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Dresden Nuclear Power Station
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Morris, Illinois 60450
Telephone 815/942-2920

November 25, 1991

EDE LTR #91-706

U.S. Nuclear Regulatory Commission
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Washington, D.C. 20555

Licensee Event Report #91-039, Docket #050237 is being submitted as required by Technical Specification 6.6, NUREG 1022 and 10 CFR 50.73(a)(2)(ii)(B).

L. J. Hermer for "1/26/91"
E. D. Eenigenburg
Station Manager
Dresden Nuclear Power Station

EDE/dwh

Enclosure

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

(ZDVR/357)

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Dresden Nuclear Power Station, Unit 2 Docket Number (2) 0 15 10 10 10 12 13 17 Page (3) 1 of 0 5

Title (4) Vent and Purge System Exhaust Ductwork Separation Due to Construction/Installation Deficiency

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)
09	18	91	91	0 13 19	0 0	11	25	91	Dresden Unit 3	0 15 10 10 10 12 14 9

OPERATING MODE (9) N

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)

POWER LEVEL (10) 0 9 5	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name Louis M. Kline, Regulatory Assurance Department

Ext. 2709

TELEPHONE NUMBER

AREA CODE 8 1 5 9 4 2 -12 19 12 10

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) NO

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At 0515 hours on September 18, 1991, with Unit 2 at 95% power and Unit 3 in a refuel outage, a joint in the exhaust ductwork of the Unit 3 Drywell Vent and Purge System was found separated. The two pieces of exhaust ductwork were touching and slightly out of alignment. Repairs were completed by 0600 hours on September 18, 1991. The exhaust ductwork had been verified to be intact on September 17, 1991 at 1600 hours by a Technical Staff Engineer; this indicated that the failure occurred subsequent to that time. Initial review of the event focused on scaffolding erection work in the area as a potential cause of the damage. However, further investigation into the existing joint configuration concluded that it had not been fastened in accordance with its design requirements. Inspections of the other ductwork sections were also completed. Engineering review concluded on November 12, 1991 that the as-found configuration of the failed joint did not conform to design basis criteria; however, failure of this joint under design basis conditions would not have prevented the Standby Gas Treatment System from maintaining a significant vacuum in the Reactor Building.

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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-XXXXX)

EVENT IDENTIFICATION:

A joint of the exhaust ductwork in the Unit 3 Drywell Vent and Purge [VB] System was found separated. The two pieces of exhaust ductwork were touching and out of alignment. The time of discovery was at 0515 hours and the exhaust ductwork was repaired by 0600 hours under Work Request (WR) 03724.

A. CONDITIONS PRIOR TO EVENT:

Unit(s): 2(3) Event Date: September 18, 1991 Event Time: 0515 Hours
 Reactor Mode(s): N(N) Mode Name(s): Run(Refuel) Power Level(s): 95%(0%)
 Reactor Coolant System (RCS) Pressure(s): 996(0) psig

B. DESCRIPTION OF EVENT:

During a walkdown on September 18, 1991, a joint in the exhaust ductwork of the Unit 3 Drywell Vent and Purge System was found separated. The two pieces of exhaust ductwork were touching and slightly out of alignment. The time of discovery was at 0515 hours and the condition was repaired by 0600 hours under WR 03724. Refer to attached Figure 1.

Due to a large amount of scaffolding erection in the general area for performance of the Drywell Hardened Vent modification on Unit 3, it was first postulated that scaffold erectors might have inadvertently disturbed the exhaust ductwork and caused it to separate. Upon reviewing the Engineering and Construction (ENC) Erection Records, it was found that the scaffolding erection started on August 27, 1991, and was completed for use on September 13, 1991 (the scaffolding was completed five days ahead of the discovery of the exhaust ductwork separation).

Prior to the discovery of the exhaust ductwork separation, a number of Secondary Containment Leak Rate Tests (SCLRTs) (which demonstrate the capability of the Standby Gas Treatment System [BH] to maintain a proper vacuum in the Reactor Buildings with respect to the outside atmosphere) and one Local Leak Rate Test (LLRT), challenging the volume of piping containing the valve A03-1601-24, had been conducted. Two of the tests had the potential to challenge this exhaust ductwork in some manner. After further investigation into the SCLRT and LLRT performance dates, it was found that all the tests were completed prior to the discovery of the exhaust ductwork separation. The exhaust ductwork was also verified to be intact on September 17, 1991 at 1600 hours by a Technical Staff Engineer who walked down this exhaust ductwork approximately ten hours after the last LLRT was conducted.

