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October 31, 2003

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

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION  
DOCKET NO. 50-395  
OPERATING LICENSE NO. NPF-12  
LICENSEE EVENT REPORT (LER 2003-003-00)  
CONTROL ROOM VENTILATION BOUNDARY BREACHED DURING  
MAINTENANCE

Attached is Licensee Event Report (LER) No. 2003-003-00, for the Virgil C. Summer Nuclear Station (VCSNS). The report describes an event in which the VCSNS control room ventilation boundary was breached during HVAC system maintenance for greater than the allowable time in the facility Technical Specifications. This LER is being submitted in accordance with 10 CFR 50.73(a)(2)(i)(B).

Should you have any questions, please call Mr. Ronald B. Clary at (803) 345-4757.

Very truly yours,

Stephen A. Byrne

PAR/SAB/dr  
Attachment

c: N. O. Lorick  
N. S. Carns  
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File (818.07)  
DMS (RC-03-0226)

JEZZ

**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503.

<b>1. FACILITY NAME</b> Virgil C. Summer Nuclear Station	<b>2. DOCKET NUMBER</b> 05000395	<b>3. PAGE</b> 1 OF 4
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**4. TITLE**  
Control Room Ventilation Boundary Breached During Maintenance

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
09	08	2003	2003	- 003	- 00	10	31	2003	FACILITY NAME	DOCKET NUMBER

<b>9. OPERATING MODE</b> 1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>									
<b>10. POWER LEVEL</b> 100	20.2201(b)	20.2203(a)(3)(ii)	50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)						
	20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)						
	20.2203(a)(1)	50.36(c)(1)(i)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)						
	20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)						
	20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER Specify in Abstract below or in NRC Form 366A						
	20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)							
	20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)							
	20.2203(a)(2)(v)	X 50.73(a)(2)(i)(B)	50.73(a)(2)(vii)							
20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)								
20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)								

**12. LICENSEE CONTACT FOR THIS LER**

<b>NAME</b> R. B. Clary, Mgr., Nuclear Licensing	<b>TELEPHONE NUMBER (Include Area Code)</b> (803) 345-4757
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	AH			N					

<b>14. SUPPLEMENTAL REPORT EXPECTED</b>				<b>15. EXPECTED SUBMISSION DATE</b>			
X	YES (If yes, complete EXPECTED SUBMISSION DATE).	NO			MONTH	DAY	YEAR
					02	25	04

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

On September 8, 2003, at 15:30 maintenance personnel opened the "A" train Control Room charcoal filter plenum to replace a charcoal filter that failed surveillance testing. On September 9, at 07:30, the shift supervisor asked if the system could perform its design function during an accident in the current configuration. At approximately the same time (08:05), maintenance was directed to close up the system (reinstall the plenum covers and gag the isolation dampers closed).

Engineering stated that the tag-out of the "A" train ventilation system inadvertently repositioned the isolation dampers for the emergency charcoal filter plenum and fan XFN 0030A open. The configuration would not allow maintaining the required positive 0.125 inch water column as specified in TS (3.7.6) and as verified by the intermittent control room low pressure alarms. This maintenance activity effectively breached the control room boundary and rendered the two emergency trains inoperable. This activity unknowingly placed the plant into Technical Specification Limiting Condition for Operability (LCO) 3.0.3, which requires 1 hour to prepare for plant shutdown and 6 hours to Hot Standby. This is being reported under 50.73(a)(2)(i)(B), a condition prohibited by Technical Specifications as the condition was undetected for 16 hours.

Replacement of the charcoal was suspended and the filter plenum was closed and isolated by manually gagging the isolation dampers while a plan was developed that would not degrade the ventilation system (charcoal replacement was completed on September 10, 2003). The NRC Emergency Operations Center was notified at approximately 11:30; event number EN# 40142.

A root cause evaluation is ongoing to determine the underlying cause.

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**17. NARRATIVE** (If more space is required, use additional copies of NRC Form 366A)

**PLANT IDENTIFICATION**

Westinghouse - Pressurized Water Reactor

**EQUIPMENT IDENTIFICATION**

Control Room Ventilation system emergency filter plenum XAA 0029A-AH

**IDENTIFICATION OF EVENT**

The oncoming shift supervisor (9/09/03, 07:30) questioned why the intermittent control building alarm was acceptable and if the system would perform its design function following an accident.

