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L45-90(01-18)-LP
2C.220

ILLINOIS POWER COMPANY

CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

January 18, 1990

10CFR50.73

Docket No. 50-461

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

Subject: Clinton Power Station - Unit 1
Licensee Event Report No. 89-042-00

Dear Sir:

Please find enclosed Licensee Event Report No. 89-042-00: Sensor System Design Causes False Reactor Core Isolation Cooling (RCIC) Steam Line Differential Pressure High Signal and RCIC Isolation. This report is being submitted in accordance with the requirements of 10CFR50.73.

Sincerely yours,

D. L. Holtzscher
Acting Manager -
Licensing and Safety

TSA/krm

Enclosure

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

IE22

NRC FORM 366 (6-89)

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

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-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)
Clinton Power Station	0 5 0 0 0 4 6 1	1 OF 0 3

TITLE (4) Sensor System Design Causes False Reactor Core Isolation Cooling (RCIC) Steam Line Differential Pressure High Signal and RCIC Isolation

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)
									None	0 5 0 0 0
1 2	1 9	8 9	8 9	0 4 2	0 0	0 1	1 8	9 0		0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 8 4	20.402(b)	20.405(c)	X 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 (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
	AREA CODE
R. D. Freeman, Manager-Nuclear Station Engineering Dept. ext.3538	2 1 7 9 3 5 - 8 8 8 1

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	
X	J E	F T	R 3 6 9	N							

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 December 19, 1989, at approximately 1555 hours, with the plant in Mode 1 (POWER OPERATION), at eighty-four percent reactor power, a false Reactor Core Isolation Cooling (RCIC) Division I steam line differential pressure high signal caused valve 1E51-F064, the RCIC turbine steam supply containment isolation valve, to shut and the RCIC turbine to trip. The cause of this event is attributed to the sensor system design. The system's sensitivity to minor changes in sensing line pressure resulted in the false RCIC Division I steam line differential pressure high signal. The sensitivity of transmitter 1E31-N084A was reduced by implementing Field Alteration C-F031 for that transmitter. At 2235 hours, on December 24, 1989, implementation of Field C-F031 Alteration was completed for 1E31-N084A, and RCIC was declared operable. This Field Alteration will be installed as necessary on other transmitters which exhibit similar sensitivity to minor changes in sensing line pressure.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Clinton Power Station	0 5 0 0 0 4 6 1	8 9	— 0 4 2	— 0 0	0 2 OF 0 3

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

DESCRIPTION OF EVENT

On December 19, 1989, at approximately 1555 hours, with the plant in Mode 1 (POWER OPERATION), at eighty-four percent reactor [RCT] power, a false Reactor Core Isolation Cooling (RCIC) [BN] Division I steam line differential pressure high signal caused valve 1E51-F064, the RCIC turbine [TRB] steam supply containment isolation valve [ISV], to shut (isolating RCIC) and the RCIC turbine to trip.

Control room operators immediately verified that valve 1E51-F031, the RCIC pump [P] suppression pool suction isolation valve, was closed and that the RCIC Division I steam line differential pressure high annunciator was illuminated. RCIC was declared inoperable in accordance with Technical Specification 3.7.3.

At 1615 hours, operators attempted to restore steam to RCIC by opening valve 1E51-F064 and then opening valves 1E51-F025 and 1E51-F026, the RCIC steam supply condensate return control valves, locally. Operators checked the RCIC steam line flow ATMs and noted erratic readings, between -30 and -20 inches of water, for 1E31-N684A and a zero reading for 1E31-N683A. Valve 1E51-F064 shut again on a false RCIC Division I steam line differential pressure high signal.

No additional attempts were made to open valve 1E51-F064 and restore steam to RCIC. A maintenance work request (MWR), D19199, was initiated to investigate and repair the cause of the RCIC isolation.

On December 21, 1989, Control and Instrumentation (C&I) technicians began investigating the isolation in accordance with MWR D19199. The investigation determined that the isolation was caused by the sensitivity of steam line flow transmitter [FT] 1E31-N084A to minor changes in sensing line pressure.

On December 22, 1989, C&I technicians replaced the amplifier [AMP] and calibration cards in transmitter 1E31-N084A in accordance with Field Alteration C-F031 and Field Engineering Change Notice (FECN) 24557. The new cards have an adjustable inherent time delay which reduces the sensitivity of the transmitter. At 2235 hours, on December 24, 1989, implementation of Field Alteration C-F031 was completed for 1E31-N084A, and RCIC was declared operable.

No automatic or manually initiated safety system responses were necessary to place the plant in a safe and stable condition. No equipment or components were inoperable at the start of this event such that their inoperable condition contributed to this event.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Clinton Power Station	0 5 0 0 0 4 6 1	8 9	— 0 4 2	— 0 0	0 3 OF 0 3

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

CAUSE OF EVENT

The cause of this event is attributed to the sensor system design. The system's sensitivity to minor changes in sensing line pressure resulted in the false RCIC Division I steam line differential pressure high signal.

CORRECTIVE ACTION

The sensitivity of transmitter 1E31-N084A was reduced by implementing Field Alteration C-F031 for that transmitter.

This Field Alteration allows for the installation of the adjustable time delay feature on other transmitters which exhibit sensitivity to minor changes in sensing line pressure. This Field Alteration will be installed as the affected systems become available for work.

ANALYSIS OF EVENT

Assessment of the safety consequences and implications of this event indicates that this event was not nuclear safety significant. The RCIC system isolated as designed, in response to the RCIC Division I steam line differential pressure high signal. The High Pressure Core Spray (HPCS) system [BG], the alternate means of providing reactor core cooling under high reactor pressure vessel pressure conditions, was available at the time of this event.

This event is reportable under the provisions of 10CFR50.73(a)(2)(iv) because of an automatic isolation of the RCIC system. RCIC was isolated and inoperable from 1555 hours on December 19, 1989 until 2235 hours on December 24, 1989.

ADDITIONAL INFORMATION

The flow transmitter discussed in this LER is a model number 1153DB5PC manufactured by Rosemount, Incorporated.

LER 88-022-01 discusses an HPCS initiation caused by an oversensitive reactor pressure vessel water level transmitter resulting from the sensor system design.

LER 87-052-00 discusses an RCIC isolation caused by personnel error while investigating erratic readings on the Division II RCIC steam flow indication.

For further information regarding this event, contact R. D. Freeman, Manager - Nuclear Station Engineering Department at (217) 935-8881, extension 3538.