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 3	05000249	1 OF 4

TITLE (4) Loss of Power to Bus 34 Resulted in Auto-Start of Unit 3 Emergency Diesel Generator Due lack of preventive maintenance on Bus Pots.

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
03	25	94	94	-- 011 --	01	12	31	97	None	
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)	000		20.402(b)		20.405(c)	X	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)		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)
D. Spencer - Plant Engineering Ext. 3292	(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)

At 2355 on March 25, 1994, multiple alarms were received on panels 903-8, 903-5, 902-4, 923-2, 923-5, and many of the lights on the Unit 3 side of the Control Room went off. This caused a Unit 3 Half Scram, Standby Gas Treatment (SBGT) auto-start and auto-start of Unit 3 Emergency Diesel Generator (EDG) which closed onto bus 34-1. Bus 34 indicated a low voltage condition (via panel meters and white bus energized light out) with the feed breaker from Transformer (TR) 32 to Bus 34 indicating closed. The loss of power to Bus 34 was caused by corrosion buildup on the Bus Pots due to lack of preventive maintenance. A continuing program of preventive maintenance on the Bus Pots has been implemented.

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: March 25, 1994 Event Time: 2355

Reactor Mode: Shutdown Mode Name: Outage Power Level: 0

Reactor Coolant System Pressure: 0 psig

B. DESCRIPTION OF EVENT:

On March 25, 1994, at approximately 2355, Bus 34 undervoltage (UV) relays 127B34 1-2 and 127B34 2-3 actuated. These relays actuate the 127-B34X1, 127-B34X2, 127-B34X3 relays. These relays load shed Bus 34, consequently de-energizing Bus 34-1, and causing the Unit 3 EDG to auto-start. Bus 35, Bus 36, and Bus 37 were cross-tied and all were de-energized. Bus 38 and Bus 39 were crosstied, but fed from Bus 33-1, so neither was lost. Reactor Protection System (RPS) Bus B was de-energized as it was being fed from its reserve feed, MCC 35-2. All systems functioned as expected for a first level undervoltage.

The Unit 3 Nuclear Station Operator (NSO) recognized a Unit 3 Half Scram, Standby Gas Treatment (SBGT) auto-start and auto-start of Unit 3 Emergency Diesel Generator (EDG) which closed onto bus 34-1. Bus 34 was indicating a low voltage condition (via panel meters and white bus energized light out) with the feed breaker from Transformer (TR) 32 to Bus 34 indicating closed. 480 Volt Busses 35, 36 and 37 were all de-energized due to the loss of Bus 34. This caused multiple switchyard alarms due to the loss of AC power (Bus feed 25 was already OOS due to outage work). The loss of Bus 37 caused a Unit 2 Instrument Air (IA) low pressure due to loss of 3C IA Compressor which is lined up to Unit 2. The Service Air (SA) cross-tie opened to maintain IA pressure (the Unit 2 SA Compressor was carrying Unit 2 SA, supporting Unit 2 IA and carrying Unit 1 SA and IA due to Unit 1 Compressor problems). The TR 32 to Bus 34 breaker was opened from the Control Room and the Bus was inspected by the HVO and Electrical Maintenance Department (EMD), visual inspection did not reveal any abnormalities. All loads were verified stripped from the Bus and an attempt was made to close the TR 32 to Bus 34 breaker. The TR 32 to Bus 34 breaker was closed but voltage was not restored to Bus 34. The breaker was re-opened and taken to Pull To Lock (PTL) from the Control Room. The Bus Pot Fuses were removed, inspected and re-installed. The breaker was then closed and Bus 34 was energized. Restoration of normal feeds was actively pursued and all were easily recovered except for Bus 35. Bus ties from 35 to 36 or 35 to 37 could not be closed until jumpers were installed. This happened because the 480 Volt breaker at Bus 35 from Bus 33 was actually removed from the cubicle for maintenance. When the breaker is removed, it breaks the closing circuit for the Bus tie breakers.

The NSO log books, SER/Alarm Typer output, Event Participant Statements and Prints 12E-3333, 12E-3334, 12E-3343, & 12E-3347 were reviewed. A Total Job Management (TJM) search of previous Bus 31, Bus 32, Bus 33, Bus 34, Bus 33-1 and 34-1 work requests was performed and D3R12 relay calibrations for Bus 34 and TR 32 were reviewed.

