10 CFR 50.73

May 23, 2005

SVPLTR # 05-0024

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Dresden Nuclear Power Station, Unit 2
Renewed Facility Operating License No. DRP-19
NRC Docket No. 50-237

Subject: Licensee Event Report 237/2005-002, "Unit 2 Group 1 Isolation and Resulting Scram"

Enclosed is Licensee Event Report 237/2005-002, "Unit 2 Group 1 Isolation and Resulting Scram," for Dresden Nuclear Power Station. This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), "Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B)."

Should you have any questions concerning this report, please contact Mr. Pedro Salas, Regulatory Assurance Manager, at (815) 416-2800.

Respectfully,

Original Signed By

Danny G. Bost
Site Vice President
Dresden Nuclear Power Station

Enclosure

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Dresden Nuclear Power Station

NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 06/30/2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Dresden Nuclear Power Station Unit 2	05000237	1 OF 4

4. TITLE
Unit 2 Group 1 Isolation and Resulting Scram

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									N/A	N/A
03	24	2005	2005	- 002 -	00	05	23	2005	FACILITY NAME: N/A	DOCKET NUMBER: N/A

9. OPERATING MODE
1

10. POWER LEVEL
096

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Dresden Nuclear Power Station – George Papanic Jr.	(815) 416-2815

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
NA					NA				

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On March 24, 2005, at 0529 hours (CST), with Unit 2 at approximately 96 percent power, two unexpected control room alarms were received for exceeding the Electro-Hydraulic Control System maximum combined flow limit setpoint and open Turbine Bypass Valves. Several seconds later, high flow in the Main Steam System resulted in a signal to close the Main Steam Isolation Valves that initiated an automatic reactor scram. All control rods fully inserted and all other systems responded to the reactor scram as expected, except for non-safety related equipment, the Turbine Generator Lube Oil Pump and the 2B Reactor Feedwater Pump Auxiliary Oil Pump, which did not operate as required.

The root cause of this event is indeterminate. The most probable cause is attributed to an increase in electrical resistance between electrical pins 13 and 22 on the “A54” card within the Electro-Hydraulic Control System. The corrective actions to prevent recurrence are to replace the “A54” card backplane connector, remake all termipoints on the connector for the “A54” card and to rework the remaining connectors between electrical pins 13 and 22. The “A54” card backplane connector was replaced and the all termipoints on the connector were remade prior to startup. The remaining connectors will be reworked during the next Unit 2 refueling outage.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
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Dresden Nuclear Power Station Unit 2	05000237	2005	-- 002 --	00	2 OF 4

NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

Dresden Nuclear Power Station (DNPS) Unit 2 is a General Electric Company Boiling Water Reactor with a licensed maximum power level of 2957 megawatts thermal. The Energy Industry Identification System codes used in the text are identified as [XX].

A. Plant Conditions Prior to Event:

Unit: 02 Event Date: 03-24-2005
Reactor Mode: 1 Mode Name: Power Operation Power Level: 96 percent
Reactor Coolant System Pressure: 1000 psig

B. Description of Event:

On March 24, 2005, at 0529 hours (CST), with Unit 2 at approximately 96 percent power, two unexpected control room alarms were received for exceeding the Electro-Hydraulic Control System (EHC) [TG] maximum combined flow limit setpoint and open Turbine Bypass Valves (TBVs) [V]. Several seconds later, high flow in the Main Steam System (MS) resulted in a signal to close the Main Steam Isolation Valves (MSIVs) [V] that initiated an automatic reactor scram. All control rods fully inserted and all Group 1 Isolation Valves [V] closed as designed. The Group 2 and 3 Isolation Valves [V] closed as expected and the Isolation Condenser [BL] was manually initiated to control reactor pressure. All MSIVs fully closed within the required time and all other systems and components responded as designed, except for non-safety related equipment, the Turbine Generator Lube Oil Pump [P] and the 2B Reactor Feedwater Pump Auxiliary Oil Pump [P], which did not operate as required.

