



Commonwealth Edison
Dresden Nuclear Power Station
R.R. #1
Morris, Illinois 60450
Telephone 815/942-2920

June 30, 1992

CWS LTR #92-360

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

Licensee Event Report #91-010-01, Docket #050249 is being submitted in accordance with NUREG 1022. This revised LER provides an update concerning the cause and corrective actions for an undervoltage relay problem, as was committed in the original report.

L. J. Demer for 6/30/92

Charles W. Schroeder
Station Manager
Dresden Nuclear Power Station

CWS/cfq

Enclosure

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

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Dresden Nuclear Power Station, Unit 3	Docket Number (2) 0 5 0 0 0 2 4 9	Page (3) 1 of 0 7
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Title (4) Bus 38 Undervoltage Relay Actuation Due to Inadvertent Shorting of Relay Terminals

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	9	2	3	9	1	9	1	---	0	1	0	---	0	1	1	0	1	7	9	1		

OPERATING MODE (9) POWER LEVEL (10) 0 0 0	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)	
		<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(a)(1)(i)
		<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 20.405(a)(1)(iii)
		<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 20.405(a)(1)(v)
		<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.36(c)(1)
		<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)
		<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)
		<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(v)
		<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 50.73(a)(2)(ix)
		<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 73.71(c)
		<input type="checkbox"/> Other (Specify in Abstract below and in Text)	

LICENSEE CONTACT FOR THIS LER (12)

Name Emory Johnson, Technical Staff System Engineer	Ext. 2603	TELEPHONE NUMBER AREA CODE 8 1 5 9 4 2 -12 9 2 0
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> Yes (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	Expected Submission Date (15)	Month	Day	Year
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ABSTRACT (Limit to 1400 spaces; i.e, approximately fifteen single-space typewritten lines) (16)

During performance of Dresden Electrical Surveillance (DES) 500-2, HFA Relay Electrical Maintenance Inspection, on September 23, 1991, with Unit 3 in cold shutdown for a refuel outage, 480V Bus 38 partially load shedded upon actuation of undervoltage relay #227-B38-X1 when an Electrician unintentionally shorted a tool across two terminals of the relay. This actuation caused trips of the Reactor Water Cleanup Auxiliary Pump, the 3C Reactor Building Vent Fan, the 3B Reactor Building Exhaust Fan, and the 3A South Turbine Building Vent Fan. DES 500-2 was immediately terminated and all affected equipment was restored to normal operation. The safety significance of this is event is considered minimal because the load shedding trips occurred properly when challenged by the undervoltage signal and there was no affect on redundant division equipment, nor was there any significant affect on normal plant status. Corrective actions included a review of the event with the personnel involved. The Electrical Maintenance Department purchased insulated nut drivers for this type of activity. A previous event involving an unplanned start of a Diesel Generator during use of a hand held voltage tester was reported by LER 90-01/050249.

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TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

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-XXXX)

EVENT IDENTIFICATION:

Bus 38 [ED] Undervoltage Relay Actuation Due to Inadvertent Shorting of Relay Terminals

A. CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: September 23, 1991 Event Time: 1715 Hours
 Reactor Mode: N Mode Name: Shutdown Power Level: 0%
 Reactor Coolant System (RCS) Pressure: 0 psig

B. DESCRIPTION OF EVENT:

During the performance of Dresden Electrical Surveillance (DES) 500-2 (HFA Relay Electrical Maintenance Inspection) at 1715 hours on September 23, 1991, with Unit 3 in cold shutdown for a refuel outage, 480V Bus 38 partially load shedded when undervoltage (UV) relay #227-B38-X1 actuated due to an Electrician accidentally shorting a tool across two terminals of the relay. The actuation caused trips of the power supply breakers to the Reactor Water Cleanup [CE] Auxiliary Pump, the 3C Reactor Building Vent Fan [VA], the 3B Reactor Building Exhaust Fan [VL], and the 3A South Turbine Building Ventilation Fan [VK]. DES 500-2 was terminated immediately and the affected equipment was returned to normal operation.

C. APPARENT CAUSE OF EVENT:

This event is being reported in accordance with 10CFR50.73(a)(2)(iv) because an unplanned Engineered Safety Feature (ESF)[JE] actuation occurred.

The cause of this event is attributed to the Electrician's tool coming in contact with two terminals on the undervoltage relay (Refer to Figure 1). During a tightness check of a wire termination nut at the rear of relay #227-B38-X1, the Electrician had put a taped nut driver on terminal #10. When the exposed lower face of the nut driver contacted a non-insulated lug of a resistor installed on terminal #8. The resistor lug on terminal #8 was in close proximity to terminal #10. The momentary contact between the two terminals caused relay #227-B38-X1 to actuate, shedding all active equipment off of Bus 38 (Refer to Figure 2). In order for the relay to have actuated, terminal #10 would have to be at a positive DC potential, as the coil is normally at a negative DC potential. Initially it was believed that the wiring to contacts #9 and #10 were reversed. Work Request (WR) 04274 was written to investigate the wiring to relay #227-B38-X1.

