



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

November 18, 1992

CWS LTR #92-677

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

Licensee Event Report 92-34, 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. Herwer for 11/20/93

Charles W. Schroeder
Station Manager
Dresden Nuclear Power Station

CWS/glt

Enclosure

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

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(ZDVR/786)

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1) Dresden Nuclear Power Station, Unit 2/3						Docket Number (2) 0 5 0 0 0 2 3 7			Page (3) 1 of 0 3		
Title (4) Standby Gas Treatment System Found Outside FSAR Design Limits Due to Flow Increasing Above Normal Limits Upon Loss of Instrument Air											

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)		
10	23	92	92	034	00	11	18	92	Dresden Unit 3		05000249		

OPERATING MODE (9) POWER LEVEL (10) 0 9 3 0 8 8		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)									
N		20.402(b)		20.405(c)		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 (Specify in Abstract below and in Text)			
		20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)					
		20.405(a)(1)(iv)		x 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 Brian Springer - SBTG System Engineer						TELEPHONE NUMBER AREA CODE 8 1 5 9 4 2 - 2 9 2 0					
Ext. 3588											

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)

X Yes (If yes, complete EXPECTED SUBMISSION DATE)								NO		Expected Submission Date (15) 0 6 0 1 9 3	
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ABSTRACT (Limit to 1400 spaces, i.e, approximately fifteen single-space typewritten lines) (16)

During a review of a Standby Gas Treatment System (SBGT) [BH] Technical Specification, on October 16, 1992 at Quad Cities Nuclear Power Station, it was revealed that a loss of instrument air would cause the SBGT flow control valve (FCV) to fail full open increasing the flow rate of the running train to 5100 cfm. Under this condition, the Control Room Dose limits defined in General Design Criterion (GDC) -19 could potentially be exceeded.

At 1820 hours on October 23, 1992, with Unit 2 at 93 percent power and Unit 3 at 88 percent power, the Nuclear Engineering Department (NED) notified the Dresden Station Control Room Engineer (SCRE) that if SBGT lost instrument air during operation, the FCV on the running train would fail full open increasing the air flow to 5670 cfm. Under this condition, the system would be considered to be outside of its design basis. However, the system was declared operable based on preliminary engineering calculations. Final engineering calculations later proved that GDC-19 and 10 CFR100 limits would not be exceeded, primarily due to the methyl iodine removal efficiency of the charcoal adsorbers being higher than the required efficiency of 90%.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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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:

Standby Gas Treatment System Found Outside FSAR Design Limits Due to Flow Increasing Above Normal Limits Upon Loss of Instrument Air

A. CONDITIONS PRIOR TO EVENT:

Unit(s): 2(3) Event Date: October 23, 1992 Event Time: 1820 Hours
 Reactor Mode(s): N(N) Mode Name(s): Run (Run) Power Level(s): 93 (88)%
 Reactor Coolant System (RCS) Pressure(s): 1003 (996) psig

B. DESCRIPTION OF EVENT:

At 1820 hours on October 23, 1992, with Unit 2 at 93 percent power and Unit 3 at 88 percent power, the Nuclear Engineering Department (NED) determined that the Standby Gas Treatment (SBGT) system could potentially operate in an unanalyzed condition. Each SBGT train has a flow control valve upstream of the fan. Upon loss of instrument air to the flow control valve on the SBGT train, the valve will fail full open, resulting in a flow of 5670 cfm through the running train. A review of design basis information indicated that SBGT was not analyzed to operate in this condition. An operability determination was immediately performed. Both trains of SBGT were determined to be operable based on preliminary calculations. Using actual radioactive iodine removal efficiency data, it was determined that the charcoal bed emissions were well within the General Design Criterion (GDC)-19 30-day control room thyroid dose limit of 30 rem.

C. APPARENT CAUSE OF EVENT:

This report is submitted in accordance with 10 CFR 50.73(a)(2)(ii), which requires the reporting of any condition that is outside the design basis of the plant. The apparent cause of the event was an inaccurate original SBGT flow control valve design analysis. The SBGT system is designed to provide an air flow of 4000 cfm ± 10% to achieve the optimum balance between the ability of the system to create a negative pressure in Secondary Containment [NG], and the amount of time contaminated air is held in the charcoal adsorber beds. At 5670 cfm flow, the methyl iodide removal efficiency of the charcoal adsorbers would have to be greater than 92% in order to maintain a 30-day control room thyroid dose within GDC-19 limits. Technical Specifications Section 3.7.B states that the methyl iodide removal efficiency as verified by laboratory carbon sample analysis shall show greater than or equal to 90% when tested at 130 degrees celsius and 95% relative humidity.

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D. SAFETY ANALYSIS OF EVENT:

The SBT system is designed to operate at 4000 cfm ± 10 percent flow with a charcoal adsorber methyl iodide removal efficiency of greater than or equal to 90% at 130°C and 95% relative humidity (RH). The actual efficiency of the existing charcoal in both trains of SBT at 130°C and 95% RH was 99.838% when translated to an airflow of 5670 cfm. Testing results for the charcoal were also obtained at 30°C and 70% RH resulting in an efficiency of 98.757%. The excess flow results in a 42% increase in bypass leakage around the charcoal. Therefore, a 1.42% bypass leakage was conservatively assumed in this calculation. Taking into account these conditions, a worst-case value of 97.337% overall adsorber efficiency was calculated, corresponding to a thirty-day control room thyroid dose of 14.02 rem which is considerably less than the GDC-19 limit of 30 rem.

The offsite dose calculation used to determine 10CFR100 compliance does not assume any hold-up time in Secondary Containment, and therefore is not a function of SBT flow. Based on these calculations and test data, the safety significance of this event is considered to be minimal.

E. CORRECTIVE ACTIONS:

The immediate corrective action was to perform an operability determination based on a preliminary calculation on October 23, 1992. On November 6, 1992, a safety-related calculation was approved, verifying the results of the original operability evaluation.

NED is investigating further corrective actions, which could include additional charcoal bed testing, a modification to the system or a change to the design basis. Recommendations will be provided by January 27, 1993 (237-180-92-33001).

NED will investigate to determine the reason for the design not accounting for the higher flow rates resulting from the valve's full-open position upon a loss of instrument air. The results of this investigation will be provided by March 1, 1993 (237-180-92-33002).

The Technical Staff will review the above recommendations and investigation, and will submit a supplemental report detailing these results by June 1, 1993 (237-180-92-33003).

F. PREVIOUS OCCURRENCES:

No previous occurrences involving increased train flow rate were noted during a review of past reportable events related to the Standby Gas Treatment System.

G. COMPONENT FAILURE DATA:

A component failure did not occur during this event, therefore, this section is not applicable.