

## **OPERATIONS DIVISION STANDARD OPERATING PROCEDURE**

### **OD/SOP 08.12 Freeze Protection Protocol**

**DATE: October 3, 2018**

#### **PURPOSE**

This Operations Division Operating Policy and Procedure (OD/OP) establishes procedures to be followed in protecting equipment and facilities from damage during times of freezing weather.

#### **REVIEW**

In October of each year the Emergency Maintenance Supervisor will present the OD/SOP 08.12 to the Energy Manager, HVAC Superintendent, ELOM Foreman and the Systems Maintenance Foreman to be reviewed. It will then be approved by the Assistant Vice President for Operations.

#### **POLICY AND PROCEDURE**

##### **1. Definitions**

- a. AHU: Air Handling Unit
- b. Chilled Water Pump (CWP): Device used to pump chilled water through the cooling coil of the AHU.
- c. Chilled Water valve: Device used to regulate the flow of chilled water through the cooling coil of the AHU.
- d. Environmental Control Systems: Computers used to monitor and make adjustments to Air Handlers, Chilled Water systems, Hot Water systems, etc., in campus facilities.
- e. Exceptions: Buildings or AHUs which require special procedures not covered in this Operating Policy. They will be listed on Appendix A, *Exceptions*.
- f. FAB: Face and Bypass Damper. A damper which bypasses inlet air flow around the pre-heat coil.
- g. Heating Valve and Pre-Heat Valve: Device used to regulate the amount of steam or hot water to the heating coil of the AHU.
- h. Hot Water Pump (HWP): Device used to pump hot water to the heating coil of the AHU.
- i. MAT: Mixed Air Temperature (The ODCC does not act on these alarms for freeze.)
- j. Mixed Air Low Temperature Limit: (This is not a low limit alarm, this is from a space temp sensor).
- k. OAD: Outside Air Dampers
- l. OAT: Outside Air Temperature
- m. Operator: The Emergency Maintenance Operator on duty.
- n. Software Override (SWO): A command on the Front-End Computer to change the state of a device in the field. The command must be manually released.

## 2. Procedures According to System Mode/Status

- a. When an AHU is running properly:

No action will be taken on any AHU that is online and running properly.

- b. When an AHU trips off due to:

☒ Freeze Stat

☒ AHU Low Temperature Limit

1. **DO NOT OPEN ANY STEAM VALVES.** Ensure the Hot Water Valve is 100% open. If not, issue a SWO to open it to 100%.
  2. If so equipped, override the Pre-Heat Valves open and the FABs open.
  3. Check the HWP indications and ensure it is running. If it is not, the Operator will issue a SWO to turn it on.
  4. Issue a SWO to override the Chilled Water Pump on and open the Chilled Water Valve to 50%.
  5. Ensure the OAD is closed. If the OAD is not closed, issue a SWO to close the Dampers.
  6. The Heating Valves, Pre-Heat valves, HWPs, OADs and FABs will stay overridden. In order to clear the alarm and reset the AHU, contact and inform the on-call BMC Superintendent of the problem.
- c. When the AHU is scheduled off for weekends or holidays, and the OAT drops below 30°:  
The Operator will start the campus AHUs and run them for two hours during each 12-hour period during which the OAT drops to or remains below 30°. During subsequent 12-hour shifts, it can be restarted at the Operator's discretion.
- d. Any time the OAT drops below 20°:
1. The Operator will start all campus AHUs and let them run until the OAT rises above 24°.
  2. The Operator will contact and notify the on-call Emergency Maintenance Supervisor that this action has been taken.
  3. After the OAT rises above 24°, the Operator will return to the normal schedule, or if the AHU is scheduled off for weekends or holidays, to running for two hours during each 12-hour period as described in section 2.c. above.

## 3. Documentation and Reporting

Immediately send email/text notification to the freeze group for freeze action when the DAC operator Turns campus on for the temperature dropping below 20°. Use the freeze distribution list.

## 4. Exceptions

Some specific buildings or AHUs will require unique procedures which are Exceptions to the above. These units must be listed on Appendix A, *Exceptions*, and must be reviewed annually at the same time as this Operating Policy.