Initial indications from the permanently installed recorders in the EHC cabinet showed a drop in the output signal of the “A” EHC Pressure Regulator from 880 pounds to 750 pounds in approximately 4 seconds. The “A” EHC Pressure Regulator returned to 880 pounds after approximately 4 seconds. However, the pressure regulator transient caused the Turbine Control Valves to ramp open and several TBVs also opened. This resulted in an increase steam flow that caused the Group 1 Isolation on high MS flow.

The “A” EHC Pressure Regulator, Turbine Generator Lube Oil Pump and the 2B Reactor Feedwater Pump Auxiliary Oil Pump were repaired and Unit 2 was connected to the grid at 2011 hours (CST) on March 27, 2005.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), “Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B).” An automatic scram and isolation signals affecting containment isolation valves are listed in 10 CFR 50.73(a)(2)(iv)(B).

C. Cause of Event:

The root cause of this event is indeterminate. The most probable cause is attributed to an increase in electrical resistance between electrical pins 13 and 22 on the “A54” card within the EHC.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

The investigation into this event identified that Unit 2 had experienced three events in 2002 that exhibited similar characteristics to the event of March 24, 2005. Each of the 2002 events caused control room alarms for exceeding the EHC maximum combined flow limit setpoint and signals to open the TBV(s). However, the resulting increase in MS flow did not cause an automatic scram. The investigations performed in 2002 focused on the failure or degradation of one or more of the electronic components (i.e., circuit boards, potentiometers) in the "A" EHC Pressure Regulator. The 2002 investigation suspected that the problem was associated with the "A54" card. On January 9, 2003, the "A" EHC Pressure Regulator "A54" card was replaced. The "A54" card was sent to General Electric (GE) for testing. On January 22, 2004, GE stated that the testing and analysis of the "A54" card could not identify any specific component on the card that failed and it was suspected that the failure mode was random and intermittent. GE concluded that it might be impractical to find the cause of the events. The "A" EHC Pressure Regulator operated satisfactorily from January 2004 until the event of March 24, 2005.

The 2005 investigation checked all the "A" EHC Pressure Regulator circuit and card connections that could have caused the transient. No abnormalities, grounds or loose connections were found. The "A45", "C46" and "A54" cards from the "A" EHC Pressure Regulator were sent to a vendor for testing and no abnormalities or failed components were found.

A circuit analysis was then performed in an attempt to identify the possible causes of the EHC transient event. The analysis indicated that neither the "A45" nor "C46" cards are the likely sources for the event. Further troubleshooting and analysis was not successful in determining the root cause of the March 24, 2005, event.

The investigation concluded that the most probable cause was determined to be an increase in electrical resistance associated with pins 13 and 22 of the "A54" card. Calculations identified that an increase in electrical resistance of approximately 220 ohms for pin 22 or 2000 ohms for pin 13 could have caused the event of March 24, 2005. Prior to startup, the "A" EHC Pressure Regulator "A45," "A54" and "C46" cards were replaced, the "A" EHC Pressure Regulator "A54" card backplane connector was replaced and the all termipoints on the connector were remade. The remaining connectors to the "A" EHC Pressure Regulator "A54" card will be reworked during the next Unit 2 refueling outage.

D. Safety Analysis:

The safety significance of the event is minimal. The Dresden Nuclear Power Station Updated Final Safety Analysis Report Section 15.1, "Increase in Heat Removal by the Reactor Coolant System," analyzed a design basis transient for increased steam flow that results in an automatic reactor scram and subsequent control of reactor pressure with the Isolation Condenser. The transient was analyzed as a moderate frequency event and the results of the analysis demonstrate that the plant transient response was within design limits. Therefore, the consequences of this event had minimal impact on the health and safety of the public and reactor safety.

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NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

E. Corrective Actions:

The “A” EHC Pressure Regulator “A45,” “A54” and “C46” cards were replaced.

The “A” EHC Pressure Regulator “A54” card backplane connector was replaced and the all termipoints on the connector were remade.

The remaining connectors to the “A” EHC Pressure Regulator “A54” card will be reworked during the next Unit 2 refueling outage.

F. Previous Occurrences:

A review of DNPS Licensee Event Reports (LERs) for the last five years did not identify any similar events.

G. Component Failure Data:

NA