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Dresden Generating Station
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ComEd

March 2, 1995

TPJLTR 95-0027

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

Licensee Event Report 95-004, Docket 50-237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10CFR50.73(a)(1), 10CFR50.73(a)(2)(ii).

Sincerely,

Thomas P. Joyce
Site Vice President

TPJ/TL:bk

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 Nuclear Power Station, Unit 2	05000237	1 OF 4

TITLE (4)
102 Percent Rated Thermal Power Potentially Exceeded Due to Spurious Reactor Recirculation Pumps Speed Run-Up

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
02	07	95	95	-- 004 --	00	02	28	95	None	
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	097

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

	20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(iii)		73.71(b)
	20.2203(a)(1)		20.2203(a)(3)(ii)		50.73(a)(2)(iv)		73.71(c)
	20.2203(a)(2)(i)		20.2203(a)(4)		50.73(a)(2)(v)	X	OTHER
	20.2203(a)(2)(ii)		50.36(c)(1)		50.73(a)(2)(vii)		(Specify in Abstract below and in Text, NRC Form 366A)
	20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(viii)(A)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)		50.73(a)(2)(viii)(B)		
	20.2203(a)(2)(v)	X	50.73(a)(2)(ii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Thomas I. Leffler, System Engineer Ext. 2349	(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
X	AD	SC	B045	YES						

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 February 7, 1995, at approximately 2011 hours, Dresden Unit 2 adjusted power to 97 percent. After 15 minutes of steady state operation, both Reactor Recirculation pumps' speed increased, bringing power to 100.6 percent. The operator promptly returned power to 97 percent. At that time, Dresden Unit 2 was derated to 97 percent power due to possible instrument inaccuracies. Considering worst case instrumentation inaccuracies, it is possible that this event may have exceeded the 102 percent maximum power Operating License Condition. No operator error or procedural violations occurred. A dirty Master Speed Controller potentiometer was determined to have caused the event. An improved design potentiometer will be installed in the Master Level Controller and in all similar applications in Reactor Recirculation control circuitry on Dresden Units 2 and 3. In the interim, preventative maintenance will be performed on the affected lays at an increased frequency. Engineering is evaluating improvements other utilities have made to their control circuitry for possible incorporation at the Dresden Station. On November 26, 1991, a similar event occurred on Dresden Unit 2. The potentiometer which caused the event was eliminated from the circuit.

EVENT IDENTIFICATION:

102 Percent Thermal Power Potentially Exceeded Due To Spurious Reactor Recirculation [AD] Pumps Speed Run-Up

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 2 Event Date: February 7, 1995 Event Time: 2026 Hours

Reactor Mode: N Mode Name: N Power Level: 97 Percent

Reactor Coolant System Pressure: 995 psig

B. DESCRIPTION OF EVENT:

On February 7, 1995 at approximately 2011 hours, Dresden Unit 2 adjusted power to 97 percent of Rated Thermal Power (RTP). After power had been steady for about 15 minutes, both Reactor Recirculation pumps increased speed which increased total reactor core flow and peaked reactor power to 100.6 percent RTP. The Nuclear Station Operator (NSO) took control of the Reactor Recirculation system in accordance with Dresden Operating Procedure, (DOP) 0202-03, Reactor Recirculation Flow Control System Operation, and returned power to 97 percent RTP. The operator entered Dresden General Abnormal (DGA) Procedure, DGA-07, Unpredicted Reactivity Addition and verified Off-Gas Monitors and Stack Gas Monitors showed no Failed Fuel indications.

During the event, Dresden Unit 2 was derated to 97 percent RTP due to possible Feedwater Flow instrument inaccuracies. Considering worst case instrumentation inaccuracies, it is possible that this event may have exceeded Operating License Condition 2.C.(1). Operating Condition 2.C.(1) states that steady state reactor core power levels are not to exceed 2527 MWth (100 percent RTP). This license condition is further defined by an NRC memorandum dated August 22, 1990, which states eight hour average power at maximum may equal 100 percent RTP, but in no case should RTP exceed 102 percent. Considering worst case Feedwater Flow instrument inaccuracies, power could have reached 103.7 percent RTP.

