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Dresden Nuclear Power Station
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February 8, 1994

GFS LTR: 94-0050

U. S. Nuclear Regulatory Commission
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Licensee Event Report 93-01-01, Docket 050249 is being submitted to provide an update concerning corrective action to prevent recurrence.

2-9-94

Gary F. Spedl
Station Manager
Dresden Station

GFS/ND/maf

Enclosure

cc: J. Martin, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

180097

IE22
1/1

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Dresden Nuclear Power Station, Unit 3	0 5 0 0 0 2 4 9	1 of 0 5

Title (4)

Emergency Core Cooling Level Indicating Switch Out of Calibration Due to Instrument Drift

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 1	1 3	9 3	9 3	--- 0 0 1	--- 0 1	0 2	0 9	9 3	N/A	
									N/A	

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIRMENTS OF 10CFR (Check one or more of the following) (11)									
POWER LEVEL (10)	1 0 0		20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)		
			20.405(a)(1)(i)		50.36(c)(1)	X	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)		
			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)				

LICENSE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
Nicos P. Digrindakis, Technical Staff Engineer Ext.3584	8 1 5 9 4 2 - 2 9 2 0

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	L I S	Y 0 1 0	Y					

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 January 13, 1993 at 0110 hours with Unit 3 at 100 percent rated core thermal power, while performing Dresden Instrument Surveillance (DIS) 500-3, Reactor Low Low Water Level Emergency Core Cooling System (ECCS) Initiation Indicating Switch Calibration and Functional Test the Instrument Maintenance Department (IMD) found Level Indicating Switch (LIS) 3-263-72A outside the required Technical Specification range. Contacts [5-6] were found to trip at 114.9 inches of water dP which corresponds to 83.1 inches above the top of active fuel. Contacts [7-8] were also found to trip at 114.9 inches of water dP which corresponds to 83.1 inches above the top of active fuel. At 0200 hours January 13, 1993 (50 minutes following the testing of LIS 3-263-72A) the IMD found LIS 3-263-72B outside the required Tech. Spec. range. Contacts [5-6] were found to trip at 114.8 inches of water dP which corresponds to 83.3 inches above the top of active fuel. Both switches were immediately recalibrated to within acceptable range. An ENS phone call was made at 0922 hours January 13, 1993. The root cause to these switches failing to actuate at the ideal tolerances specified has been attributed to instrument drift. Unit 3 Low Pressure Coolant Injection (LPCI) would not have initiated at $\leq$-59 inches reactor level as required by Technical Specifications but would have initiated at -59.9 inches reactor level. Since the LPCI initiation would have occurred at a reactor level 0.9 inches less than the level required by Technical Specifications the safety significance of this event is minimal. Failure to make the ENS phone call within the required time period has been attributed to management deficiency.

PLANT AND SYSTEM IDENTIFICATION:

General Electric-Boiling Water Reactor-2527 MWt rated core thermal power.

Nuclear Tracking System (NTS) tracking code numbers are identified in the text as (XXX-XXX-XX-XXXXX)

EVENT IDENTIFICATION:

Emergency Core Cooling Level Indicating Switch Out of Calibration Due to Instrument Drift

A. CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: 01/13/93 Event Time: 01100

Reactor Mode: N Mode Name: Run Power Level: 100%

Reactor Coolant System (RCS) Pressure: 1007 psig

B. DESCRIPTION OF EVENT:

On January 13, 1993 at 0110 hours with Unit 3 at 100 percent rated core thermal power, while performing Dresden Instrument Surveillance (DIS) 500-3, Reactor Low Low Water Level Emergency Core Cooling System (ECCS) Initiation Indicating Switch Calibration and Functional Test the Instrument Maintenance Department (IMD) found Level Indicating Switch (LIS) 3-263-72A outside the required Technical Specification range. Technical Specification Tables 3.2.1 and 3.2.2 require the switch to trip at 84 (+4/-0) inches above the top of active fuel, which approximately corresponds to a range of 114.5 to 111.7 inches of water differential pressure (dP). Contacts [5-6] were found to trip at 114.9 inches of water dP which corresponds to 83.1 inches above the top of active fuel. Contacts [7-8] were also found to trip at 114.9 inches of water dP which corresponds to 83.1 inches above the top of active fuel. The switch was recalibrated to within Technical Specifications and cycled several times to check for repeatability. The as-left setpoint was 112.4 inches of water dP. At this time, a Problem Investigation Form (PIF) was initiated and forwarded to the Shift Supervisor as well as notification by telephone to the Shift Control Room Engineer (SCRE). At 0200 hours January 13, 1993 (50 minutes following the testing of LIS 3-263-72A), the Instrument Maintenance Department found LIS 3-263-72B outside the required Technical Specification range. Contacts [5-6] were found to trip at 114.8 inches of water dP which corresponds to 83.3 inches above the top of active fuel. The switch was recalibrated to within Technical Specifications and cycled several times to check for repeatability. The as-left setpoint was 112.4 inches of water dP. Following this discovery, the SCRE was notified by telephone that contacts [5-6] of LIS 3-263-72B were found out of calibration but a Problem Identification Form (PIF) was not forwarded to the shift until 0830 hours on January 13, 1993 (six hours and thirty minutes after the discovery at 0200 hours). Upon receiving this PIF, the Shift Engineer recognized that this event, combined with the earlier event, would result in Unit 3 Low Pressure Coolant Injection (LPCI) not initiating at $\leq$-59 inches reactor level as required by Technical Specifications. An ENS phone call was made at 0922 hours January 13, 1993.

C. APPARENT CAUSE OF EVENT:

This report is submitted in accordance with 10 CFR 50.73 (a)(2)(v) which requires the reporting of any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

The Instrument Maintenance Department inspection of LIS 3-2663-72A and LIS 3-263-72B revealed no abnormalities. The root cause to these switches failing to actuate at the ideal tolerances specified has been attributed to instrument drift.

The cause of the failure to make the ENS phone call within the four hour period following the discovery of the degraded condition is due to management deficiency. As a result of a similar occurrence involving instrument drift of Yarway level indicating switches, Dresden Operating Department Technical Specification Interpretation (T.S.I.) number 17 was written. This T.S.I. was written to provide Operations Department Personnel with a swift and accurate method of determining availability of the Emergency Core Cooling Systems and reportability requirements when certain initiating level switch contact pairs are found non-conservatively set. This T.S.I. was approved on December 18, 1992, but there was no formal training on this T.S.I. nor was there any notification to shift personnel of its existence. A PIF was written on January 22, 1993, stating that there is no procedural guidance to ensure that appropriate personnel are notified of new T.S.I.'s nor is there procedural guidance for Operations personnel to ensure that the requirements of T.S.I. 17 are performed. Another contributing factor was the length of time it took the second Problem Identification Form to reach the Operations Department.

D. SAFETY ANALYSIS OF EVENT:

The reactor low low water level logic consists of four level switches, LIS 3-263-72A, 72B, 72C, and 72D, that are designed to initiate the Emergency Core Cooling Systems upon sensing reactor vessel low low water level. LIS 3-263-72A and 72B also have logic that is designed to trip the High Pressure Coolant Injection (HPCI) turbine on reactor vessel high water level. LIS 3-263-72A provides the following initiation or trip signals as listed below:

Contacts [3-4] - HPCI turbine trip.

Contacts [5-6] - LPCI subsystem I initiation and HPCI initiation.

Contacts [7-8] - Corespray subsystem I initiation and input to Auto Blowdown logic.

LIS 3-263-72B provides the following initiation or trip signals as listed below:

Contacts [3-4] - HPCI turbine trip.

Contacts [5-6] - LPCI subsystem 2 initiation and HPCI initiation.

