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Aurora Sinai – Site Visit Notes
April 15, 2009
Brian Basken

1. CENS Heat Exchanger: The CENS tower heat exchanger has an outdoor air reset schedule on the hot water setpoints. The reset was 190°F HW @ -10°F OA, 160°F HW @ 70°F. We lowered the 160°F to 155°F and the 70°F to 60F. Gene will leave these setpoints for a week and then determine if he can lower the 155°F by another 5°F per week, until he starts hearing that people are a little cold in the spaces. Then he will raise the setpoint back up 5°F and leave it alone. He will not make changes to the high water temperature end of the reset until next fall when it gets cold again.

2. CENS Tower Heat Exchanger: The reset was 200°F HW @ -10°F OA, 170°F HW @ 70°F. We left these setpoints alone because of the existing cold problems in about 6 spaces in this system. I'd like to work with the balancer to determine why these 6 reheat coils need this hot water during the summer.   We will develop a solution that would allow this reset schedule to be reduced, especially at the warmer outside air temperatures.

3. Winter Research Heat Exchanger: The reset was 195°F HW @ 15°F OA, 160°F HW @ 60°F. We lowered the 15°F to 0°F, and the 160°F to 155°F. Gene will keep lowering this setpoint by 5 degrees at a time until it starts causing problems.

4. We left the OHC boiler reset alone until we investigate the piping and make sure that if we lower the setpoint, we won't cause condensing inside the boilers. The reset is 180°F HW @ -10°F OA, 160°F HW @ 60°F.

5. The CENS Tower AHUs 1-5 currently use an enthalpy economizer control. The rest of the AHUs use a dry bulb economizer. Most of these were set to 55°F. We adjusted these switchover setpoints to 62°F because the outside air will still provide cooling without bringing in too much humidity. The OHC building was already set at 65°F, so we left that alone.

6. The following AHUs in CENS do not have an economizer: 1, 3, 5, 6, 7, 8, 9, 10, 11, 12, and 16.

7. Time of day schedules were added in the A-building per the following schedules. All units were operating continuously. We put in an override so that the units operate continuously when the outside air temperature gets above 80°F. Gene was concerned about the recovery time on these units if the spaces get too far out of control when it is hot. We adjusted the unoccupied setpoints to 65°F and 80°F.

   - AHU-1: 5:30AM - 11:00PM, Monday through Friday
   - AHU-2: 6:00AM – 4:00PM, Monday through Friday
   - AHU-5: 6:00AM – 10:00PM, Monday through Sunday

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8.	We discussed the need to proper maintenance of dampers and calibration in the five big CENS tower AHUs. On my previous site visit, I noticed one of these AHUs was economizing and another was heating. I suggested that Gene calibrate the temperature sensors each year when he adjusts the dampers. The following is the calibration procedure we discussed:

- Use a handheld temperature sensor to calibrate each discharge temperature. Drill a hole in the mid level of the duct, after the sound attenuator.

- Switch the unit to 100% outside air, and manually close the steam and chilled water valves to stop these coils from adding any heat or cooling. Now that the discharge sensors have been calibrated, use the values shown by the DDC system to calibrate the mixed air temperature sensor and the wing coil leaving temperature sensor.

- This procedure will need to be done when the outside air temperature is between 50°F and 60°F to avoid comfort problems in the occupied spaces.

9.	Most of the AHUs have some sort of discharge reset schedule using the return air temperature. We worked on creating the program to raise the discharge air temperature on the constant volume reheat systems after 7:00PM, and then lower it back down at 6:00AM. Stefan will finish the logic, send it to me for review, and then we can get this downloaded and begin to use it.

10.	I described the trends we want setup to Stefan. He will get these setup and the long term trends will be stored on the workstation hard drive.

11.	We'd like to investigate shutting down one of the five AHUs in CENS tower under certain conditions. This will take some experimenting during "off-normal" hours in colder weather. A recent failure of a VFD kept one fan down for a while and the system worked OK. There may be a lot of hours in the winter when one fan could be shut down, especially at night.