FILTER PRESS ROOM

1. EF-1 EXHAUST FAN

   A. RUN CONDITIONS:
      I. UNIT SHALL BE MANUALLY STARTED AND EF-1 SHALL RUN CONTINUOUSLY.
   B. POINTS MONITORED BY THE SCADA SYSTEM:
      I. FAN STATUS THRU A SINGLE CURRENT TRANSMITTER.
      II. FILTER HOUSING (PRESSURE DROP ACROSS EACH FILTER BANK)
         a. Bank-1 (30% filters): 0.75"
         b. Bank-2 (90% filters): 1.2"
         c. Bank -3 (HEPA filters): 2.0"
   C. SMOKE DETECTION:
      I. THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTION ALARM STATUS.
      II. INSTALL SMOKE DETECTOR UPSTREAM OF FILTER HOUSING.

2. AHU-1 AIR HANDLING UNIT

   A. RUN CONDITIONS:
      I. UNIT SHALL BE MANUALLY STARTED AND AHU-1 SHALL RUN CONTINUOUSLY AND SHALL PROVIDE 100% OUTSIDE AIR.
   B. COOLING STAGES:
      I. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT.
      II. UNIT SHALL UTILIZE SPLIT FACE COILS TO CONTROL HUMIDITY. AS AN OPTION UNIT MOUNTED CONTROLLER SHALL MONITOR ROOM HUMIDITY LEVEL IN THE SPACE AND SHALL UTILIZE HOT GAS RE-HEAT TO MAINTAIN ROOM HUMIDITY.
   C. HEATING WITH HEAT PUMP AND ELECTRIC HEATING WITH SCR:
      I. THE PRIMARY SOURCE OF HEAT SHALL BE TO UTILIZE THE HEAT PUMP CYCLE. SYSTEM SHALL STAGE UP AND DOWN AS REQUIRED TO MAINTAIN ROOM SETPOINT.
      II. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT IN THE EVENT THE HEAT PUMP SECTION CANNOT MAINTAIN ROOM SETPOINT OR IN THE EVENT OF HEAT FAILURE.
   D. SMOKE DETECTION:
      I. THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTION ALARM STATUS.
   E. POINTS MONITORED/CONTROLLED BY THE SCADA SYSTEM:
      I. AHU START/STOP
      II. AHU STATUS

CHEMICAL DISTRIBUTION ROOM

1. EF-3 EXHAUST FAN

   A. RUN CONDITIONS:
      I. UNIT SHALL BE MANUALLY STARTED AND EF-3 SHALL RUN CONTINUOUSLY.
   B. POINTS MONITORED BY THE SCADA SYSTEM:
      I. FAN STATUS THRU A SINGLE CURRENT TRANSMITTER.

2. AHU-3 AIR HANDLING UNIT

   A. RUN CONDITIONS:
      I. UNIT SHALL BE MANUALLY STARTED AND AHU-3 SHALL RUN CONTINUOUSLY AND SHALL PROVIDE 100% OUTSIDE AIR.
   B. COOLING STAGES:
      I. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE COOLING TO MAINTAIN ITS COOLING SETPOINT.
      II. UNIT SHALL UTILIXE SPLIT FACE COILS TO CONTROL HUMIDITY. AS AN OPTION UNIT MOUNTED CONTROLLER SHALL MONITOR ROOM HUMIDITY LEVEL IN THE SPACE AND SHALL UTILIZE HOT GAS RE-HEAT TO MAINTAIN ROOM HUMIDITY.
   C. HEATING WITH HEAT PUMP AND ELECTRIC HEATING WITH SCR:
      I. THE PRIMARY SOURCE OF HEAT SHALL BE TO UTILIZE THE HEAT PUMP CYCLE. SYSTEM SHALL STAGE UP AND DOWN AS REQUIRED TO MAINTAIN ROOM SETPOINT.
      I. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE ELECTRIC HEATING TO MAINTAIN ITS HEATING SETPOINT IN THE EVENT THE HEAT PUMP FAILURE OR HEAT PUMP CANNOT MAINTAIN ROOM SETPOINT.
   D. SMOKE DETECTION:
      I. THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTION ALARM STATUS.
   E. POINTS MONITORED BY THE SCADA SYSTEM:
      I. AHU START/STOP
      II. AHU STATUS