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TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

A check for circuit continuity utilizing approved drawings, with the fuses pulled and the Recirculation [AD] Motor Generator Set (MG-Set) Vent Fan 3A Out-Of-Service (OOS), confirmed a properly wired circuit for the 9-10 contact of relay #227-B38-X1 (Refer to Figure 3). A review of Unit 3 Operator Daily Surveillance Log was performed, and it was determined that at time of the event the MG-Set 3B Vent Fan was in the pull-to-lock (PTL) position. With the MG-Set 3B Vent Fan control switch in its PTL position, contact 2-2T which is in parallel with contact 9-10 of relay #227-B38-X1, is closed. Terminal #10 in this condition would be at a positive DC potential. Also, relay #227-B38-X1 has a coil with a DC rating of 62.5 Volts. Therefore, when the terminals were shorted the voltage across the coil was sufficient to pick up relay #227-B38-X1, which sealed in the undervoltage scheme of the circuit actuating relay #227-B38-X2 and shedding the active equipment off of Bus 38.

A work history review of previous work and surveillances on this relay did not reveal any other maintenance or surveillance activities that may have contributed to this event.

D. SAFETY ANALYSIS OF EVENT:

Bus 38 is part of Unit 3's Division I 480V Switchgear, which is comprised of two redundant divisions of equipment. The purpose of the undervoltage relaying is to trip the associated loads upon receipt of an initiation signal indicative of a bus undervoltage condition in order to prevent equipment damage. During this event, Unit 3 was in a refuel outage with all fuel removed from the reactor vessel. The trips which occurred were proper upon receipt of the undervoltage signal. The redundant division of equipment remained operable during the event and there was no significant affect on plant status. Therefore, the safety significance of this event is considered minimal.

E. CORRECTIVE ACTIONS:

The immediate corrective actions were to terminate the surveillance and restore all affected equipment to normal operation. The event was reviewed with the personnel involved; it should be noted that the Electrician had taped the nut driver shaft and was using caution against accidental shorts. WR 04274 was written to further investigate the wiring. Under WR 04274 the wiring leading to terminals #9 and #10 was confirmed to be correct. The Electrical Maintenance Department (EMD) purchased sets of nut drivers insulated with a rubber sheath for use in this type of activity. WR 09999 was written to adjust the position of the resistor to prevent this event from recurring. EMD will perform this during refueling outage D3R13. (249-200-91-07504)

F. PREVIOUS EVENTS:

LER/Docket Numbers Title

90-01/050249 Inadvertent Auto Start of Unit 3 Diesel Generator [EK] Due to Procedure Deficiency

With Unit 3 in a refuel outage, the Unit 3 Diesel Generator (DG) auto-started while undervoltage logic testing was in progress. An Electrician using a low resistance hand held voltage tester to check terminals on an undervoltage relay inadvertently completed the auto-start circuit of the DG. The DG was secured and the test procedure was revised to prohibit use of this type of voltage tester.

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Non-Reportable Event Numbers

12-3-86-15 480V Bus 36 Fire Caused by Phase Shorted to Ground

With Unit 3 in a refuel outage, arcing occurred when a racking wrench stored in a spare compartment in the bus shorted a bus breaker. The crank fell through when the door closed after a bus inspection. Sheet metal was installed in the back of the storage compartment to provide a barrier between the storage area and the bus bars.

12-3-89-55 Generator [EL] Core Monitor Fire Due to the Use of a Conductive Tool

With Unit 3 operating at 100% core rated thermal power while performing Dresden Instrument Surveillance (DIS) 6000-3, Generator Core Monitor Calibration and Functional Test, a small hydrogen ignition occurred when an Instrument Mechanic (IM) attempted to tighten a sample line fitting. When the conductive tool came in contact with an electrical connection an arc resulted and ignited a combustible mixture of hydrogen and air. The equipment was secured, and a revision of DIS 6000-3 was made to require only sparkless and insulated tools when working on the generator core monitor.

G. COMPONENT FAILURE DATA:

<u>Manufacturer</u>	<u>Nomenclature</u>	<u>Model Number</u>	<u>Mfg. Part Number</u>
N/A	N/A	N/A	N/A

No component failure was identified with this event; therefore, this section is not applicable.

