Commonwealth Edison
Dresden Nuclear Power Station
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April 6, 1994

GFSLTR 94-0108

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

Licensee Event Report 94-007, Docket 50-249 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10CFR50.73(a)(2)(vii).

Sincerely,

Gary F. Spedl
Station Manager
Dresden Station

GFS/JNK:cfq

Enclosure

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

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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Dresden 3	05000249	1 OF 5

TITLE (4)
Yarway Reactor Water Level Switch Failure

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 NAME	DOCKET NUMBER
									None	
03	16	94	94	-- 007 --	00	04	11	94	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	000

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.402(b)		20.405(c)		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)	X	50.73(a)(2)(vii)		OTHER
	20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
	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 (Include Area Code)
John N. Kish, System Engineer Ext. 2360	(815) 942-2920

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 15 single-spaced typewritten lines) (16)

On March 16, 1994 at 0845 hours, with Unit 3 at 0 % rated core thermal power, while performing Dresden Instrument Surveillance (DIS) 0500-03, Reactor Water Level ECCS Initiation Indicating switch calibration , level switch 3-263-72A contact 5-6 tripped outside of the Technical Specification (TS) limits. Level Indicating Switch (LIS) 3-263-72A is part of the High Pressure Coolant Injection (HPCI) and Low Pressure Coolant Injection (LPCI) Loop 1, -59" RWL initiation one out of two/twice logic. The TS limit is 114.5" water column (WC), however, the switch was actuated closed at 114.7" WC. The switch was exercised and returned to within tolerance. No adjustments or corrective maintenance was required. The necessary redundant switches were available during the event allowing both systems to remain operable. Previous events involving the failure of similar Yarway configurations are documented in "Operability Assessment" of February 17,1994 (Chron 0124505) written in response to LER 93-031/050237.

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: 12/22/94 Event Time: 0845 hrs.

Reactor Mode: N Mode Name: Refuel Power Level: 0%

Reactor Coolant System Pressure: 0 psig

B. DESCRIPTION OF EVENT:

On March 16, 1994 at 0845 hours, with Unit 3 at 0 % rated core thermal power, while performing Dresden Instrument Surveillance (DIS) 0500-03, Reactor Water Level ECCS Initiation Indicating switch calibration , level switch 3-263-72A contact 5-6 tripped outside of the Technical Specification (TS) limits. Level Indicating Switch (LIS) 3-263-72A is part of the High Pressure Coolant Injection (HPCI) and Low Pressure Coolant Injection (LPCI) Loop 1, -59" RWL initiation one out of two /twice logic. The TS limit is 114.5" water column (WC), however, the switch was actuated closed at 114.7" WC (or 0.28" RWL low). The switch was exercised where upon it returned to within tolerance. No adjustments or corrective maintenance was required. The necessary redundant switches were available during the event allowing both systems to remain operable.

C. CAUSE OF EVENT:

This report is being submitted in accordance with 10CFR50.73(a)(2)(vii) which requires the reporting of any event or condition that caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to mitigate the consequences of an accident. It has been determined that this failure is one point of an unfavorable trend history that has developed during the two years since January 1992. A thorough review of the past two years of Yarway performance has been performed. Unit 3 Yarway contacts have been found at or "out of tolerance" 44 times out of a possible 280 calibrations. This particular instrument contacts were found "out of tolerance" twice during 1993. The continued "out of tolerance" events of Yarway setpoints has received heightened station attention. This current event has been found to increase the instruments failure rate by 0.3%. This increase is considered minimal.

The Yarway instruments have been found to have setpoint "drifts" that exceed both the Technical Specification and DIS 0500-03 limits. The Technical Specification restricts the setpoint to be within a tolerance of +4, -0" RWL, which is 3.33% of Full Scale. The calibration procedure dictates a setpoint tolerance of 2.82" RWL, which is 2.37% of Full Scale. The combined manufacturer's accuracy for the Yarway is identified as 5.19% of Full Scale or ± 3.11" RWL. Probable causal factors have been attributed to Mercoid switch aging (spring force degradation), mounting of the Mercoid switch, alignment of switch to actuating magnets, and/or defective jewelled bearings. However, the average "drifts" experienced during the past two years have been within the statistical 2σ failure values (± 6.42" RWL) documented in calculation NED-I-EIC-0100 revision 2.

D. SAFETY ANALYSIS:

The safety significance of this event is minimal. The failure (out of tolerance) occurred in the non-conservative direction, thereby supplying an actuation permissive later than the reactor water lower level than 84" top of active fuel. However, this would have been actually at 83.72" TAF, and, the necessary redundant switches were still available.

A review of the safety significance of non-conservative drifts were performed as part of the "Operability Assessment" of February 17, 1994 (Chron 0124505). A bounding PRA analysis, assuming one complete logic system failure with a duration of 10 days during the two year period resulted in a change to core damage frequency of only 1%. The worst cased switch failure identified during the past two years would not have been considered a failure with respect to Dresden specific PRA.

