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 5

TITLE (4) Control Room Ventilation System Found Outside Design Limits Due to Inadequate Modifications

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
10	08	96	96	-- 17 --	00	11	06	96	Dresden Unit 3	05000249
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	100

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)	x	50.73(a)(2)(v)		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)		50.73(a)(2)(ii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Mr. N. Konstantinou, Design Engineering Ext. 2225	(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
x	YES (If yes, complete EXPECTED SUBMISSION DATE).	NO		01	31	97

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

During modification review activities, engineering personnel determined that the Control Room emergency zone was operating at a negative pressure with respect to adjacent spaces. Investigation determined that the differential pressure was not in accordance with the UFSAR and the associated Dresden Administrative Technical Requirements. Under post-accident conditions, unfiltered air in excess of design limits could be admitted to the Control Room emergency zone.

The present configuration of the Control Room ventilation systems, both normal and emergency, is the result of a series of modifications installed over the last 12 years. Inadequate design of the differential pressure monitoring instrumentation and inadequate modification control, where modifications may have not received adequate acceptance testing, allowed this condition to go undetected. Investigation indicates that this inadequacy is the result of deficiencies in the modification process and may have existed since the modifications were installed. Corrective action includes an immediate assessment of the integrity of the Control Room emergency zone boundary. Leakage identified will be corrected. New instrumentation and methodology for measuring differential pressure will be implemented. The safety significance of this event is minimal.

The root cause of the event will be investigated and reported in a supplement to this report.

PLANT AND SYSTEM IDENTIFICATION

General Electric - boiling water reactor - 2527 MWt rated core thermal power.

Energy Industry Identification System (EIIS) codes are identified in the text as [XX] and are obtained from IEEE Standard 805-1984, IEEE Recommendation Practice for System Identification in Nuclear Power Plants and Related Facilities.

Control Room HVAC System [VI]

EVENT IDENTIFICATION:

Control room ventilation system found outside design limits due to inadequate modifications.

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 2(3) Event Date: 10/8/96 Event Time: 0030

Reactor Mode: N(N) Mode Name: Run(Run) Power Level: 100(82)%

Reactor Coolant System Pressure: 993(1003) psig

B. DESCRIPTION OF EVENT:

This issue is reportable pursuant to 10CFR50.73 (a)(2)(v)(d) which requires that the licensee report any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: mitigate the consequences of an accident. The Control Room Ventilation configuration was determined to be outside of design requirements on October 8, 1996.

Notification of the event was performed pursuant to 10CFR72(b)(2)(iii)(D) at 0209 (CT) on October 8, 1996 through Emergency Notification System (ENS) number 31109.

On September 26, 1996, Engineering personnel were performing review activities associated with modifications that had been implemented during 1988 to 1991. While reviewing the Control Room (CR) emergency zone boundary, air flow into the CR was detected. Investigation of the situation was commenced in accordance with Dresden Administrative Procedures.

On October 8, 1996 the CR Heating, Ventilation, and Air Conditioning (HVAC) [VI] system was declared inoperable in accordance with the Dresden Administrative Technical Requirements (DATR). The operability determination concluded that the existing configuration was not in accordance with the design basis of the plant. Differential pressures were measured between the CR and surrounding spaces under a variety of CR HVAC configurations. Results indicated that the Control Room emergency zone could not be maintained at >/= 1/8 inches of water with respect to the surrounding spaces with CR HVAC operating in the emergency mode as required by the design basis. The Control Room emergency zone also could not be maintained at the positive pressure in the normal operating mode.

Notification was made in accordance with 10CFR50.72 and a special test procedure was written and performed to determine if the requirements could be met with portions of the CR emergency zone isolated. The special test showed that the requirements of >/= 1/8 inches of water could not be met. Identification and sealing of breaches in the emergency zone boundary was initiated.

During the repair effort, the gross leakage was measured using tracer gas which determined that the inleakage was approximately twice the allowed maximum for original design calculations. Calculations were performed using SRP methodology that indicated the actual in-leakage was acceptable. The CR system was declared operable but degraded. Identification and sealing of leakage on the negative pressure ductwork and the CR emergency zone boundary will continue until system can be declared operable with no concerns. The Auxiliary Computer room has been temporarily removed from the CR emergency zone.