CIRCULATION / PLATFORM / CLEARWELL

1. PROPELLER EXHAUST FAN EF-2A AND EF-2B (COOLING)

   A. RUN CONDITIONS - INTERLOCKED:
      I. WHENEVER THE WALL MOUNTED THERMOSTAT RISES ABOVE 80°F (ADJUSTABLE) ENERGIZE EF-2A AND OPEN DAMPERS MD-1, MD-3 AND MD-6.
      II. WHENEVER THE WALL MOUNTED THERMOSTAT RISES ABOVE 85°F (ADJUSTABLE) ENERGIZE EF-2B AND OPEN DAMPERS MD-2, MD-4 AND MD-5.
      III. WHEN EACH SET POINT IS SATISFIED, THE CORRESPONDING FAN SHALL DE-ENERGIZE, AND THE ASSOCIATED DAMPERS SHALL CLOSE.

2. MAN COOLER FANS (MC-1A, MC-1B, MC-1C, MC-1D)

   A. RUN CONDITIONS
      I. THE UNIT(S) MC-1A THRU MC-1D SHALL BE ENABLED WHENEVER THE FANS ARE MANUALLY STARTED FROM INDIVIDUAL WALL SWITCHES. THE FANS SHALL RUN UNTIL THE FANS ARE MANUALLY SWITCHED TO THE OFF POSITION.

3. MAN COOLER FANS (MC-2A, MC-2B, MC-2C)

   A. RUN CONDITIONS
      I. THE UNIT(S) MC-2A THRU MC-2C SHALL BE ENABLED WHENEVER THE FANS ARE MANUALLY STARTED FROM INDIVIDUAL WALL SWITCHES. THE FANS SHALL RUN UNTIL THE FANS ARE MANUALLY SWITCHED TO THE OFF POSITION.

4. CEILING FAN (CF-1)

   A. RUN CONDITIONS
      I. CEILING FAN SHALL BE ENABLED MANUALLY. SPEED OF THE FAN SHALL BE ADJUSTED BY THE END USER. THE FAN SHALL RUN UNTIL THE FAN IS MANUALLY SWITCHED TO THE OFF POSITION.