E. CORRECTIVE ACTIONS:

As documented in the "Operability Assessment" of February 17, 1994, the station has committed to numerous actions to improve the Yarway operability and subsequent replacement. The following NTS items (partial listing) identify pertinent actions to be taken by the station to eliminate the continued performance deficiencies with the Yarway instruments:

Proposed "Corrective Actions" have been documented in the LER and Operability Assessment referenced above and are being tracked by NTS as the following items:

237-200-91-11901 Provide construction schedule for Yarway replacement. (action completed, Yarways are committed to be replaced during D2R14 and D3R14)

237-180-93-03101 Develop action plan for the chronic failures of Yarways switches, (action in progress, Yarway Administrative Action Plan "Draft" submitted for review)

237-180-93-03102 Provide feasibility assessment for Yarway replacement (action completed,Yarways are committed to be replaced during D2R14 and D3R14)

237-180-93-03103 Evaluate and provide appropriate revision to DIS 0500-03 (action in progress, Yarway Administrative Action Plan "Draft" submitted for review).

237-200-93-03104 Provide supplement to LER 2-93-031 that identifies root causes and corrective actions (action in progress, Yarway Administrative Action Plan "Draft" submitted for review).

237-201-94-30600 Provide Yarway operability assessment due to a high degree of drift (action completed February 17, 1994 Chron 0124505).

249-180-94-00301 Perform QE 40.1 Operability assessment for Yarways in response to LER 3-94-003 corrective action (action completed February 17, 1994 Chron 0124505).

237-225-94-R12-94018A Develop drift optimization actions and incorporate in DIS 0500-03 (action in progress).

237-225-94-R12-94018B Trend as-found calibration data per Dresden Yarway Administrative Action Plan and perform corrective actions as identified in the plan (actions on going until replacement).

237-225-94-R12-94018C Obtain setpoint tolerance Technical Specification change approval from NRC (expected delivery of Technical Specification amendment week of April 4, 1994).

249-225-94-R12-94018D Implement setpoint change on Unit 3 Yarways and revise Administrative Action Plan (action during D3R13).

237-225-94-R12-94018E Implement setpoint change on Unit 2 Yarways (action in progress, waiting for TS amendment).

237-225-94-R12-94019A Develop characterization program for Yarways. Perform characterization and input to the Administrative Action Plan (action in progress).

237-225-94-R12-94019B Develop Yarway Administrative Action Plan with the objective of achieving Yarway contact failure rates of 1x10E-5 per operating hour or better (action in progress, Yarway Administrative Action Plan "Draft" submitted for review).

249-225-94-R12-94019C Develop and implement inspection plan and preventative maintenance program for the Unit 3 Yarways during D3R13 (action in progress).

237-225-94-R12-94019D Update 3/29/93 NFS assessment for non-conservative instrument setpoint drift to support the Administrative Action Plan.

237-225-94-R12-94019E Evaluate the feasibility of installing switch contact arc suppressor (action completed).

237-225-94-R12-94019F Implement the requirements of the Inspection Plan on Unit 2 switches (actions ongoing).

237-225-94-R12-94019G Inspect and correct condition of Unit 2 Level indicating switch 2-263-72C during the next surveillance (actions ongoing).

237-225-94-R12-94019H Review available 1994 Surveillance data for additional information to potentially add further follow-up actions (action completed).

237-225-94-R12-94019I Communicate the need for the Operating Department to maintain a heightened awareness regarding the excessive

non-conservative drift and failure history (action completed).

F. PREVIOUS OCCURRENCES:

Numerous occurrences of similar events have been documented. A detailed calibration history is contained in the "Operability Assessment" of February 17, 1994, which provides a chronology of all calibration during the past two years with indication of as-found and as-left setpoints. A partial listing of "out of tolerances" and switch failures is as follows:

UNIT 2	LER 2-93-031-00	CDE 2-201-93-M337
	CDE 2-201-93-M175	CDE 2-201-93-M62
	LER 2-93-019	CDE 2-202-93-046
	CDE 2-201-93-827	CDE 2-201-93-803
	CDE 2-202-93-039	CDE 2-202-93-023
	DVR 12-2-92-103	DVR 12-2-92-97
	DVR 12-2-92-73	DVR 12-2-91-234
	DVR 12-2-91-202	DVR 12-2-91-176
	DVR 12-2-91-139	DVR 12-2-91-119
	DVR 12-2-91-103	DVR 12-2-91-83
	DVR 12-2-91-62	DVR 12-2-91-34
	DVR 12-2-91-19	DVR 12-2-90-119
	DVR 12-2-90-100	DVR 12-2-90-46
	DVR 12-2-90-35	DVR 12-2-89-102
	DVR 12-2-89-76	DVR 12-2-88-123
	DVR 12-2-88-114	DVR 12-2-88-91
UNIT 3	LER 3-94-002-00	CDE 3-202-93-018
	LER 3-93-018	CDE 3-202-93-015
	CDE 3-202-93-013	CDE 3-202-93-07
	LER 3-93-001	CDE 12-3-92-186
	CDE 12-3-92-164	PIR 3-92-116
	DVR 12-3-92-98	DVR 12-3-92-87
	DVR 12-3-92-86	DVR 12-3-92-80
	DVR 12-3-92-46	DVR 12-3-91-88
	DVR 12-3-86-64	DVR 12-3-86-55
	DVR 12-3-86-54	DVR 12-3-86-46

G. C31OMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Yarway	Level Switch	4418C	DS551