NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

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)
RPS Actuation Due to Inadvertant Actuation of Redundant Reactivity Control System

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)
										0 5 0 0 0
0 3	2 9	8 6	8 6	0 0 2	0 0	0 4	2 8	8 6		0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
5	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 0 0	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)	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
Paul Russ, Compliance Engineer, Ext. 6472	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 NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On March 29, 1986 at 0854, a Division II Channels A and B Redundant Reactivity Control System (RRCS) Alternate Rod Insertion (ARI) actuation resulted in a Scram Discharge Instrument Volume (SDIV) high level trip of the Reactor Protection System (RPS)(control rods were already fully inserted). The RRCS Channel B trip was caused by reinstalling a Card Select Decoder (CSD) printed circuit card, which had been removed to verify its calibration date. The Channel A trip was initiated when the digital display was being redirected from the monitor mode to the off mode.

The applicable instructions will be revised to prohibit installation of any printed circuit card when RRCS is energized. The read only memory (ROM) programming components associated with the RRCS digital display are being changed to preclude future spurious trips.

IE 22
1/1

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Perry Nuclear Power Plant Unit 1	0 5 0 0 0 4 4 0	8 6	— 0 0 2	— 0 0	0 2 OF 0 3

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

On March 29, 1986 at 0854 the Reactor Protection System (RPS)[JC] actuated as a result of a Scram Discharge Instrument Volume (SDIV) high level following a Redundant Reactivity Control System (RRCS)[JC] Alternate Rod Insertion (ARI) actuation. During performance of a Surveillance Instruction (SVI) for RRCS, a spurious voltage spike caused Channel B of Division II RRCS to trip. A control signal deficiency associated with the monitor display for RRCS then caused a Channel A trip. The plant was in Operational Condition 5 (REFUELING) with core [AC] alterations not in progress. Reactor temperature was approximately 75 degrees with reactor pressure atmospheric, reactor vessel [RPV] and drywell heads were removed, all control rods [ROD] were fully inserted and reactor vessel water level was above the top of the reactor vessel flange.

During surveillance SVI-B21-TO213B, calibration for pressure transmitter [PT] 1B21-N403B, the Card Select Decoder (CSD) printed circuit card was pulled to verify its calibration date. Upon reinserting the CSD card, a voltage spike was created causing the Analog Trip Module (ATM)[IMOD] for Reactor Low Water Level Channel B of RRCS to actuate. The ATM actuation caused an alarm [ALM], and actuated Div. II Channel B ARI Logic. In order to determine the cause of the alarm, the technician attempted to place the RRCS monitor/display [MON] in the calibration mode. To do so, the monitor is first placed in off and then calibrate. Coincident to pressing the ON/OFF button, a Data Acquisition and Display Controller (DADC) control signal deficiency caused the ATM for High Reactor Dome Pressure Channel A of RRCS to actuate. The Channel A and B ATM actuations caused RRCS ARI to actuate. RRCS ARI isolated and depressurized the scram air header, the scram inlet and outlet valves opened, and the SDIV isolated. The SDIV then filled to the high level setpoint resulting in an RPS actuation.

At 0917 the Supervising Operator reset RRCS and RPS. In order to determine if the SVI caused the actuation, at 0917 the applicable steps of the SVI were repeated with all control rods fully inserted and again RRCS ARI actuated. Actuation of RPS was prevented by previously placing the SDIV high level bypass switches in bypass. At 0927 RRCS was reset and the SVI was suspended.

On April 8, 1986 further investigation of the RRCS actuation was conducted. The RRCS input connectors to the ARI valve solenoid voltage amplifiers were lifted to prevent ARI valve actuation. The steps of the SVI were repeated several times. Only partial duplication of the previous problem occurred. It was determined that the voltage spikes associated with the CSD card reinstallation were caused by the order in

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Perry Nuclear Power Plant Unit 1	0 5 0 0 0 4 4 0	8 6	— 0 0 2	— 0 0	0 3 OF 0 3

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

which the board edge connector "fingers" made contact when inserted. It was also determined that the calibration date of the CSD card can be ascertained through administrative controls already in place. The actuation of the second ATM was due to an improper control signal produced by the read only memory (ROM) chips on the DADC card in conjunction with the operation of the monitor display ON/OFF button.

RRCS is a backup to the RPS, which receives actuation signals from High Reactor Steam Dome Pressure and Low Reactor Water Level. The ARI mode of RRCS, when actuated, energizes solenoid operated valves to isolate and depressurize the scram air header. When the scram air header depressurizes, a reactor scram occurs. RRCS consists of two divisions, each with two channels. Actuation of RRCS requires both channels of either division.

Since the surveillance (SVI-B21-T0213B) is only performed in COLD SHUTDOWN (Operational Condition 4) or REFUELING (Operational Condition 5), it is unlikely that more severe consequences would have resulted from this event. The problems identified would not have prevented the associated systems from performing their intended functions. The systems and operators responded as expected, consequently there were no additional safety consequences. There were no previous similar events identified.

In order to prevent recurrence the RRCS surveillance instructions have been changed. Since there exists a means to determine the calibration date without removing the CSD card, a caution will be added to applicable instructions to prohibit the insertion of any printed circuit card with RRCS energized. The ROM on the DADC card will be replaced with reprogrammed components.

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

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

P.O. BOX 5000 - CLEVELAND, OHIO 44101 - TELEPHONE (216) 622-9800 - ILLUMINATING BLDG. — 55 PUBLIC SQUARE

Serving The Best Location in the Nation

MURRAY R. EDELMAN
VICE PRESIDENT
NUCLEAR

April 28, 1986
PY-CEI/NRR-0454L

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

Perry Nuclear Power Plant
Docket No. 50-440
LER 86-002-0

Dear Sir:

Enclosed is Licensee Event Report 86-002-0 for the Perry Nuclear Power Plant.

Very truly yours,

Murray R. Edelman
Vice President
Nuclear Group

MRE:dlp

Enclosure: LER 86-002-0

cc: Jay Silberg, Esq.
John Stefano (2)
J. Grobe

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

IE22
1/1