The cause of this event was a loss of the power from the Bus 34 Bus Pots. An actual undervoltage condition did not exist at TR 32 feeding Bus 34 but Bus 34

was de-energized. TR 32 UV relays are set to actuate at a higher voltage than the Bus 34 UV relays and with a smaller time delay. No TR 32 UV targets nor alarms were received, no other Bus experienced UV conditions and they were all fed from the same source. This would indicate that voltage at TR 32 was within acceptable limits. The only other way to drop out the Bus 34 UV relays would be to disturb power from the Bus Pots to the relaying scheme.

The Bus Pots were thoroughly cleaned and ohm readings brought back within acceptable limits. All stabs were realigned.

It is this combination of factors that substantiates the fact that the Bus Pots lost good contact and caused the Bus Undervoltage condition. The Bus Pots were removed during the Bus outage and the stabs were inspected and cleaned. High resistance readings were indicated at the stab connections. This was anticipated as removing and inspecting the Bus Pots allowed re-energization of Bus 34 from TR 32 during the initial recovery from the event. This is further substantiated by the fact that a TJM history search indicates no record of Bus Pot cleaning and previous cubicle inspections indicate that the Bus and Cubicles were generally in an unpolished state.

C. CAUSE OF EVENT:

This report is being submitted in accordance with 10CFR50.73(a)(2)(iv) which requires the reporting of any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature.

Root cause of the event is corrosion buildup on the Bus Pot stabs in Bus 34 due to lack of preventive maintenance.

D. SAFETY ANALYSIS:

The safety significance of the event during normal shutdown operations is minimal. The loss of power to Bus 34 sent auto-start signals to the Emergency Diesel Generator logic. The Unit 3 Emergency Diesel Generator started properly and assumed the proper loads when challenged by the actuation of the undervoltage relays.

Because Bus 35 and ties from 35 to 36 or 35 to 37 could not be closed until jumpers were installed, the Unit 3 Half-Scram could not be reset and SBGT could not be secured. This resulted in normal Reactor Building Ventilation System unavailability for a period of time. Emergency systems functioned as expected.

E. CORRECTIVE ACTIONS:

All Unit 2 and Unit 3 Bus Pot stabs and cubicals were inspected, cleaned, and contact stabs lubricated during their respective D2R14 and D3R13 outages. A review of maintenance history did not identify any unusual conditions with the Bus Pots during these inspections. (Complete)

Electrical Maintenance procedure DES 6700-11, 4 kV Potential Transformer Inspection, was developed to provide instruction for the cleaning and inspection of potential transformers located in 4 kV switchgear auxiliary cubicals. (Complete)

Since the issuance of the initial LER, a Performance Centered Maintenance review was completed. Based on industry PM practices for 4 kV breakers and cubicals, it was concluded that the original PM frequency as stated in the initial LER was overly conservative. Consequently, it has been determined that a more appropriate PM schedule would be necessary to support plant operations and outage activities. While this decision does allow a more cost-effective management of plant resources, it is believed that the change in PM frequency does not adversely impact the ability of the associated equipment to perform as required. Currently, our Work Control Program establishes a 4 kV breaker PM frequency of every third refueling outage. However, we are continuing to evaluate this frequency based on industry efforts regarding breaker maintenance. The frequency of the cleaning and inspection activities will continue to be performed in accordance with the station's Work Control Program. (Complete)

EMD revised procedures DEP 7300-09 and DEP 7300-10 to place the Bus Jumpers at locations that allow tie breakers to be operated even if a feed breaker is removed. (Complete)

F. PREVIOUS OCCURRENCES:

LER/Docket Number	Title
93-012	Inadvertent Auto Start of 2/3 Diesel Generator Due to Mechanical Failure. C/A: The affected breaker was repaired and testing was successful.
92-033	Inadvertent Auto Start of 2/3 Diesel Generator Due to cubicle door slam. C/A: Include in HVO training syllabus caution to the sensitivity of the relays in question. Post warning signs on cabinet doors. Tailgate current cabinet door situation to all operators. Fixed cabinet doors so that excessive force or special techniques are not required to properly close the doors.

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
Not Applicable			