Contacts [7-8] - Corespray subsystem 2 initiation and input to Auto Blowdown logic.

For the ECCS logic initiation signals, Technical Specification Tables 3.2.1. and 3.2.2. require that the number of operable instrument channels per trip system be a minimum of two and the trip level setting be 84 (+4/-0) inches above the top of active fuel. The reactor vessel low low water level initiation switches are arranged in one out of two twice logic, and as long as one switch in each leg of the circuit is functional, the circuit will still perform as designed. However, during this event two contacts within the same leg of the one out of two twice logic circuitry were out of calibration in the non-conservative direction. Unit 3 Low Pressure Coolant Injection (LPCI) would not have initiated at $\leq$-59 inches reactor level as required by Technical Specifications but would have initiated at -59.9 inches reactor level. Since the LPCI initiation would have occurred at a reactor level 0.9 inches less than the level required by Technical Specifications the safety significance of this event is minimal.

E. CORRECTIVE ACTIONS:

The immediate corrective action readjusted and tested LIS 3-263-72a per DIS 0500-03.

The switches for the Unit 3 -59 inch initiation logic 3-263-72A,3-263-72B, 3-263-72C and 3-263-72D will not be replaced as previously committed in PIR 3-92-116 as a result of the apparent failure increase on the Unit 2 LIS that were replaced during D2R13.

Due to the chronic failures of Yarway switches an action plan to address the setpoint drifts will be developed by 2/28/94 by the System Engineer (237-180-93-03101).

The Site Engineering Department will determine if it is feasible to replace the Yarway switches with a Rosemount Analog Trip System by 7/1/94 (237-180-93-03102).

A Technical Specification change has been submitted to change the required setpoint from 84 (+4/-0) inches of water dp to $\geq$84 inches of water dp (237-200-89-02203).

A review of procedure DIS 0500-03 will be performed to determine if the as found procedure steps can be enhanced by 9/1/94 (237-180-93-03103).

A supplemental report to Unit Two LER 93-031-00 will be written by 12/1/94, providing status on the actions taken to date and results of a root cause investigation (237-180-93-03104).

A PIF was written on January 22, 1993,stating that there is no procedural guidance to ensure that appropriate personnel are notified of new T.S.I.'s nor is there procedural guidance for Operations personnel to ensure that the requirements of T.S.I. 17 are performed. Corrective actions to address this will be followed by NTS# 237-201-93-04900 and the results will be discussed in a supplement to this LER to be submitted by June 30, 1993. Additionally, in the interim the Instrument Maintenance Department will hold a Supervisors' counseling session which will cover the information surrounding this event as well as the importance of forwarding PIF's to the Operations Department in a timely manner and the proper way to notify the Operations Department of the discovery of non-conservative level switch contacts and how to assist in evaluating the logic diagrams. This training will be completed by March 8, 1993 (NTS# 2491809300102).

Department in a timely manner and the proper way to notify the Operations Department of the discovery of non-conservative level switch contacts and how to assist in evaluating the logic diagrams. This training will be completed by March 8, 1993 (NTS# 2491809300102).

F. PREVIOUS OCCURRENCES:

Five previous events are listed below:

LER/Docket Numbers	Title
12-3-92-46	Emergency Core Cooling Level Indicating Switch Out of Calibration Due to Instrument Drift
12-2-92-73	Emergency Core Cooling Level Indicating Switch Out of Calibration Due to Instrument Drift
12-3-92-86	Emergency Core Cooling Level Indicating Switch Out of Calibration Due to Instrument Drift
12-2-92-97	Emergency Core Cooling Level Indicating Switch Out of Calibration Due to Instrument Drift
12-2-92-103	Emergency Core Cooling Level Indicating Switch Out of Calibration Due to Instrument Drift

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Yarway Co.	Level Indicating Switch	4418C	N/A

An industry wide NPRDS data base search revealed 129 failures of this type of switch due to instrument drift or instrument failure.