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RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-005-02:on 880208,determined that CR emergency filtration sys,Train B bypass flow greater than TS limit of 0.05 gpm from 870923-880120.Caused by installation deficiency.Flow restrictor installed.W/930611 ltr.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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June 11, 1993
G02-93-147

Docket No. 50-397

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

Subject: **NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21**
LICENSEE EVENT REPORT NO. 88-005-02

Transmitted herewith is Licensee Event Report No. 88-005-02 for the WNP-2 Plant. This report is submitted in response to the report requirements of 10CFR50.73 and incorporates only minor administrative changes.

Sincerely,

J. V. Parrish (Mail Drop 1023)
Assistant Managing Director, Operations

JVP/CLF/jd
Enclosure

cc: Mr. B. H. Faulkenberry, NRC - Region V
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	1 OF 5

TITLE (4)
CONTROL ROOM EMERGENCY FILTRATION SYSTEM, TRAIN "B", BYPASS FLOW NOT IN COMPLIANCE WITH TECHNICAL SPECIFICATIONS

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 NUMBERS(S)
0 2	0 8	8 8	8 8	0 0 5	0 2	0 6	1 1	9 3		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
1	20.402(b)	20.405(C)	50.73(a)(2)(iv)	77.71(b)
POWER LEVEL (10) 0 7 2	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.73(c)
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	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
C. L. Fies, Licensing Engineer	AREA CODE 5 0 9 3 7 7 - 4 1 4 7

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 (16)

On February 8, 1988, it was determined that Control Room Emergency Filtration System, Train "B," bypass flow was greater than the 0.05 percent allowed by the Plant Technical Specifications, presumably from September 23, 1987, until January 20, 1988.

During September 23-25, 1987 an HVAC contractor (Able Balance Co.) was brought on site to collect air balance data for the Control Room Emergency Filtration System. On November 9, 1987, the Supply System received a report from Able Balance that indicated that air may have been bypassing the Control Room Emergency Filtration System, Train "B." However, no action was taken because a Plant System Engineer, who assisted Able Balance in recording the data, did not note any abnormalities during data collection in September. The System Engineer made the assumption that an error was made when recording the data.

During January 1988, Able Balance returned to perform Plant Service Building HVAC air balancing work and was requested to recheck Control Room Emergency Filtration System flow measurements. On January 20, 1988, a pressure differential was noted across outside air intake (bypass) damper WMA-AD-51B-1. As a result of further investigation, a flow restrictor was installed (on January 20, 1988) in the Emergency Filter Unit (WMA-FU-54B) air intake in an attempt to restore a proper balanced condition to the system.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)
		Year	Number	Rev. No.	
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	8 8	0 0 5	0 2	2 OF 5

TITLE (4)
CONTROL ROOM EMERGENCY FILTRATION SYSTEM, TRAIN "B", BYPASS FLOW NOT IN COMPLIANCE WITH TECHNICAL SPECIFICATIONS

On February 8, 1988, a test was performed with and without the flow restrictor in place to reconfirm flow balance/pressure drop data. It was determined that, without the restrictor in place, a small quantity of air (approximately 15-24 cfm of a total flow of 1000 cfm) was bypassing the filtration system through WMA-AD-51B-1. With the flow restrictor in place, test results were satisfactory.

The cause of this event was an installation deficiency that resulted in an unbalanced condition in the system.

Although this event posed no threat to the health and safety of the public, during the event period there could have been an emergency condition (DBA-LOCA) when 1.5-2.4 percent of unfiltered air would have entered the Control Room. An Engineering analysis has been performed that shows the calculated control room dose would have remained within acceptable limits under these conditions.

Plant Conditions

a) Power Level - 72%
b) Plant Mode - 1 (Power Operation)

Event Description

On February 8, 1988, it was determined that Control Room Emergency Filtration System, Train "B," bypass flow was greater than the 0.05 percent allowed by the Plant Technical Specifications, presumably from September 23, 1987, until January 20, 1988.

During September 23-25, 1987, an HVAC contractor (Able Balance Co.) was brought on site to collect air balance data for the Control Room Emergency Filtration System. The contractor was brought on site in an attempt to verify several Supply System concerns relating to the accuracy of HVAC flow data obtained by Argonne National Laboratory (ANL) personnel during the last refueling outage (spring, 1987). Results of the ANL flow measurements are to be included in a NUREG on the Control Room Habitability Survey.

On November 9, 1987, the Supply System received a written report from Able Balance, and a review of the air balance data indicated that there may be air bypassing the Control Room Emergency Filtration System, Train "B," through a motor-operated outside-air-intake (bypass) damper (WMA-AD-51B-1). However, no action was taken at that time because a Plant System Engineer, who assisted Able Balance in the recording of data in September, did not note any abnormalities when measuring the ΔP across the damper. As a result, the System Engineer made the assumption that a transposition error (the positive and negative pressure data were assumed to be reversed) had been made when the data was recorded and, therefore, did not believe that an actual abnormal condition existed. Another factor which led the System Engineer to believe that no abnormal condition existed was that Plant Procedure (PPM) 7.4.7.2.2, "Control Room Emergency Filtration System - HEPA DOP Test," had been successfully performed in August, 1987, and no work had since been performed on the system which would account for any change.