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Therefore, the exhaust ductwork had separated some time during Shift 3 on September 17, 1991 or Shift 1 on September 18, 1991.

Work group activities were reviewed to see if during this time period any work was performed in the area of this exhaust ductwork. The review showed that no work was performed in this area during the time period this exhaust ductwork most likely separated.

Additionally, a review of the lineup of the Reactor Building Ventilation [VA] supply and exhaust fans was conducted. The review showed that there were no unusual fan lineups during this time period.

Subsequently, a Seismic Qualification Utility Group (SQUG) Team performed a walk down of the subject exhaust ductwork at the request of the Nuclear Engineering Department (NED) and compared it to the Low Velocity and Duct Construction Standards Fourth Edition - 1969 (applicable code of construction). NED determined that the exhaust ductwork joint in question had not been properly assembled as required by this standard. The standard requires that with a Beaded Crimp Joint (the type of joint for this exhaust ductwork), a sheet metal screw must be installed in each quadrant around the exhaust ductwork. Inspection of the failed joint indicated no evidence of the proper sheet metal fasteners having been installed. WR 03742 installed sheet metal screws in the exhaust ductwork as part of the repair of this joint. Further analysis by NED, which was concluded on November 12, 1991, determined that the as found condition was not in conformance with design requirements. This event was then classified as reportable under 10CFR50.73 at that time.

In order to insure that similar ductwork joints on the Dresden Units 2 and 3 Drywell Vent and Purge Systems were adequately fastened, further inspections were performed. The Unit 3 joints had sheet metal screws installed and two screws had to be installed in the Unit 2 joints. Prior to the exhaust ductwork separation, all the joints were secured with Sheet Metal Screws except for the one joint that had separated.

C. APPARENT CAUSE OF EVENT:

This report is being submitted in accordance with 10CFR50.73(a)(2)(ii)(b), which requires the reporting of any condition outside the design basis. It should be noted that 10CFR 50.72 notification was performed concerning this event on September 18, 1991, due to the potential for degraded secondary containment integrity pending repairs and further investigation. Initial investigation focused on scaffolding work in the area as a potential cause of damage; however, further review concluded, on November 12, 1991, that the as-found joint configuration did not meet design requirements.

The root cause of this event was construction/installation deficiency in that the proper fastening configuration was apparently not adhered to. It could not be determined if this had occurred at original construction, or at some later time. Extensive interviews could not pinpoint a proximate cause of the separation other than vibration. Review of records shows that this type of event has not been a recurring trend.

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D. SAFETY ANALYSIS OF EVENT:

The purpose of Secondary Containment is to prevent the ground level release of radioactive materials to the environment under design basis accident conditions. Investigation of this event determined that an overall Reactor Building-to-atmosphere differential pressure (dp) in excess of 0.25 inches of water (Technical Specification 4.7.c.1.a minimal acceptance criteria for surveillance testing) was maintained throughout this event. The integrity of Secondary Containment would have only been challenged if the Standby Gas Treatment System was running with Reactor Building Ventilation isolated. Upon discovery of the separated exhaust ductwork, Operations and Maintenance personnel responded promptly to ensure that secondary containment was restored in accordance with Technical Specification 3.7.C.1, which allows four hours to restore secondary containment integrity. Had the duct separated under accident conditions, the Standby Gas Treatment System would have been able to maintain a significant negative pressure in the Reactor Building. This is supported by test data from a September 17, 1991 SCLRT, during which a reactor building vacuum of 0.17 inches of water with respect to the atmosphere was demonstrated with inspection ports in the drywell vent and purge piping opened for testing purposes.

E. CORRECTIVE ACTIONS:

The Unit 3 Vent and Purge System exhaust ductwork joint was repaired under WR 03724 in a timely manner. The SQUG Team performed a walkdown to verify the installation of the exhaust ductwork. It was determined that the basic installation was correct, but the joint that separated was not properly secured as required by the Low Velocity and Duct Construction Standards Fourth Edition - 1969. Two WRs (03998 for Unit 2 and 03997 for Unit 3) were written to verify that each exhaust ductwork joint of the Unit 2 and Unit 3 Vent and Purge System was properly secured with a minimum of four sheet metal screws, one in each quadrant. Both WRs were completed resulting with the installation of two additional sheet metal screws in the Unit 2 exhaust ductwork.