Reviewed: \_\_\_\_\_  
Energy Manager

Reviewed: \_\_\_\_\_  
HVAC Superintendent

Reviewed: \_\_\_\_\_  
ELOM Foreman

Reviewed: \_\_\_\_\_  
Systems Maintenance Foreman

Reviewed: \_\_\_\_\_  
ODCC Supervisor

Reviewed: \_\_\_\_\_  
BM&C Director

Reviewed: \_\_\_\_\_  
Utilities Director

Approved: \_\_\_\_\_  
Assistant Vice President for Operations

## **APPENDIX A, Exceptions**

The Air Handlers below require special procedures which cannot be addressed in the Freeze Protection Protocol due to extensive and unique details:

### **Animal Science AHUs 2, 3, and 5**

Do not SWO the OA dampers closed on these units unless the units trip off due to Low Limit Alarm; then ensure the OAD is closed and the HWV and CWV are open per the Freeze Protection Protocol and call out a technician. Units are 100% OA and will be starved if the dampers become shut.

### **Animal Science AHUs 1 and 4**

Close these dampers per Freeze Protection Protocol.

### **Art 3D AHUs 1, 2, 3**

Close these dampers per Freeze Protection Protocol.

### **Art 3D AHU 4**

Do not SWO the OA dampers closed on these units unless the units trip off due to Low Limit Alarm; then ensure the OAD is closed and the HWV and CWV are open per Freeze Protection Protocol and call out a technician. Units are 100% OA and will be starved if the dampers become shut.

### **Art 3D AHU 5**

When the OA temp reaches 40°, issue a SWO of 100% closed to the OAD. 9/2/15 Per Bobby Flores there should be some doors opened at this area to help keep the units warm. When the OAT gets above 40°, release the SWO's.

### **Biology AHUs 1-11 and 16**

Do not SWO the OA dampers closed on these units unless the units trip off due to Low Limit Alarm; then ensure the OAD is closed and the CWV is open per Freeze Protection Protocol and call out a technician.

Do not SWO the steam valves at this location any time because it may damage the controls and create false fire alarms.

### **Biology AHUs 12-15**

DO NOT close these dampers per Freeze Protection Protocol. Do not SWO the steam valves at this location any time because it may damage the controls and create false fire alarms. the dampers for these units will be electronically controlled for this winter, per Bobby Flores. 10/19/16; 11/09/18.

### **Bledsoe Hall AH01, 2, 3, 4**

Per Ross O'Connor if these units trip OFF, open the HWV, CWV and make sure the HWP, CWP's are ON per freeze protocol, DO NOT call anyone out. Send an email at the end of your shift to Ross O'Connor. Housing will reset the units when the temperature warms up.

### **Boston Commons RTU's**

Turn these units ON when campus is turned on for freeze protection.

### **Chemistry Building All AHU's**

AHUs in the Chemistry building utilize Steam Valves which should not be opened to 100%, as are the Heating Valves above, because this action could overheat and damage components such as temperature sensors and smoke detectors.

**For Steam Valves in the Chemistry building, no action should be taken except at the direction of the technician who has been dispatched to troubleshoot the problem.** Otherwise, concerning chilled water pumps and valves, the Protocol should be followed.

### **College of Business Administration (New/Old)**

Do not SWO the OA dampers closed on these units unless the units trip off due to Low Limit Alarm; then ensure the OAD is closed and the HWV and CWV are open per Freeze Protection Protocol and call out a technician. Controls will take care of themselves.

### **College of Engineering AHU 1**

Do not SWO the OA dampers closed on this unit unless the unit trips off due to Low Limit Alarm. If the OA dampers do not automatically close, then override them closed and call out a technician. This AHU supplies fume hoods and can create a hazardous atmosphere in the room if the dampers become closed.

If the HWV and/or CWV do not automatically open, then override them open as per the Freeze Protection Protocol and call out a technician.

### **College of Engineering AHUs 2, 3, 4**

Close these dampers per Freeze Protection Protocol.

### **Drane AH10**

This unit has no heat (preheat), in order to clear the MAT low alarm, you will need to turn ON the unit, per Bobby Flores 9/2/15.

### **Experimental Science**

Do not SWO the OA dampers closed on these units. Leave the units alone unless they trip off on Low Limit Alarm; then ensure the OA dampers are closed, and the HWV and CWV are open, as per the Freeze protection Protocol. Call out a technician. These AHUs supply fume hoods and can create a hazardous atmosphere in the rooms if the dampers become closed.

### **IEHH 555 (Reese) All AHU's**

Do not SWO the OA dampers closed on these units. Leave the units alone unless they trip off on Low Limit Alarm; then ensure the OA dampers are closed, and the HWV and CWV are open, as per the Freeze protection Protocol. Call out a technician. These AHUs supply fume hoods and can create a hazardous atmosphere in the rooms if the dampers become closed.