The purpose of PPM 7.4.7.2.2 is to verify that the HEPA section of the Control Room Emergency Filtration System 1) satisfies the inplace penetration and bypass leakage testing acceptance criteria of less than 0.05 percent in accordance with Regulatory Guide 1.52 (Revision 2-1978), when tested to ANSI 510-1975/1980 requirements, and 2) does not exceed the flow and pressure drop requirements of the Plant Technical Specifications.

However, the System Engineer should have either 1) documented the potential condition on a Plant Nonconformance Report (NCR), or 2) immediately verified the results of the Able Balance data at the time the report was received.

During January, 1988, Able Balance was brought back on site to perform Plant Service Building HVAC air balancing work and the decision was made at that time to recheck the Control Room Emergency Filtration System flow measurements.

On January 20, 1988, it was documented that a pressure differential was noted across bypass damper WMA-AD-51B-1. Accordingly, Plant personnel began an investigation to determine the cause and how the pressure differential related to potential bypass leakage. As a result of the investigation, Plant personnel installed a flow restrictor (on January 20, 1988) in the Emergency Filter Unit (WMA-FU-54B) air intake in an attempt to restore a proper balanced condition to the system.

On February 8, 1988, PPM 7.4.7.2.2 was performed with and without the flow restrictor in place as a further attempt to reconfirm flow balance/pressure drop data. It was determined that, without the flow restrictor, a small quantity of air (approximately 15-24 cfm of a total flow of 1000 cfm) was bypassing the filtration system through WMA-AD-51B-1 when in the pressurization mode. As a result, this would have allowed a small amount (1.5-2.4 percent) of unfiltered air to enter the Control Room during accident conditions. With the flow restrictor in place, procedure results were satisfactory.

The cause of this event was an installation deficiency that resulted in an unbalanced condition in the system.

Immediate Corrective Action

A flow restrictor was installed which restored a proper balanced condition to the system and, thereby, force any leakage through damper WMA-AD-51B-1 to return to filter unit WMA-FU-54B.

Further Corrective Action

1. An investigation was performed to determine the cause for the change in the system air balance:

   - Filter ΔPs were checked and were within limits.
   - Fan performance was unchanged.
   - System flow had not degraded.
   - Discharge, suction and bypass ducting was inspected and no problems were identified.
   - It was verified that Control Room Emergency Filtration System, Train "A" leakage was recirculating and not bypassing.
   - System dampers were inspected and found to be satisfactory.
   - It was determined that no flow balancing had been performed during the event period which would account for a change in bypass flow.

2. A review was performed to determine if additional HVAC changes would be required. The review concluded that no other HVAC changes would be required because the use of a flow restrictor instead of a balancing damper is unique to Control Room Emergency Filtration System, Train "B." Train "A" is configured (the intake is closer to the fan suction) such that a flow restrictor is not required to prevent bypass flow.

3. The Plant System Engineer involved in this event was counseled on the importance of documenting potential nonconforming conditions at the time of discovery.

4. Further engineering evaluations were performed to determine the potential effects of minor system changes on system bypass flow.

Safety Significance

The reliability of the HVAC systems servicing the Main Control Room is achieved by two redundant systems (Trains "A" and "B"). The two trains are physically separated to preclude simultaneous failure from any one incident. Each train contains separate 1000 cfm capacity emergency filter systems which are normally in the standby mode and operate only in the event of an emergency signal resulting from a Design

Basis Accident (DBA-LOCA). The emergency signals which activate the emergency filtration systems are 1) high drywell pressure - "F" signal, 2) reactor vessel low water level - "A" signal, and 3) high radiation level in Reactor Building exhaust ventilation system - "Z" signal.

Each of the emergency filter systems consists of an emergency filter unit, an electric heater, bypass and recirculation control dampers and associated ductwork. Each emergency filter unit consists of a medium-efficiency prefilter, high-efficiency particulate air (HEPA) filter, activated charcoal filters, and a direct-drive centrifugal fan (all enclosed in a welded sheet metal housing). A deluge water spray system is provided to soak the charcoal filters in the event of high temperatures in the charcoal beds.

Although this event posed no threat to the health and safety of the public, during the event period there could have been an emergency condition (DBA-LOCA) when 1.5-2.4 percent of unfiltered air would have entered the Control Room. Accordingly, an engineering evaluation was performed to evaluate the impact of this bypass leakage. The results are found in Technical Memorandum No. 1158, Revision 4 which show the calculated doses are below Post-LOCA acceptance criteria given in Standard Review Plan 6.4, Control Room Habitability. The whole body gamma dose was calculated at 0.1 Rem compared to the limit of 5 Rem; the skin beta dose was 3.0 Rem compared to the limit of 30 Rem; and the Thyroid dose was 8.9 Rem compared to the limit of 30 Rem.

Similar Events

None

EIIS Information

Text Reference	EIIS Reference System	EIIS Reference Component
Control Room Emergency Filtration System	VH	---
Plant Service Building HVAC System	VH	---
WMA-AD-51B-1	VH	CDMP
WMA-FU-54B	VH	FLT