Commonwealth Edison
Dresden Nuclear Power Station
R.R. #1
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January 5, 1993

CWS LTR #92-01a

U.S. Nuclear Regulatory Commission
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Licensee Event Report 92-43 , Docket 050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73 (a) (d) (vii).

L. F. Gerner for 1/6/93
Charles W. Schroeder
Station Manager
Dresden Nuclear Power Station

CWS/

Enclosure

cc: A. Bert Davis, Regional Administrator, Region III
NRC Resident Inspector's Office
File/NRC
File/Numerical

110085

ZDVR/809

IE22 1/1

LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)	Docket Number (2)	Page (3)
Dresden Nuclear Power Station, Unit 2	0 5 0 0 0 2 3 7	1 of 0 4

Title (4) Average Power Range Monitors (APRM) 1 and 2 Exceeded SCRAM Setdown Trip Setting Technical Specification Limit Due to Changed Calibration Methodology

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
1 2	1 2	9 2	9 2	0 4 3	0 0	0 1	0 4	9 2		0 5 0 0 0

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

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER AREA CODE
George J. Piccard, Technical Staff System Engineer Ext. 2377	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	I G		G 0 8 0	No					

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 12, 1992, while performing DIS 700-5, APRM Setdown Calibration, APRMs 1 and 2 were found to exceed the upscale high-high scram setdown trip setting Technical Specification limit of 15/125 of scale. Technical Specifications section 2.1.A.2 requires two operable channels per Reactor Protection System (RPS) trip system. Since both APRM 1 and APRM 2 may have been non-conservative and both feed the RPS "A" trip channel, RPS "A" may have been degraded. The APRMs on Unit 2 were immediately calibrated to within specification limits. The safety significance of this event is minimal because RPS "A" trip channel would have performed its safety function at slightly greater than required (15.1 percent). Also, none of the transient and accident analyses take credit for a 15 percent power scram. The root cause of the settings being out of tolerance was attributed to a change in the calibration procedure. The new procedure used a more sensitive calibration technique. There are no previous occurences of a similar events.

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:

Average Power Range Monitors (APRM) [IG] 1 and 2 exceeded scram setdown trip setting Technical Specification limits.

A. CONDITIONS PRIOR TO EVENT:

Unit: 2 Event Date: December 12, 1992 Event Time: 1305 hours

Reactor Mode: (N) Mode Name: Shutdown Power Level: 0%

Reactor Coolant System (RCS) Pressure: 0 psig.

B. DESCRIPTION OF EVENT:

On December 11, 1992, with Unit 2 in the shutdown mode, Dresden Operating Surveillance (DOS) 500-3, APRM Rod Block and Scram Functional Test, was being performed in preparation for Unit 2 startup following a forced outage. The functional test found all six Average Power Range Monitors (APRM) to be within the limits specified in Technical Specification Table 3.2.3, Instrumentation that Initiates Rod Blocks, and Section 2.1.A.2, APRM Flux Scram Trip Setting (Refuel or Startup and Hot Standby Mode). Although the APRM settings passed the functional test, it was determined that the Upscale High Rod Block Setdown Trip and the Upscale High High Scram Setdown Trip settings for APRM channel 6 were not within station calibration acceptance criteria, per Dresden Instrument Surveillance (DIS) 700-5, APRM Setdown Calibration. DIS 700-5 requires APRMs to be calibrated to within 11.0/125 of full scale to 11.5/125 for the rod block setpoint and 14.0/125 to 14.5/125 for the scram setting. APRM 6 was found at 11.7/125 and 14.7/125 for the rod block and scram settings, respectively. The Instrument Maintenance Department (IMD) was requested to perform a calibration of all the APRMs on Unit 2.

On December 12, 1992, at 1305 hours, while performing DIS 700-5, APRM 2 was found to exceed the upscale high-high scram setdown trip setting limit of Technical Specification Section 2.1.A.2. The APRM 2 scram setdown trip setting was found at 15.19/125 (1.215 Vdc). The Technical Specifications require the scram setdown trip setting to be $\leq$ 15/125 (1.200 Vdc). APRM 2 was calibrated to within specification to 14.29/125 (1.143 Vdc) by 1325 hours.

At 1340 hours, APRM 1 was found to exceed the upscale high-high scram setdown trip setting limit of Technical Specification Section 2.1.A.2. The APRM 1 scram setdown trip setting was found at 15.19/125 (1.215Vdc). APRM 1 was calibrated to within specifications to 14.24/125 (1.139 Vdc) by 1350 hours.

APRMs 1, 2, and 3 are part of Reactor Protection System "A" trip system. Technical Specification 3.1.A.1, Table 3.1.1, Reactor Protection System (SCRAM) Instrumentation Requirements, requires two operable channels per trip system. Consequently, it is possible both APRM 1 and APRM 2 were non-conservative while in service.