F. PREVIOUS EVENTS:

LER/Docket Number	Description
12-2-88-010 (Non-Reportable Event)	Failed seam in recirculation motor generator ventilation ductwork. The failed seam was repaired using sheet metal and sheet metal screws. This ductwork deficiency did not have secondary containment integrity implications.

G. COMPONENT FAILURE DATA:

Manufacturer	Nomenclature	Model Number	Mfg. Part Number
N/A	Ventilation Duct	N/A	N/A

This component is not reportable under the Nuclear Plant Reliability System Data (NPRDS).

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Revision Number

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Separation Occured Here

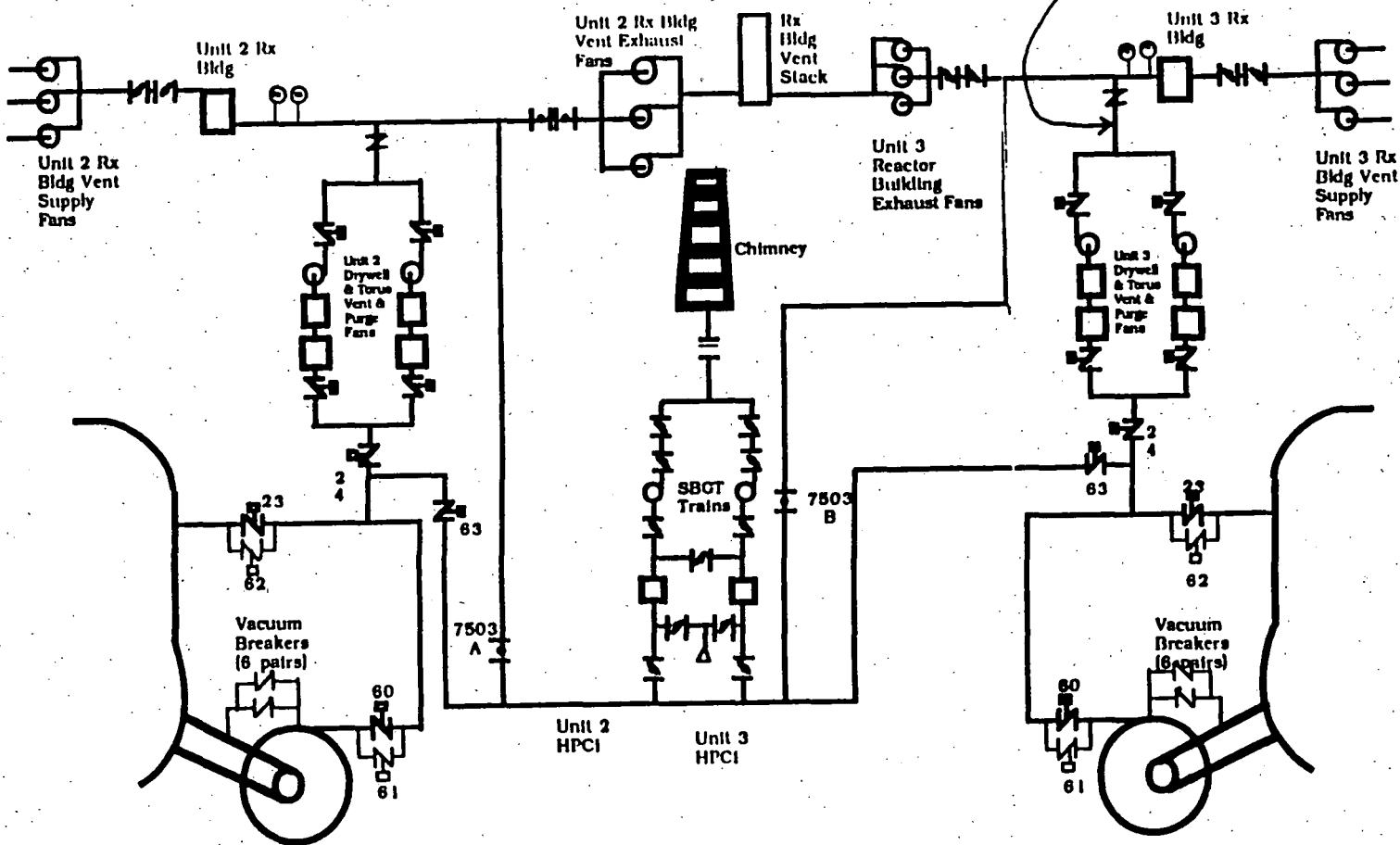


Figure 1 Drywell & Torus Vent Flowpaths