Executive Summary

This report looks into the compliance of the Baylor College of Medicine Research Tower with ASHRAE Standard 62.1 via its Ventilation Rate Calculation Procedure. ASHRAE Standard 62.1 is widely used for designing a building with proper ventilation rates to avoid health and comfort problems. The Baylor College of Medicine Research Tower is an 8 story, 200,000 ft^2 building. The building consists of 2 levels of animal facilities (levels 1 & 2), 5 levels of research labs (levels 4-8) and 1 level, dedicated to the building's mechanical systems, contains 10 of the building's 12 air handling units.

As mentioned above the Baylor College of Medicine Research Tower contains 12 air handling units, of which 8 were analyzed for the purpose of this report. The 4 air handlers that were not accounted for could be bypassed during analysis because 2 were used for stairwell pressurization and the other 2 were used for the mechanical floor on level 3. All 4 systems were 100% outdoor air and since there is no occupancy they are assumed to meet any ventilation requirements that may apply via standard 62.

The Research Tower's air handlers have a unique configuration. Despite 8 air handling units being analyzed this only equates to 3 different air systems in the building. The air handlers tagged AHU-A.1a, AHU-A.1b, AHU-A.1c and AHU-A.1d, that serve the animal facilities, are stacked in a 2 x 2 configuration and all dump into a discharge plenum that then runs to the appropriate zones. The air handlers tagged AHU-L.1a and AHU-L.1b are stacked on top of each other run into a shared discharge plenum and likewise for the air handlers tagged AHU-L.2a and AHU-L.2b. The 8 air handling units that were analyzed by the Ventilation Rate Calculation Procedure in standard 62 all met the required outdoor air. The air handlers serving the animal facilities on levels 1 & 2 and the laboratory spaces on levels 4-8 are 100% outdoor air systems which simplifies the Ventilation Rate Calculation procedure greatly. The multiple zone recirculating systems version of the procedure was used for AHU-L.1a and AHU-L.1b because this air handler returns a portion of the air that it supplies (the air in office and lobby spaces).

All spaces within the building are supplied air via ceiling diffusers using industry accepted air temperatures. The ventilation effectiveness of all systems analyzed was taken to be 1.0. Table 6-2 dictates this because there is ceiling supply of cool air. However, this E_v was only used in calculation of one of the air systems as 100% outdoor air systems do not require use of this value.