5. UNIT HEATERS (HEATING)
   A. UNITS SHALL CYCLE OFF/ON AS REQUIRED TO MAINTAIN ROOM SET POINT.

OPERATING GALLERY ROOM

1. AHU-4 AIR HANDLING UNIT AND SF-2 SHALL OPERATE IN CONJUNCTION TO MAINTAIN ROOM SETPOINTS.

   A. RUN CONDITIONS:
      I. AHU-4 SHALL BE ENABLED BY A SIGNAL FROM THE SCADA SYSTEM. WHEN ENABLED AHU-4 SHALL RUN CONTINUOUSLY AND SHALL PROVIDE UP TO 100% OUTSIDE AIR.
      II. AHU-4 SHALL MAINTAIN HEATING SETPOINT
      III. SF-2 SHALL BE ENABLED BY THE SCADA SYSTEM MAINTAIN COOLING SETPOINT AND TO CONTROL HUMIDITY.
   B. AMBIENT TEMPERATURE BELOW 55°F:
      I. THE SCADA SYSTEM SHALL ENABLE AHU-4 AND DISABLE SF-2.
      II. AHU-4 TO RUN CONTINUOUSLY AND MAINTAIN THE ROOM AT 60°F AND A MAXIMUM OF 50% RELATIVE HUMIDITY.
      III. RELATIVE HUMIDITY SHALL BE MEASURED BY A SENSOR IN THE ROOM.
      IV. THE AHU-4 CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE HEAT PUMP TO MAINTAIN ITS HEATING SETPOINT. MINIMUM LEAVING AIR TEMPERATURE SHALL NOT BE LESS THAN 50°F.
      V. THE AHU-4 CONTROLLER SHALL MEASURE ROOM HUMIDITY AND VARY THE AMOUNT OF OUTSIDE AIR TO MAINTAIN HUMIDITY NO HIGHER THAN 50% RELATIVE HUMIDITY. AHU-4 SHALL NEVER PROVIDE LESS THAN THE MINIMUM OUTSIDE AIR AS INDICATED IN THE AHU SCHEDULE.
   C. AMBIENT TEMPERATURE ABOVE 55°F:
      I. THE SCADA SYSTEM SHALL ENABLE SF-2 AND DISABLE AHU-4.
      II. SF-2 SHALL RUN CONTINUOUSLY.
   D. HEATING WITH THE HEAT PUMP AND ELECTRIC HEATING WITH SCR:
      I. THE PRIMARY SOURCE OF HEAT SHALL BE TO UTILIXE THE HEAT PUMP CYCLE. SYSTEM SHALL STAGE UP AND DOWN AS REQUIRED TO MAINTAIN ROOM SETPOING.
      II. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE ELECTYRIC HEATING TO MAINTAIN ITS HEATING SETPOINT IN THE EVENT OF HEAT PUMP FAILURE OR THE HEAT PUMP SECTION CANNOT MAINTAIN ROOM SETPOINT.
   E. SMOKE DETECTION:
      I. THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTION ALARM STATUS.
   F. POINTS MONITORED/CONTROLLED BY THE SCADA SYSTEM:
      I. AHU-4 START/STOP
      II. AHU-4 STATUS
      III. SF-2 START/STOP
      IV. SF-2 FAN STATUS THRU A SINGLE CURRENT TRANSMITTER.

COMPRESSOR / HVAC ROOM

1. SUPPLY FAN SF-1

   A. RUN CONDITIONS:
      I. UNIT SHALL BE ENABLED ON A CALL FOR COOLING FROM THE WALL MOUNTED TEMPERATURE CONTROLLER.
   B. SUPPLY FAN SF-1 SHALL START AT 80°F (ADJUSTABLE):
      I. COOLING OPERATION: WHEN THE ROOM TEMPERATURE RISES ABOVE 80° FAN SHALL START AND RUN CONTINUOUSLY AND DISCHARGE AIR SENSOR SHALL MAINTAIN THE DISCHARGE TEMPERATURE OF 55°F BY MODULATING THE OUTSIDE AIR AND RETURN AIR DAMPERS INVERSELY PROPORTIONAL.
      II. WHEN THE AMBIENT TEMPERATURE IS ABOVE 55°F SF-1 SHALL BE 100% OUTSIDE AIR.
      III. WHEN FAN IS NOT RUNNING OUTSIDE AIR DAMPER SHALL BE FULLY CLOSED AND THE RETURN AIR DAMPER SHALL OPEN.
   C SMOKE DETECTION:
      I. THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTION ALARM STATUS.
   D. POINTS MONITORED BY THE SCADA SYSTEM:
      I. NONE

ELECTRICAL ROOM

1. AHU-2A AND AHU-2B AIR HANDLING UNIT. EACH UNIT IS CAPABLE OF 100% OF THE COOLING CAPACITY FOR THE ELECTRICAL ROOM. INSTALLED UNITS SHALL PROVIDE 100% REDUNDANCY.