HVAC System Modifications

In 1982, changes were made to the CR HVAC system to add a second ventilation train that would provide filtered air to the control room in response to NUREG - 0737. Testing of the ability of this modification to pressurize the control room to >/= 1/8 inch of water with respect to the surrounding area had not been performed adequately. Contributing to the inadequate testing was a CR differential pressure gauge that measured the differential between the CR and the East Turbine Building, but was incorrectly labeled as measuring the differential between the CR and atmosphere.

Additionally, the materiel condition of the East Turbine Building differential pressure piping connecting the gauge to the outside sample point was degraded, which adversely affected the accuracy of the gauge reading. The sample line was cracked inside of the turbine building and thus the sample point was not representative of the outside atmosphere.

Between 1988 and 1990 at least four other modifications were made to the CR HVAC system that could have impacted the ability to maintain the correct differential pressure. These modifications; (1) installed silencers in ductwork, (2)installed new ductwork in the CR, (3) sealed CR penetrations, and (4) reconfigured the CR emergency zone. While the installation of each of these modifications is complete, the required testing was not completed. This discrepancy was identified during a modification audit, and the resulting investigation identified the concern reported in this LER.

C. CAUSE OF THE EVENT:

This event continues to be under investigation and will be reported in a supplement to this LER. Preliminary root cause is inadequate design control (NRC Cause Code B) in that modification testing was not performed adequately.

D. SAFETY SIGNIFICANCE:

To ensure Control Room habitability over a spectrum of failures that involve airborne transport of radiologically or chemically hazardous material, the design basis requirement is that the Control Room be pressurized at least 1/8 inch of water greater than the surrounding spaces.

Based on calculations using the SRP model, assuming Standby Gas Treatment System (SBGT) filter efficiency of 95 percent, the inability to pressurize the Control Room because of high in-leakage, or the inadequacy of the Control Room HVAC as existed in the condition of this LER, would not have resulted in radiological exposure to operators in excess of the SRP 6.4 or GDC 19 criteria. Actual testing of the last three years shows SBGT filter efficiency to be greater than 95 percent.

Though radiological exposures could approach limits, there is reasonable margin to expect that it would not lead to the inability to occupy the Control Room or substantially interfere with post-accident management and recovery. Previous analysis performed indicates that the CR habitability concern caused by hazardous chemicals is below the criteria specified by SRP 2.2.3.

There has been no event requiring isolation and pressurization of the Control Room at either of the Dresden units. Therefore, the habitability of the Control Room has not been challenged.

The safety significance of this event is minimal.

E. CORRECTIVE ACTIONS:

1. Implemented Dresden Operational Surveillance 5750-07, "Control Room DP Measurements" which monitors the Control Room to surrounding area differential pressures. (Complete)

2. Restoring the operability of the Control Room emergency zone boundary and HVAC system by;

   a) identifying and sealing leakage into the Control Room emergency zone until the differential pressure and in-leakage limitations can be met or initiate a licensing basis change request. (2371809601701)

   b) re-labeling the CR differential pressure instrument to accurately reflect the reference points. (Complete)

3. The results of the root cause investigation and any significant corrective actions will be reported in a supplement to this LER. This root cause will address previous occurrences and the effectiveness of their corrective actions. (2371809601702)

F. PRIOR SIMILAR OCCURRENCES:

LER Number/Docket Number Title

96-003/050237 Main Control Room HVAC Outside of Design Basis Due to Inadequate Implementation of Modification.

In the event of coincident loss of offsite power (LOOP) and loss of coolant accident (LOCA) conditions, the Control Room Heating Ventilation and Air Conditioning (HVAC) emergency Air Filtration Unit system could not pressurize the Control Room. The preliminary root cause was identified as personnel error during implementation of a Control Room HVAC modification.

95-001/050237 Inoperable Control Room HVAC Booster Fans, due to improperly sized thermal overload heater devices.

Trip of HVAC booster fan was determined to be due to improperly sized thermal overload (TOL) devices for the booster fans of both A and B of the Control Room HVAC system. The TOL devices for both Booster Fans were replaced, set properly, and tested. A review of the modification that installed the B Train of Control Room HVAC (modification M12-2/3-82-1) was performed.

94-007/050237 Potentially Unanalyzed Control Room Habitability Condition due to Purge Mode

A Systems Engineer noted that the Control Room HVAC System was operating in the "outside purge" mode. This mode provided for a supply of outside make-up air at a rate in excess of the analyzed value of 2000 scfm. Administrative controls were put in place to assure the system remains in the normal mode of operation.

G. COMPONENT FAILURE DATA

Not Applicable