

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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January 5, 1990 PY-CEI/NRR-1117 L

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

> Perry Nuclear Power Plant Docket No. 50-440 LER 89-031

Dear Sir:

Enclosed is Licensee Event Report 89-031 for the Perry Nuclear Power Plant.

Very truly yours

Al Kaplan Vice President Nuclear Group

AK/njc

Enclosure: LER 89031

cc: T. Colburn NRC Resident Inspector

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

Al Kaplan

VICE PRESIDENT NUCLEAR GROUP

NRC FORM 366 (6-89)									EXP EN PER LLECTIC DING BL NAGEMI MISSION REDUCT	D OMB NO. 3150-0104 PIRES 4/30/92 R RESPONSE TO COMPLY WTH THIS ION REQUEST: 50.0 HRS. FORWARD BURDEN ESTIMATE TO THE RECORDS AENT BRANCH (P\$30), U.S. NUCLE R DN, WASHINGTON, DC 2055, AND 10 CTION PROJECT (3150-0104), OFFICE UDGET, WASHINGTON, DC 20503.											
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LICENSEE EVENT REPORT TEXT CONTINUATION	APPROVED OME NO. 31500104 EXPIRES 4/30/92 ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST BOC HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530). U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20565, AND TO THE FAPERWORK REDUCTION PROJECT (3150104). OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.						
FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)		PAGE (3)			
		YEAR SEQUENTIAL NUMBER	REVISION	TT			
Perry Nuclear Power Plant Unit 1	0 15 10 10 10 1414 10	819 - 0131 1-	010012	OFO			
On December 6, 1989, at approximat approximately 1725, Reactor Water isolations occurred due to high di ventilation. On December 8, 1989 containment isolation occurred due times of the events, the plant was at approximately 100 percent of re	tely 1034, and on De Cleanup (RWCU) [CE] ifferential temperat , at approximately 2 e to indicated high s in Operational Con	cember 15, 1989, System contains ure in the RWCU 225, an RWCU Sys differential flo differential flo	, at ment Pump Room stem ow. At th Operation	n ne n)			

Building Ventilation System was using the "B" Supply and Exhaust fans. The Equipment Area Differential Temperature Recorder points, which monitor RWCU Pump Room 1 and 2 differential temperatures, were bypassed due to differential temperatures exceeding alarm setpoints; as a result, operators were monitoring the temperatures every 4 hours. At approximately 1034, during the performance of control room surveillance activities, an RWCU Pump Room 2 differential temperature switch [TDS] caused a temperature signal spike when the operator was taking his reading. This resulted in an inboard containment isolation of the RWCU System. At approximately 1059, after verifying that no steam leak existed, operators returned both RWCU pumps to service, and shifted ventilation Supply and Exhaust fans to reduce differential temperature.

Prior to the December 8, 1989 event, the RWCU system was shut down for maintenance. At approximately 2225, while starting RWCU pump A, suction flow exceeded discharge flow by more than the 68 gpm setpoint for longer than the 45 second delay time, which resulted in an RWCU system containment isolation due to high differential flow, despite efforts by the operators to manually trip the pump prior to exceeding the time delay setpoint. On December 9, 1989, at approximately 0255, the RWCU system was restarted with no further difficulty.

Prior to the December 15, 1989 event, the RWCU system was in service when both Auxiliary Building Ventilation supply fans tripped on low temperature resulting in a high differential temperature in RWCU pump room 2 and subsequently an outboard RWCU system containment isolation at approximately 1725. The loss of ventilation had caused the RWCU pump room temperature to increase enough to exceed the differential temperature setpoint but not the ambient temperature setpoint. At approximately 1745, operators closed the inboard RWCU system containment isolation valves. Investigation revealed the ventilation supply plenum roughing [FLT] filters to be covered with snow. The snow was removed and at 1840 a supply fan was restarted. At approximately 1955 RWCU was returned to service and at approximately 2200 all Auxiliary Building Ventilation supply plenum roughing filters were replaced.

