than the Recirculation System. Although the drywell leakage did not exceed the Technical Specification limit, the cracked weld was reported as pertinent information in LER 91-010. Follow-up activities for LER 91-010 included a review of Residual Heat Removal (RHR) system design and a review of safety system applications in high vibration areas. Seven appendages were identified as requiring inspection. The increased testing of welds as a plant initiative from LER 91-010 resulted in the discovery of the cracked weld in the December 13, 1991 event, as the cracked weld was on one of the seven appendages identified. Additionally, the affected weld was determined to have a profile similar to the Reactor Recirculation welds associated with LER 91-010. Two other appendages were penetrant inspected at that time and no problems were found.

V. Corrective Actions

The schedule to inspect four other welds identified by the activities resulting from LER 91-010 has been accelerated. Two of the welds were penetrant inspected with no problems found and the remaining two appendages are scheduled to be inspected when the plant maintenance schedule allows. Both of these welds are on piping in the RHR system. Engineering personnel are in the process of monitoring the reworked weld on the HPCS system for vibration to determine if additional corrective actions may be required. Additionally, engineering personnel will perform a design review to identify applications involving welds with similar profiles. Those identified in the design review will be inspected to ensure compliance with design requirements. As part of the established requalification training program, all plant licensed operators will be instructed on the lessons learned from this event.

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