   A. RUN CONDITIONS:
      I. ONE UNIT AT A TIME SHALL BE ENABLED TO RUN FROM THE SCADA SYSTEM.
      II. SCADA SYSTEM SHALL PROVIDE LEAD/LAG FUNCTION AND UNIT FAIL OVER TO START THE OFF-LINE UNIT IN THE EVENT THE LEAD UNIT FAILS. UNITS LEAD/LAG FUNCTION SHALL BE ON A 48 HOUR ROTATION.
   B. EACH UNIT SHALL UTILIZE ECONOMIZER DAMPERS AND HEAT PUMP TO PROVIDE COOLING FOR THE ELECTRICAL ROOM.
   C. ON A CALL FOR COOLING THE FIRST STAGE OF COOLING SHALL BE THE ECONOMIZER SECTION THAT SHALL UTILIZE A 55°F DRY BULB SWITCH OVER AND THE MIXING DAMPERS SHALL MIX THE AIR TO DELIVER 55°F LEAVING AIR TEMPERATURE.
   D. THE SECOND STAGE OF COOLING SHALL BE MINIMUM OUTSIDE AIR AND THE HEAT PUMP SHALL BE ENABLED IN COOLING MODE.
      I. HEAT PUMP SHALL CYCLE TO MAINTAIN ROOM SET-POINT.
   E. ON A CALL FOR HEATING THE OUTSIDE AIR DAMPERS SHALL BE AT MINIMUM POSITION AND SHALL UTILIZE THE HEAT PUMP IN HEATING MODE TO HEAT THE SPACE.
   G. SMOKE DETECTION:
      I. THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A SMOKE DETECTION ALARM STATUS.
   H. POINTS MONITORED/CONTROLLED BY THE SCADA SYSTEM:
      I. AHU-2A START/STOP.
      II. AHU-2B START/STOP.
      III. AHU-2A STATUS
      IV. AHU-2B STATUS

SAMPLE PREP ROOM

1. AHU-5 AND EF-7 SAMPLE/PREP ROOM

   A. RUN CONDITIONS:
      I. AHU-5 AND EF-7 SHALL BE ENABLED TO RUN FROM THE SCADA SYSTEM. FAN SHALL BE SET TO RUN CONTINUOUSLY.
   B. UNIT SHALL UTILIZE HEAT PUMP TO PROVIDE HEATING AND COOLING AND MINIMUM OUTSIDE AIR FOR THE CONTROL ROOM.
   C. ON A CALL FOR COOLING THE HEAT PUMP SHALL BE ENABLED IN COOLING MODE.
      I. HEAT PUMP SHALL CYCLE TO MAINTAIN ROOM SET-POINT.
   D. ON A CALL FOR HEATING THE HEAT PUMP SHALL BE ENABLED IN HEATING MODE TO
      I. HEAT PUMP SHALL CYCLE TO MAINTAIN ROOM SET-POINT.
   E. ELECTRIC HEATING WITH SCR:
      I. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT IN THE EVENT THE HEAT PUMP SECTION CANNOT MAINTAIN ROOM SETPOINT.
   F. POINTS MONITORED/CONTROLLED BY THE SCADA SYSTEM:
      I. AHU-5 ENABLE.
      II. AHU-5 STATUS

CONTROL ROOM

1. AHU-6 CONTROL ROOM

   A. RUN CONDITIONS:
      I. UNIT SHALL BE ENABLED TO RUN FROM THE SCADA SYSTEM. FAN SHALL BE SET TO RUN CONTINUOUSLY.
   B. UNIT SHALL UTILIZE HEAT PUMP TO PROVIDE HEATING AND COOLING AND OUTSIDE AIR FOR THE SAMPLE PREP ROOM.
   C. ON A CALL FOR COOLING THE HEAT PUMP SHALL BE ENABLED IN COOLING MODE.
      I. HEAT PUMP SHALL CYCLE TO MAINTAIN ROOM SET-POINT.
   D. ON A CALL FOR HEATING THE HEAT PUMP SHALL BE ENABLED IN HEATING MODE TO
      I. HEAT PUMP SHALL CYCLE TO MAINTAIN ROOM SET-POINT.
   E. ELECTRIC HEATING WITH SCR:
      I. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT IN THE EVENT THE HEAT PUMP SECTION CANNOT MAINTAIN ROOM SETPOINT.
   F. POINTS MONITORED/CONTROLLED BY THE SCADA SYSTEM:
      I. AHU-6 START/STOP.
      II. AHU-6 STATUS

2. EF-7
   A. RUN CONDITIONS:
      I. UNIT SHALL BE MANUALLY STARTED THRU THE CONTROLLER ON THE FUME HOOD AND EF-7 SHALL RUN CONTINUOUSLY.