**EVENT DATE**

09/08/03

**REPORT DATE**

10/31/03

**CONDITIONS PRIOR TO EVENT**

Mode 1, 100% Power

**DESCRIPTION OF EVENT**

On September 8, 2003, maintenance personnel opened the "A" train Control Room charcoal filter plenum (XAA-0029A-AH) to replace a charcoal filter that failed surveillance testing. The tag-out process for the work included de-energizing the plenum fan (XFN0030A-AH), which failed the isolation dampers open due to a loss of control power. At 15:30, maintenance began to disassemble the

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

**DESCRIPTION OF EVENT (Cont'd)**

plenum to allow for access to replace the charcoal filter. Intermittent alarms for the control room pressure were received but considered an expected alarm by the operating shift due to the maintenance on the system. The annunciator response procedures were reviewed in response to the alarm but did not provide adequate information to assist in evaluating the cause of the alarm.

On September 9, at 07:30, the shift supervisor asked if the system could perform its design function during an accident in the current configuration. At approximately the same time (08:05), maintenance was directed to close up the system (reinstall the plenum covers and gag the isolation dampers closed).

Engineering review determined that the tag-out of the "A" train ventilation system inadvertently repositioned the isolation dampers for the emergency charcoal filter plenum and its associated fan XFN 0030A open. The configuration would not allow maintaining the required positive 0.125-inch water column as specified in TS (3.7.6) and as verified by the intermittent control room low pressure alarms. This maintenance activity effectively breached the control room boundary and rendered the two emergency trains inoperable. This activity unknowingly placed the plant into Technical Specification Limiting Condition for Operability (LCO) 3.0.3, which requires 1 hour to prepare for plant shutdown and 6 hours to Hot Standby.

**CAUSE OF EVENT**

The cause of this event has not been officially established. A root cause evaluation is proceeding but is not complete at this time.

Multiple barriers should have prevented this event. Procedures did not contain the warning that the activity would breach the system, a lack of knowledge that this activity would violate TS, the planning process did not detect the potential for the breach, lack of understanding by the operators that considered the intermittent alarm an expected response were all instrumental in allowing this event to occur.

**ANALYSIS OF EVENT**

The Control Room ventilation envelope is designed to provide the Control Room and specific vital areas in the Control Building with a minimum flow of air to assure habitability for personnel and operability of equipment during normal operations and to provide filtered air during accidents, fires, or radiation/chemical releases onsite. During normal operations, a maximum of 1000 scfm of outside air is brought in to maintain a minimum positive pressure of 0.125 inches water column. This positive pressure is required for accident conditions to prevent intrusion of airborne contaminants.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

Engineering investigation determined that by having the isolation dampers for the "A" train emergency filter plenum open, a path existed for some percentage of the "B" train air flow to back feed into the "A" train. The opening of the plenum provided an opening, which allowed the reduction in positive pressure. Additionally, the potential increase in the outside air flow rate may have exceeded design analysis assumption limits. This potential negates the design function during an accident, which is to protect the operators from unacceptable levels of airborne contaminants.

During the time period that the "A" train was tagged out, no releases of airborne contaminants occurred and there were no undesired exposures to personnel. Equipment temperatures remained within acceptable bands.

The change out of a charcoal filter is not a common activity but has been performed previously on the Control Room emergency ventilation system as well as other ventilation systems through out the plant. The last time this activity was performed was in 2000 on the opposite train. The procedure does contain some compensatory measures, such as using sheet plastic to provide a temporary boundary, but the plastic sheeting was not used on the Control Room emergency ventilation system on September 8, 2003 due to not understanding the need to protect the boundary. The lack of understanding of what constitutes a breach of the Control Room Boundary was across all disciplines involved in the activity.

**CORRECTIVE ACTIONS**

The Station took the following immediate corrective actions:

- The filter plenum was closed to prevent unfiltered air from being drawn into the ductwork.
- The isolation dampers for the emergency charcoal filter plenum and fan were gagged closed to prevent any back flow through fan XFN0030A.

Additional corrective actions will be established to prevent similar events from recurring. These corrective actions are being developed by the root cause team investigating this event. The root cause evaluation is ongoing and is being tracked by CER 03-2819.

A revision to this LER will be submitted by February 25, 2004 to document the additional corrective actions and their status.

**PRIOR OCCURRENCES**

None