

PART II - PRIMARY SYSTEMS INFORMATION

I. HVAC System

1. Operation

d. Emergency Operating Instructions -

(1) Air Handling Unit Shutdown: Air handling unit shutdown may occur for the following different reasons and operating instructions are as follows:

1-A) Smoke Detection:

When the AHU is in operation, any space or duct mounted smoke detector which senses smoke shall signal the fire alarm control panel, which shuts down the AHU and its interlocked fans that serve the zone in alarm. Indication of fire/smoke alarm will occur at the fire alarm panel or the DDC control panel.

When the AHU has been shut down in this mode, it may only be restarted by the Fire Department or other approved personnel from the fire alarm control panel override switch. When the override switch is reset and returned to its normal position, the AHU and its interlocked fans shall start.

1-B) DDC System Failure:

The AHU's are started and controlled through a direct digital control system (DDC). If the DDC system fails to operate the AHU's, then the DDC system shall be checked to verify its operation and/or its set points. See page 2-1-5a "Control System" for emergency operating instructions.

1-C) Variable Frequency Drive Failure:

When the AHU fan is in operation, a static pressure sensor controller set to maintain approximately 250 Pa. shall operate a variable frequency drive to maintain its set point.

This static pressure sensor is located in the supply air duct approx. 2/3 rd of distance of longest duct run. A high static pressure sensor located in the discharge duct near the AHU shall shut down the AHU fans if the static pressure rises above 1250 Pa.

If a variable frequency drive failure occurs, all terminal units (VAV and CV) shall be manually set to 100% design air flow through the DDC system, and a drive bypass switch located on the variable frequency drive cabinet shall be placed in the "bypass" mode to bypass the variable frequency drive. In this mode, the AHU shall operate at 100% air flow (constant volume).

(2) Building Heating:

The loss of building heating may occur for the following reasons and operating instructions are as follows:

2-A) DDC System Failure:

The heating hot water system is started and controlled through a direct digital control (DDC) system. If the DDC system fails when heat is required in the building, the following sequence of activities should be followed to provide emergency heat to the facility. If the DDC system is inoperative, the boiler may be manually started and operated through its own operating and safety controls. The “hand-off-auto” switch on HWP-1 & HWP-2 should be moved to the “hand” position. When water flow is established through the boiler it will cycle to maintain its discharge temperature.

(3) Building Cooling:

The loss of building cooling may occur for the following reasons and operating instructions are as follows:

3-A) DDC System Failure:

The chilled water pumps and air cooled chiller are started and controlled through the direct digital control (DDC) system. An outdoor air temperature sensor shall start the chilled water pumps CWP-1 & CWP-2 when the outdoor air temperature is at or above 12°C (54°F). When flow is proven through the flow switches on the chilled water line the water chilling unit (ACC-1) will start and operate through its own internal safety and operating controls to maintain a leaving water temperature of 7.2°C (45°F).

If any of the pumps (CWP-1 & CWP-2) fails to operate automatically, the equipment’s “hand-off-auto” switch can be placed in the “hand” position for manual starting of that equipment.

3-B) Loss of Chiller:

If the chiller require shutdown for an extended repair period, the air handling units serving that area may be placed in economizer mode of operation using 100% outside air or a portion thereof. If the chiller requires a shutdown for an extended period, a package chiller can be rented and temporarily connected to the chilled water loop until the chiller can be repaired.

4) General Shutdown Procedures:

General system shutdown and emergency shutdown may be required for the following reasons:

4-A) Fire:

The building is completely sprinkled with an automatic wet pipe fire suppression system, a smoke detection system both in the occupied space and in the ductwork, and manual fire alarm pull stations. If a fire or smoke alarm occurs, the building should be evacuated until the cause of the alarm is verified and cleared. The smoke detectors and the fire alarm system will automatically shut down the air handling units and all interlocked fans that serve the area of the building where the fire or smoke alarm occur. If the shutdown does not occur automatically, the fans serving that area should be manually placed in the "off" position until the alarm is verified and cleared.

In the event that a major fire occurs where a large portion of the facility is involved, all power to the building should be shut off. This can be done at the main electrical switch in room 1B23. **CAUTION: DO NOT ENTER ANY ELECTRICAL ROOM IF THE FIRE SPRINKLER SYSTEM IS OPERATING OR HAS OPERATED IN THAT ROOM.**

If entry to this room is prohibited by the fire or by water from the sprinkler system, power can be shut down at the secondary unit substation near the south west corner of the building..

4-A) Explosion:

In the event of an explosion within the facility, evacuation and shut down of the systems would be the same as in 4-A above.