### **IEHH 555 – BSL-3Lab**

Take no actions. For any alarm call the people below. This is a highly hazardous, secure location. NO BM&C PERSONNEL are allowed in the lab. Call-outs will go to Linc's Services.

Jerry Cowen – 806-773-8541, Michael Wages – 543-2828 or Ryan Bounds – 470-7116.

### **Jones Stadium (West) AHU 2**

When the OA temperature drops to 40°, issue a SWO of 100% open to the heating valve Per Jamie (32) and Terry Neal 12/21/12, issue a SWO of 100% closed to the OAD, Per Terry Neal 10/19/16. When the OAT rises above 40° release the SWO's.

### **Maddox Engineering Research Center**

Do not SWO the OA dampers closed on these units. Leave the units alone unless they trip off on Low Limit Alarm; the OA dampers should close on their own, as well as the Preheat valves and Face and Bypass dampers, Also the CWV's will open, as per the Freeze protection Protocol programming. Call out a technician. These AHUs supply fume hoods and can create a hazardous atmosphere in the rooms if the dampers become closed.

### **Murray Hall AH01, 2, 3, 4, 5, 6**

Per Ross O'Connor if these units trip OFF, open the HWV, CWV and make sure the HWP, CWP's are ON per freeze protocol, DO NOT call anyone out. Send an email at the end of your shift to Ross O'Connor. Housing will reset the units when the temperature warms up.

### **Murray RTU's 1-4**

Turn on when you turn on campus for freeze protection. \*\*These units only have a MAD showing on the computer, there is an OAD not shown, these work opposite each other. For freeze if units trip OFF you will need to issue a SWO of 100% open to the MAD, this will close the OAD 100%, per HVAC.

### **Sneed Hall AH01, 2, 3**

Per Ross O'Connor if these units trip OFF, open the HWV, CWV and make sure the HWP, CWP's are ON per freeze protocol, DO NOT call anyone out. Send an email at the end of your shift to Ross O'Connor. Housing will reset the units when the temperature warms up.

### **Stangel RTU's**

These units will remain ON this winter. These units are steam fed and will have the chill water drained by November 1, 2017, monitor all alarms and respond as necessary, per Bobby Flores.

### **Student Union AH22**

When the OA temp reaches 40°, issue a SWO of 100% closed to the OAD to keep the unit from tripping OFF, per Larry Burks 11/23/16.

### **Talkington Hall AH01, 2, 3, 4, 5**

Per Ross O'Connor if these units trip OFF, open the HWV, CWV and make sure the HWP, CWP's are ON per freeze protocol, DO NOT call anyone out. Send an email at the end of your shift to Ross O'Connor. Housing will reset the units when the temperature warms up.

### **United Supermarket Arena**

**Do not SWO the steam valves open at this location anytime because it may damage the controls and create false fire alarms.**

When the MAT is in low alarm you need to close the OAD's, you can do this by going to the master dust switch the enable this point. This will close all the dampers for all the units. You will need to check the units to make sure the dampers did close, **The EM operator will NOT turn these units ON for any MAT alarm, per Eric Newell 10/18/16.**

If the DAC operator receives a freeze stat alarm or low limit alarm, they will need to make sure the HWP's, CWP's are ON and the cooling valve is 50% open. The operator will then need to call out a technician and follow their requests. The EM operator will email all information to Eric Newell, Jamie Doggett, Bobby Flores, Lon Mirill, Frances Lucas and Rikki Raines then the EM operator will follow up with a phone call to Eric Newell and leave a message if he does not answer, 10/2/17.

**West Hall AHU 1 and 3**

Close these dampers per freeze protection protocol.

**West Hall AHU 2**

Do not SWO the OA dampers closed on these units unless the units trip off due to Low Limit Alarm; then ensure the OAD is closed and the HWV and CWV are open per Freeze Protection Protocol and call out a technician. Units are 100% OA and will be starved if the dampers are shut.

**Wiggins MUA's 1-5**

These units will remain ON this winter until the Christmas Break, Bobby is waiting to hear back from Michael Glass to see if the units will be turned OFF or left ON. The coils have been removed and the chill water drained, DISREGARD the freeze stat alarms, per Bobby Flores - The alarms have been disabled in the TAC system to keep from cycling. 11/5/18 1415 (Per Bobby Flores/Rey Flores)