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Back View of Relay 227-B38-X1 Terminals

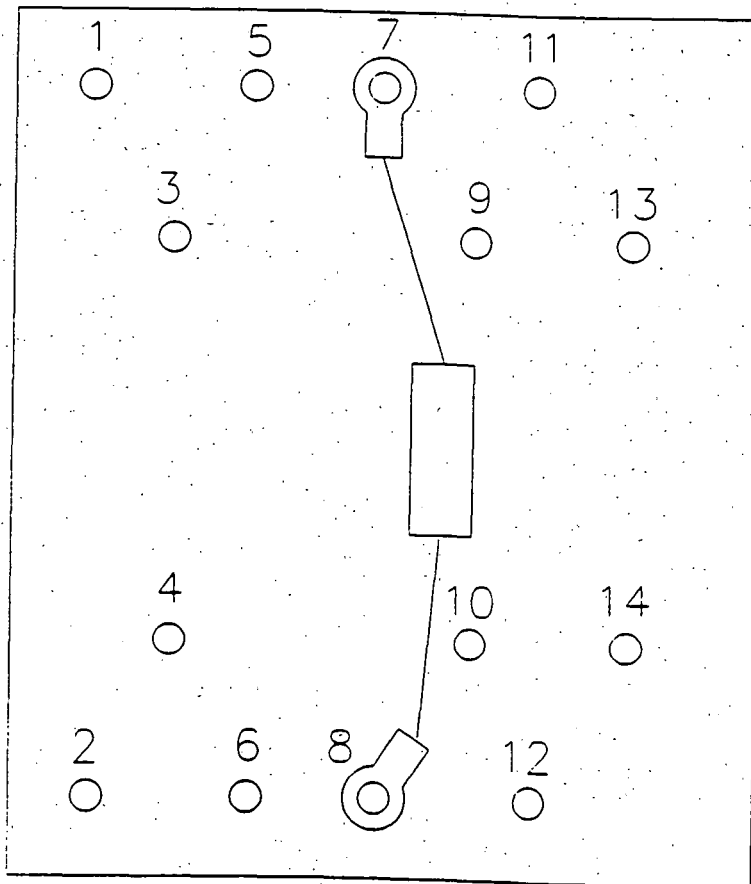


Figure 1.

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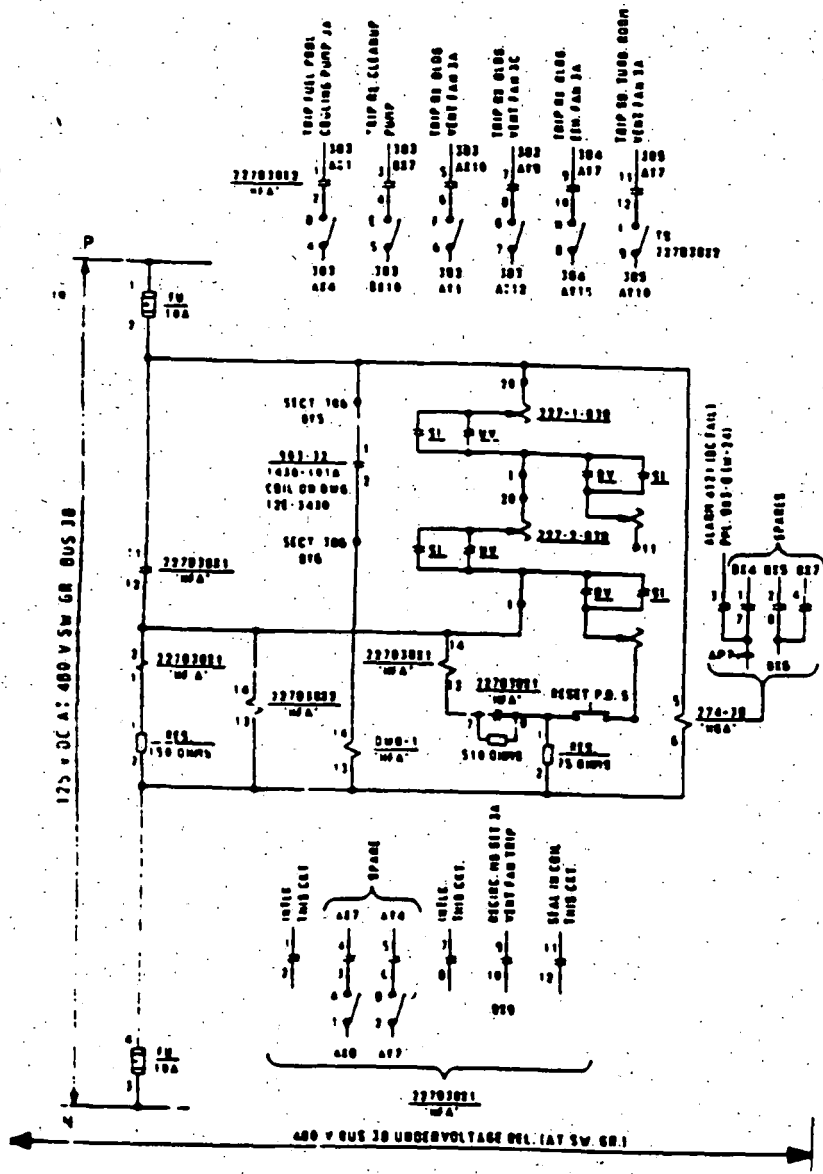


Figure 2.

