

- Air supply determined by the building ventilation system.
- Moderate fire growth rate. In the case of arson, several gallons of an accelerant might have been applied to the building combustibles, igniting the equivalent of several workstations.
- Water supply to the sprinklers and standpipes maliciously compromised.
- Intact structural insulation and interior walls.

The four cases described in this report represented fires that were far more severe than this:

- The incident jet fuel created large and widespread early fires on several floors.
- The aircraft and subsequent fireballs created large open areas in the building exterior, through which air could flow to support the fires. In Case A, the fire was still limited by the total vent area (broken windows plus aircraft gash). In Case C, the fire had sufficient air. The fires in both cases were immense.
- About 10,000 gal of jet fuel were sprayed into multiple stories, simultaneously igniting hundreds of workstations.
- The impact and debris removed the insulation from a large number of structural elements that were then subjected to the heat from the fires.

In the four cases reported earlier in this chapter, none of the columns with intact insulation reached temperatures over 300 °C. Only a few isolated truss members with intact insulation were heated to temperatures over 400 °C in the WTC 1 simulations and to temperatures over 500 °C in the WTC 2 simulations.

In WTC 1, if the fires had been allowed to continue past the time of building collapse, complete burnout would likely have occurred within a short time since the fires had already traversed around the entire floor and most of the combustibles would already have been consumed.

In a simulation of WTC 2 that allowed the fires to continue to burn for 3 hours, the temperatures in the truss steel on the west side of the building (where the insulation was undamaged) did continue to increase. In WTC 2, if the fire simulation was extended for 2 hours past the time of building collapse with all windows broken, the temperatures in the truss steel on the west side of the building (where the insulation was undamaged) would likely have increased for about 40 min before falling off rapidly as the combustibles were consumed. Temperatures of 700 °C to 760 °C were reached over approximately 15 percent of the west floor area for less than 10 min. Approximately 60 percent of the floor steel had temperatures between 600 °C and 700 °C for about 15 min. Approximately 70 percent of the floor steel had temperatures that exceeded 500 °C for about 45 min. Based on Cases C and D, the temperatures of the insulated exterior and core columns would not have increased to the point where they would have experienced significant loss of strength or stiffness.