

45-I

Davis-Besse Nuclear Power Station

SP 1104.69

Unit No. 1

System Procedure SP 1104.69

Control Room Emergency Ventilation System  
Procedure

# NUCLEAR SAFETY RELATED

## Record of Approval and Changes

Prepared by W. Alton 3/18/74  
Date  
Submitted by Larry C. Stalter 6/18/74  
Section Head Date  
Recommended by Jack Evans 6/18/74  
SRB Chairman Date  
QA Approved NA           
Manager of Quality Assurance Date  
Approved by Jack Evans 6/18/74  
Station Superintendent Date

Revision No.	SRB Recommendation	Date	QA Approved	Date	Sta. Supt. Approved	Date
1	<i>[Signature]</i>	3/18/74	NA		<i>[Signature]</i>	3/18/74
2	TO Murray	10/4/77	NA		J Evans	10/10/77
3	TO Murray	7/6/78	NA		TO Murray	9/7/78
4	<i>[Signature]</i>	8/7/81	NA		TO Murray	8/27/81
5	<i>[Signature]</i>	7/27/82	NA		TO Murray	8/11/82
6	<i>[Signature]</i>	12/7/82	NA		TO Murray	12/23/82
7	<i>[Signature]</i>	2/21/84	NA		TO Murray	2/25/84
8	<i>[Signature]</i>	MAR 20 1985	NA		<i>[Signature]</i>	4/9/85

Plant Manager Approval/Date

## 1. PURPOSE

To provide procedures for operating the Control Room Emergency Ventilation System in the following modes:

<u>Mode</u>	<u>Section</u>
Startup	4
Shutdown	5
Abnormal Operation	6

The Control Room Emergency Ventilation System consists of two recirculation centrifugal fans (3300 CFMs), two dual condenser air cooling units (water cooled and air cooled), two motor operated fresh air intake dampers, two sets of filter banks (prefilter, high efficiency absolute filter, and charcoal adsorber) and the associated dampers and ductwork.

During normal operation, the Control Room Emergency Ventilation System is held on standby. The system is continuously monitored and alarmed for high control room radiation, motor overload and high filter-differential pressure. Under normal operating conditions the Control Room will be free of airborne radioactivity and high chlorine levels. In the event of high radioactivity after a LOCA or high chlorine levels after a chlorine leak, the Control Room Normal Ventilation System is shutdown automatically and the emergency ventilation system is initiated manually from the Control Room in a closed complete recirculation mode in which outside air is not introduced by leaving the minimum outside air dampers in the closed position. All Control Room Normal Ventilation System outside air dampers will automatically close to minimize the dose to operating personnel due to inhalation of fission products or chlorine gas. If the suction air temperature to the CTRM EVS Fans is greater than 75°F, the CTRM EVS condensing units will start.

After the Control Room Emergency Ventilation Units have started, the automatic service water valves will open. If flow is received and the service water temperature is between 55 and 85 degrees Fahrenheit, the condensing unit will remain in the water cooled mode; if not, the service water valve will close and the condensing unit will automatically switch to the air cooled mode.

The Control Room emergency ventilation system filters have a total efficiency not less than 95%, so that the limits of Criterion 19 of 10 CFR 50, Appendix A, are met. For habitability considerations (primarily CO<sub>2</sub> buildup) after Control Room isolation, fresh air may be introduced into the Control Room by opening the minimum outside air dampers.

## 2. REFERENCES

2.1 Davis-Besse Unit 1 Updated Safety Analysis Report, Section 9.4.1

- 2.2 Service Water System Procedure, SP 1104.11
- 2.3 Control Room Ventilation System Procedure, SP 1104.14
- 2.4 Control Room HV and AC Piping and Instrument Diagram No. M-027A
- 2.5 480 V MCC (Essential) One Line Diagram No. E-6, Sheet 1 of 2
- 2.6 Standing Order 24 - Ventilation for painting & welding
- 8 | 2.7 AB 1203.14, Toxic Gas and Liquid Release