REST ROOM

1. EF-4
   A. RUN CONDITIONS:
      I. UNIT SHALL BE LINKED TO SPACE LIGHTING AND SHALL RUN CONTINUOUSLY WHILE LIGHTS ARE ENERGIZED.

2. EH-4
   A. RUN CONDITIONS:
      I. UNITS SHALL CYCLE OFF/ON AS REQUIRED TO MAINTAIN ROOM SET POINT.

STORAGE SOIL GEAR

1. EF-8
   A. RUN CONDITIONS:
      I. UNIT SHALL BE LINKED TO SPACE LIGHTING AND SHALL RUN CONTINUOUSLY WHILE LIGHTS ARE ENERGIZED.

FIRE RISER ROOM

1. EF-5

   A. RUN CONDITIONS:
      I. UNIT SHALL BE ENABLED WHENEVER THE SPACE TEMPERATURE RISES ABOVE 80°F (ADJUSTABLE).
   B. EXHAUST FAN EF-5 SHALL START AT:
      I. COOLING OPERATION: FAN SHALL RUN CONTINUOUSLY ON CALL FOR COOLING FROM THE WALL MOUNTED THERMOSTAT
      II. WHEN FAN IS NOT RUNNING OUTSIDE AIR DAMPER SHALL BE FULLY CLOSED

2. EH-3
   A. RUN CONDITIONS:
      I. UNITS SHALL CYCLE OFF/ON AS REQUIRED TO MAINTAIN ROOM SET POINT.

HVAC ROOM

1. EF-6

   A. RUN CONDITIONS:
      I. UNIT SHALL BE ENABLED WHENEVER THE SPACE TEMPERATURE RISES ABOVE 80°F.
   B. EXHAUST FAN EF-6 SHALL START AT:
      I. COOLING OPERATION: FAN SHALL RUN CONTINUOUSLY ON CALL FOR COOLING FROM THE WALL MOUNTED THERMOSTAT
      II. WHEN FAN IS NOT RUNNING OUTSIDE AIR DAMPER SHALL BE FULLY CLOSED

ROOM SETPOINTS

ROOM NAME	TEMPERATURE SETPOINT SUMMER OCCUPIED	TEMPERATURE SETPOINT WINTER OCCUPIED	HUMIDITY (%)
OPERATING GALLERY	105 (1)	55	50-60 (3)
CIRCULATION / PLATFORM / CLEARWELL	80 (1)	55	N/A
COMPRESSOR / HVAC ROOM	80 (1)	55	N/A
ELECTRICAL ROOM	85	55	N/A
FILTER PRESS ROOM	75	68	50-60
CHEMICAL DISTRIBUTION ROOM	75	68	50-60
FIRE RISER ROOM	80 (1)	55	N/A
SAMPLE PREP ROOM	75	68	50-60
CONTROL ROOM	75	68	50-60
STORAGE SOILED GEAR	(2)	55	N/A
RESTROOM	75	68	N/A
HVAC ROOM	80 (1)	55	N/A

1. ACTUAL ROOM TEMPERATURE IN COOLING WILL BE 5°-10° F ABOVE AMBIENT TEMPERATURE. SETPOINT INDICATES WHAT TEMPERATURE COOLING FAN STARTS.
2. EXHAUST FAN SHALL RUN CONTINUOUSLY. AMBIENT TEMPERATURE OF SPACE WILL BE 5° - 10° ABOVE SURROUNDING SPACE TEMPERATURES.
3. WINTER TIME VENTILATION RATE SET TO HOLD HUMIDITY NO HIGHER THAT INDICATED VALUE.

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PART	REV	DESCRIPTION	DRW	CHKR	DE	DVR	DM	DATE
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OF200 Mercury Treatment Facility
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HVAC TREATMENT FACILITY SEQUENCE OF OPERATIONS NOTES
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