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Dresden Nuclear Power Station	0 5 0 0 0 2 4 9	9 1	-	0 1 0	-	0 1	0 7	OF	0 7	

TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

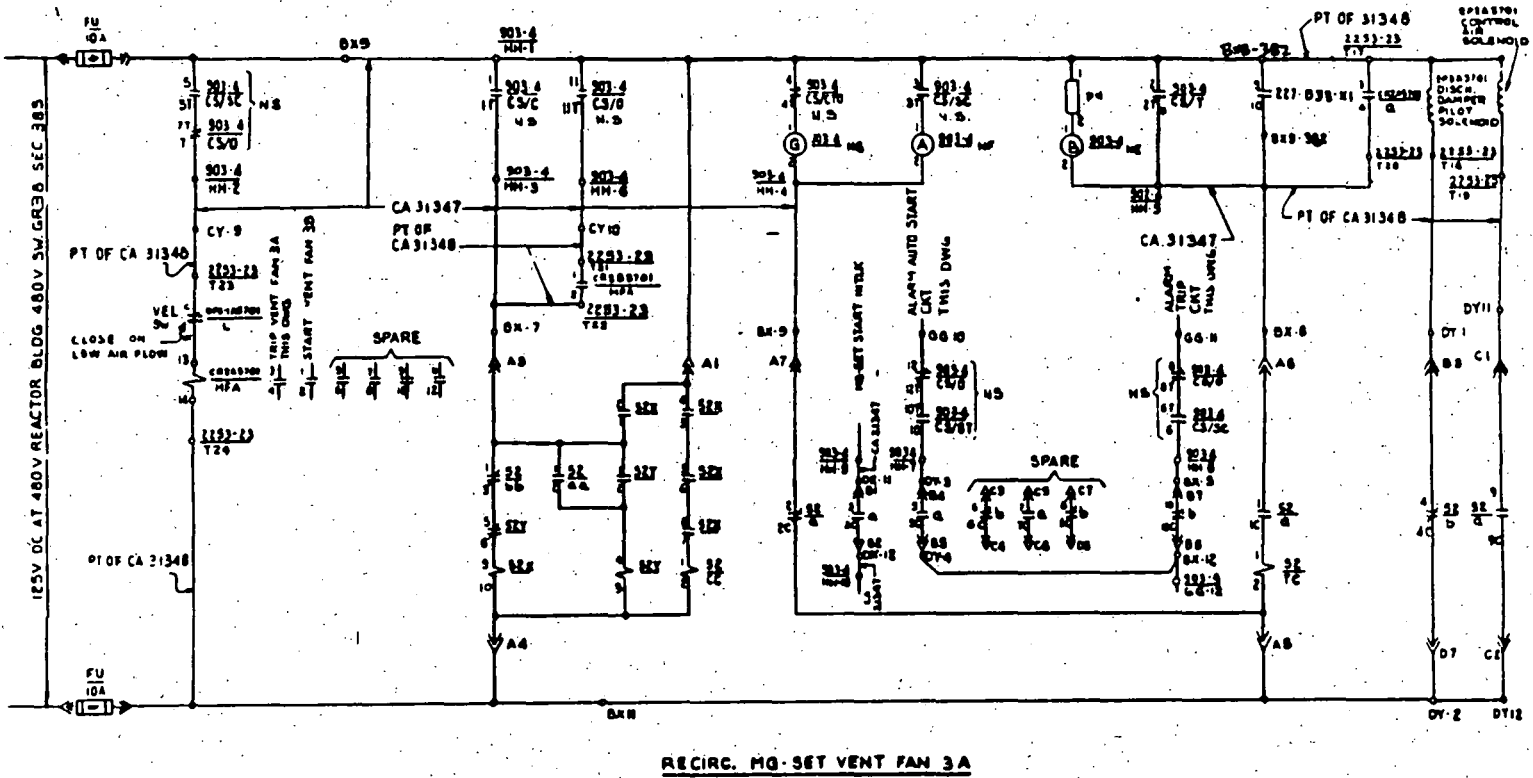


Figure 3.