All other APRM setdown settings on Unit 2 were within Technical Specification limits.

An ENS Notification was made to the Nuclear Regulatory Commission (NRC) by the Station Control Room Engineer (SCRE) at 1544 EST.

C. APPARENT CAUSE OF EVENT:

The APRM scram setdown settings were found to exceed Technical Specification limits as a result of a new calibration procedure. As part of the station procedure upgrade program, DIS 700-5 was upgraded to improve the sensitivity of the calibration process. DIS 700-5 is used to calibrate the downscale rod block trip, the upscale rod block setdown trip, and the upscale scram setdown trip settings. Previous revisions of DIS 700-5 required the Instrument Maintenance Department to adjust the power test potentiometer until the appropriate alarm activated, then read the setting from the APRM meter. When a setting was calibrated, the setpoint was also read directly from the meter. Reading the meter has an uncertainty of approximately 1/125 of full scale. While this error is small, it is greater than the difference between the upper limit of the calibration acceptance criteria and the Technical Specification limit (0.5/125). More importantly, the uncertainty is greater than the amount the settings were found above the Technical Specification limit, (i.e. approximately 0.2/125).

The new calibration method, DIS 700-5 Revision 6, utilizes a digital multimeter connected to the APRM meter test jack to read the APRM settings. A multimeter reading of 1.200 Vdc equals 15/125 of full scale. The uncertainty in reading the multimeter is approximately 0.001 VDC or 0.01/125 of full scale.

Had the calibrations performed on December 12, 1992, been performed using the old method, it is likely the setpoints would have been found inside acceptable limits. The functional test, DOS 500-3, performed on December 11, 1992, used a method similar to the old calibration procedure to read the settings and found all APRM settings within limits. APRM 1 and APRM 2 scram setdown settings were found at 14.5/125 and 14.2/125, respectively. These values correspond with the previous Unit 2 APRM calibrations performed on September 24, 1990, which employed the old calibration method. APRM 1 and APRM 2 scram setdown settings were left at 14.5/125 and 14.0/125, respectively. Therefore, it is believed Unit 2 APRM 1 and APRM 2 were found out of tolerance due to the increased sensitivity of the calibration method, not instrument drifting.

D. SAFETY ANALYSIS OF EVENT:

The safety significance of this event was minimal. Technical Specification Table 3.1.1, Reactor Protection System (SCRAM) Instrumentation Requirements, require 2 operable APRMs per trip system. Since APRM 1 and APRM 2 were outside of the Technical Specification limit, Reactor Protection System (RPS) "A" trip system was degraded. However, both APRM 1 and APRM 2 would have provided RPS "A" trip channel with the proper trip signal at a power level only slightly greater than acceptable. Also, the scram setdown trip setting of APRM 3, which provides input to RPS "A" trip channel, was found within tolerance at 14.95/125 (1.196 Vdc). Hence, it is highly probable RPS "A" trip channel would have received a trip signal at or near the required 15% power.

Furthermore, only the APRM setdown trip settings were out of tolerance and not the flow bias settings nor the 120 percent power clamps. None of the transient or accident analysis performed for Dresden take credit for a 15 percent power scram.

E. CORRECTIVE ACTIONS:

In each case in which a setpoint was found out of tolerance, the APRM was left in the bypassed condition until the setpoint was returned to an acceptable value and the instrument calibration completed. All APRMs on Unit 2 were calibrated, using the new procedure, to within station acceptance criteria. Although the event took place on Unit 2, the decision was made to calibrate the Unit 3 APRMs immediately instead of waiting for the next scheduled calibration. The calibration was performed on December 13, 1992. Only APRM channel 5 was found above the Technical Specification limit at 15.03/125 (1.202 Vdc). The instrument was calibrated to within acceptance criteria.

Because the voltage gives a more accurate indication of the APRM trip settings, the new calibration procedure is an improvement. All future calibrations will be performed with the new procedure.

F. PREVIOUS EVENTS:

DVR NUMBER (non-reportable)	TITLE
DVR 12-2-87-99	Failure of Average Power Range Monitor Channels 4 During Surveillance Due to Rod Block/Scram Setpoint Drift. The APRM channel 4 scram setdown trip setting was found above Technical Specification limit during a routine surveillance. The setpoint was returned to normal.
DVR 12-2-85-57	APRM Trip Setpoint Greater than Technical Specification Limit. The APRM channel 1 scram setdown trip setting was found above Technical Specification limit during a routine surveillance due to a faulty power poteniometer. The poteniometer was replaced and the APRM calibrated to within limits.

G. COMPONENT FAILURE DATA:

There were no component failures involved with this event. Therefore, this section is not applicable.