The Unit 2 Supervisor was notified of the event. Operations consulted the Nuclear Engineering Staff regarding the impact of the event on thermal limits and a verification of maximum thermal power measurements during the event. After an extensive evaluation by the Nuclear Engineering staff, an ENS phone notification was made at 1505 Eastern Standard Time on February 8, 1995. This notification is considered a conservative action based on the possibility that under worst case Feedwater Flow instrument inaccuracies, power could have exceeded 102 percent RTP.

C. CAUSE OF EVENT:

This Licensing Event Report is submitted in accordance with 10CFR50.73(a)(1) and 10CFR50.73(a)(2)(ii) which require a follow-up report with-in 30 days following a License Condition being exceeded.

A dirty Master Speed Controller potentiometer was determined to have caused the event. The potentiometer is designed such that airborne debris can accumulate on

the charged contact surface of the potentiometer. The debris introduces a resistance to the control circuit which causes over adjustments of the Master Speed Controller. When the debris disintegrates under the influence of the circuit current flow, the Master Speed Controller circuit resistance drops and the output increases. To further compound this negative feature of the component, the electrical throw from 0 percent to 100 percent output is 270 degrees of one turn. Therefore, small electrical adjustments can produce large output changes.

A similar controller in this circuitry caused an event, on November 26, 1991. Dresden Station completed a redesign which eliminated all potentiometers in the circuitry which could be eliminated while maintaining the original operational function of the controllers. Sixteen potentiometers were eliminated from this control circuitry on Dresden Units 2 and 3. The remaining potentiometers were placed on a once per Refueling Outage Preventative Maintenance Schedule. That preventative maintenance solution appears to have been insufficient, based on this event.

D. SAFETY ANALYSIS:

The safety significance of the power increase due to the Recirculation Pump run-up was minimal. The Dresden Nuclear Engineering Staff performed a Special Controlled Analysis. This analysis determined the heat balance during the event using corrected chart recorder indications of heat balance parameters. The maximum that core thermal power could have reached was 2541 MWth which is 103.7 percent of the Dresden Administrative Limit. Based on the Special Controlled Analysis and the margin to fuel thermal limits prior to the event, the core thermal power increase seen during the event did not challenge reactor fuel design limitations.

E. CORRECTIVE ACTIONS:

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

1. The operator immediately took individual speed control in accordance with DOP 0202-03 and returned reactor power to the administrative limit of 97 percent.

2. Systems Engineering instituted preventative maintenance for the affected potentiometers at an increased frequency (once per 31 days) under repetitive Nuclear Work Requests, D29589 and D29595.

3. Dresden will install an improved design potentiometer in Unit 2 and 3 Reactor Recirculation control circuitry. (237-180-95-00401) Unit 2 and (237-180-95-00402) Unit 3

4. Systems Engineering will evaluate NPRDS Data for solutions other nuclear stations have implemented to minimize the effects of Reactor Recirculation run-up events for possible improvements to the Dresden design. (237-180-95-00403).

F. PREVIOUS OCCURRENCES:

DVR (Non-Reportable)	Title
12-2-91-226	2A RECIRCULATION PUMP SPEED INCREASE DUE TO DIRTY POTENTIOMETER IN SPEED CONTROLLER

A similar controller in this circuitry caused an event, on November 26, 1991. Dresden Station completed a redesign which eliminated all potentiometers in the circuitry which could be eliminated while maintaining the original operational function of the controllers. Sixteen potentiometers were eliminated from this control circuitry on Dresden Units 2 and 3. The remaining potentiometers were placed on a once per Refueling Outage Preventative Maintenance Schedule. That preventative maintenance solution appears to have been insufficient, based on this event.

G. COMPONENT FAILURE DATA:

MANUFACTURER: Bailey Controls Div / Frmly
NOMENCLATURE: 500 Ohm Potentiometer
MODEL NUMBER: 137-9048
MFG. PART NO.: 5839K53P0002