### 3. LIMITATIONS AND PRECAUTIONS

- 3.1 Do not operate the Control Room Emergency Ventilation Fans when the following limits on the filter elements are exceeded:

<u>Element</u>	<u>Control Room EVS Filter 1-1 (1-2 Local Indicator</u>	<u>Limit (in H<sub>2</sub>O)</u>	<u>Approximate Clean D/P (in H<sub>2</sub>O)</u>
			<u>Not A Limit</u>
Prefilter	PDI 5295 (PDI 5298)	1.0	~.15
HEPA Filter	PDI 5294 (PDI 5297)	2	~.5
Charcoal Absorber	PDI 5293 (PDI 5296)	1.5	~.25

- 3.2 Whenever the Control Room Emergency Cooling System is inoperable because of failure, repair work progress or routine maintenance on the system, the operator is to turn IL 4809 "CTRM CLNG" on using HS 4709 panel C5717. This light is to remain illuminated as long as the system is inoperable.

### 4. STARTUP

#### 4.1 Prerequisites

- 4.1.1 The Control Room Emergency Ventilation System Air Conditioning Units must be lined up for automatic operation as per Enclosure 1.
- 4.1.2 The Service Water System must be in operation to supply cooling water to the air condition unit as per the Service Water System Procedure, SP 1104.11.
- 4.1.3 Power must be available to the following breakers and the breakers closed.

<u>Breaker</u>	<u>Panel</u>	<u>Equipment</u>
BE1209	MCC E12A	CTRM Emer Vent Fan 1-1
BE1216	MCC E12A	CTRM Emer A/C Unit 1-1
BE1232	MCC E12A	SW Inlet Valve SW2927
BE1144	MCC E11C	Minimum Outside Air Dmpr HA5261A

BE1148	MCC E11E	CTRM Emer Standby A/C Unit 1-1
BF1149	MCC F11A	CTRM Emer Vent Fan 1-2
BF1131	MCC F11A	CTRM Emer A/C Unit 1-2
BF1132	MCC F11A	SW Inlet Valve SW2928
BF11A6	MCC F11B	Min. Outside Air Dmpr HAS262A
BF1229	MCC F12A	CTRM Emer Standby A/C Unit 1-2

- 8 |        4.1.4    Close HV 5261 and HV 5262 minimum outside air intake dampers from HIS 5261A and HIS 5262A on Control Room Panel C5720.

#### 4.2 Procedure

The Control Room Emergency Ventilation System will be started manually using this procedure whenever the Control Room Normal Ventilation System is shutdown by one of the following signals:

- 8 |        1.    SFAS Incident Level 1
- (TS 3.3.3.7) 2.    Chlorine Gas Detection (Setpoint  $\leq 5$  ppm by volume)
3.    High Airborne Radiation (Setpoint as per the Radiation Monitoring setpoint book in the Control Room).

\_\_\_\_\_ 4.2.1    Turn the Control Room Emergency Ventilation Unit 1-1 and Unit 1-2 switches on Panel C5720 to START. Ensure the OFF-MANUAL-AUTO switch on RE5327 and RE5328 are in AUTO and that the radiation monitor for the respective C.R. EVS Fan started with the fan starting.

\_\_\_\_\_ 4.2.2    Check proper operation of the filters by observing that the differential pressure is within the indicated values. (Step 6.3) Listed under Limitations and Precautions, Section 3.1.

- 8 |        4.2.3    If the temperature of Control Room return air is greater than 75°F, verify that the Control Room Emergency Air Conditioning Units 1-1 and 1-2 start. The unit will start in the water cooled mode. If the service water temperature is between 55 and 85°F the condensing unit will remain in the water cooled mode; if not, the service water valve will close and the condensing unit will automatically switch to the air cooled mode. (The water cooled mode is noted by the Service Water Valves SW2927 - Unit 1-1 and SW2928 - Unit 1-2 opening and remaining in the open position.)

