

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. (See Figure 6–30.)

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.

6.16 REFERENCES

- McGrattan, K., ed. 2004. Fire Dynamics Simulator (Version 4) Technical Reference Guide. NIST Special Publication 1018. National Institute of Standards and Technology, Gaithersburg, MD. September.
- Rehm, R.G., W.M. Pitts, H.R. Baum, D.D. Evans, K. Prasad, K.B. McGrattan, and G.P. Forney. 2002. Initial Model for Fires in the World Trade Center, NISTIR 6879. National Institute of Standards and Technology, Gaithersburg, MD. May.