NR FORM 3664	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED OME NO. 31	0-0104				
LICENSEE EVENT REPO TEXT CONTINUATION	NRT (LER) ON	EXPIRES 4/30/92 ESTIMATED BURDEN PER RESPONSE TO COMPLY WYH THI INFORMATION COLLECTION REQUEST BOD HRS. FORWAR COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORD AND REPORTS MANAGEMENT BRANCH (P530). U.S. NUCLEA REGULATORY COMMISSION, WASHINGTON, DC 2055, AND T THE FAFERWORK REDUCTION PROJECT (3150-0104), OFFIC OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.					
FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)	PAGE (3)				
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A temperature survey of the RWG the pump rooms were within the system inside the rooms was ope determined that the high differ to the location of installed le of the thermocouples outside th of ventilation system different Additionally, as a result of pr had been installed in the leak unnecessary isolation caused by the December 6 event, with the the trip setpoint, the time del from causing a spurious isolati did not exceed the trip setpoint During the December 15, 1989 ev in snow intrusion into the Auxi resulting trip of system supply differential temperatures were characteristics described above Ventilation caused the trip set be implemented to restore flow.	CU pump room area reve normal expected range erating properly. Fur rential temperatures (eak detection system t he pump rooms resulted tial temperature under revious operational pr detection temperature y spikes when temperat pump room differentia lay was insufficient t lon signal. The actuant. yent, a severe snow st lliary Building Ventil y fans on low temperat approaching trip setp e, the interruption of tpoints to be exceeded	aled that temperature and that the ventila ther engineering eval close to setpoint) we hermocouples. The lo in an excessive indi normal operating con oblems, a 1 second ti trip circuitry to el ures are being read. 1 temperature very cl o prevent the signal 1 differential temper orm was in progress r ation System and the ure. Because the Pum oints due to the desi the Auxiliary Buildi before operator acti	inside inside tion uations re due cation cation ditions. me delay iminate During ose to spike ature esulting p Room gn ng on could				
The cause of the December 8, 19 deficiency in the leak detection delay during RWCU system started made, it is still difficult to for leak detection purposes, due the wide range of flows, process plant conditions present during The RWCU system is used to cont inventory during startup and sh recirculation pumps are not ope at high reactor power will allow until the system is returned to temperature instrumentation is isolate the RWCU containment per the RWCU pump room. Since no se differential temperature condit the events on December 6 and De	289 event is a previou on/differential flow c op. Although several obtain consistent and using dynamic startup as fluid temperatures, g RWCU system startups trol reactor water che hutdown, and minimize erating. An RWCU cont ow reactor coolant con o service. The RWCU p part of the Leak Dete enetrations should an system leakage or actu- tions existed and the ecember 15, 1989 are n	sly identified design ircuitry setpoint and design improvements h accurate flow measur conditions. This is other system parameter mistry, reduce reacto temperature gradients ainment isolation occ ductivity to slowly i ump rooms differentia ction system, designer RWCU system leak deve al RWCU Pump Room hig system responded as do ot considered to be s	/or time ave been ment, due to ers and r water when urring ncrease l d to lop in h esigned, afety				

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. An RWCU high differential flow signal indicates the suction flow entering the system is not being discharged via normal flow paths (reactor vessel, and blowdown to radwaste or main condenser). This could

LICENSEE EVENT REPORT TEXT CONTINUATION	APPROVED DME ND. 3150-0104 EXPIRES: 4/30/82 ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH THIS INFORMATION COLLECTION REQUEST 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANGEMENT BRANCH (F-530), U.S. NUCLEAR REGULATORY COMMISSION WASHINGTON, DC 20565. AND TO THE FARERWORK REDUCTION FROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.							
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Perry Nuclear Power Plant, Unit 1	0 15 10 10 10 14 1 4 0	89-931-010	Q 4 OF 014					
TEXT if more space a required, use additional NRC Form 3866 \$1(17) be the result of a line break in a greater than 68 gpm for a duration from the Leak Detection System.	the RWCU system. Hi n of 45 seconds gene The 45 second time d	gh differential flow rates an isolation si lelay normally allows	of gnal for BWCU					

system flow transients when changing operational configurations. Since no RWCU high differential flow existed due to a leak and the systems did respond as designed to the high indicated differential flow, the December 8, 1989 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. Other events involving RWCU System Containment Isolations due to high differential temperature or Auxiliary Building Ventilation System problems have been discussed in LER's 88-010 and 89-004.

After the December 6, 1989 event, operators were instructed to bypass the leak detection isolation logic when performing channel checks on the temperature instrumentation until design improvements could be implemented. A design modification was developed and implemented to change the locations of the thermocouples monitoring temperatures outside of the pump rooms, improving the validity of differential temperature instrumentation measurements without compromising the ability to detect actual leakage conditions. Additionally potential improvements to prevent snow intrusion for the Auxiliary Building Ventilation System supply plenum are being investigated.

To prevent recurrence of the event on December 8, 1989, a setpoint/time delay change is being evaluated; however, this would necessitate changes to Technical Specifications. Because significant progress has been made over the last few years on reducing the number of spurious RWCU isolations due to differential flow signals, and because the most recent events have occurred during system startup, a comprehensive evaluation of potential corrective actions is being performed. These potential solutions include system design modifications and operating procedure revisions in addition to the previously mentioned Technical Specification changes. A supplemental report will be provided upon completion of this evaluation and determination of appropriate corrective actions.

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