- 8 |        4.2.4    Open the minimum outside air intake when Control Room atmosphere needs replenishment (it is expected that CO<sub>2</sub> level will approach its limit within 4 days of

isolation). This is accomplished by opening dampers HA 5261A and HA 5262A using the Emergency Ventilation Fan 1 and 2 inlet valve switches on Panel C 5720 in the Control Room. The outside air dampers should be opened periodically for about an hour to change out the air volume of the Control Room and then close until required again.

## 5. SHUTDOWN

This procedure will be followed any time the system is to be shutdown.

- 5.1 Shutdown the Control Room Emergency Ventilation System by turning the switches HIS5261 and HIS5262 on Panel C5720 to Stop.

NOTE: With the fans stopped, the air conditioning unit will automatically stop.

- 5.2 Close the minimum outside air dampers (if open) using the Emergency Ventilation Fan 1-1 and 1-2 Inlet Valve switches HIS5261A and HIS5262A on Panel C5720.

- 5.3 Stop the Radiation Monitor RE 5327 (RE 4323) for Control Room EVS Fan 1-1 (1-2) by turning off the pump at the control monitor. Ensure the Off-Manual-Auto switch is still in the Auto position.

## 6. ABNORMAL OPERATION

The following abnormal operations will be discussed.

### Section

Radiation Alarm	6.1
Motor Overload	6.2
High Filter Differential Pressure	6.3

#### 6.1 Radiation Alarm

When a high radiation alarm is sensed in the discharge from one of the Control Room Emergency Ventilation Fans, you will receive an alarm on Computer Point R346 or R347 for Fan 1 or Fan 2 respectively. If the alarm is received on both fans, shutdown the fan with the highest radiation as read on RI5327A, B, and C (Fan 1), and RI5328A, B, and C (Fan 2).

#### 6.2 Motor Overload

When an overload condition occurs, you will receive a white light on the indicator switch for the fan with the overload

condition. If an overload condition occurs, these fans will not trip; therefore, it is up to the operator to determine whether the fan can be tripped or must remain operating in an emergency situation. These fans can either be tripped from Panel C 5720 or locally.

### 6.3 High Filter Differential Pressure

If the differential pressure across any filter exceeds the limit listed in the Limits and Precautions, Section 3.1, shutdown the respective Control Room Emergency Ventilation Fan (1-1 or 1-2) as per Section 5 of this procedure.



## Pre-Startup Signoff Sheet

CONDENSER UNIT 1-1  
PANEL C6708

<u>Equipment</u>	<u>No.</u>	<u>Switch</u>	<u>Position</u>	<u>Verified</u>
Hot Gas Solenoid Valve	SV4823	HIS4823	Auto	_____
Hot Gas Bypass Solenoid Valve	SV4823A	HIS4823A	Auto	_____
Liquid Solenoid Valve	SV4824	HIS4824	Auto	_____
Air Cooled Condenser Selector Switch	S61-1	N/A	Auto	_____
Air Cooled Condenser Fan	S61-1	NS0611	Auto	_____

PANEL C6706

8   Water Cooled Condenser Local Switch	S33-1	NS0331	ON	_____
---	-------	--------	----	-------

CONDENSER UNIT 1-2  
PANEL C6709

<u>Equipment</u>	<u>No.</u>	<u>Switch</u>	<u>Position</u>	<u>Verified</u>
Hot Gas Solenoid Valve	SV4827	HIS4827	Auto	_____
Hot Gas Bypass Solenoid Valve	SV4827A	HIS4827A	Auto	_____
Liquid Solenoid Valve	SV4828	HIS4828	Auto	_____
Air Cooled Condenser Selector Switch	S61-1	N/A	Auto	_____
Air Cooled Condenser Fan	S61-1	NS0612	Auto	_____

PANEL C6707

Water Cooled Condenser Local Switch	S33-2	NS0332	ON	_____
-------------------------------------	-------	--------	----	-------

COMMITMENTS

STEP NO.	COMMITMENT DOCUMENTS REFERENCE	COMMENTS
4.2.4	USAR Step 9.4.1	Details of required assumptions used in safety analyses.

END