

3.4 BUILDING COMBUSTIBLES

3.4.1 Furnishings

The most prevalent combustibles on Floors 7 through 13 were the large array of workstations (also referred to as office modules or cubicles). There were almost certainly different types of workstations in the building. However, discussions with office furniture distributors and visits to showrooms indicated that, while there was a broad range of prices and appearances, the cubicles were fundamentally similar. A typical cubicle was bounded on four sides by privacy panels, with a single entrance opening. Within the area defined by the panels was a self-contained workspace: desktop (almost always a wood product, generally with a laminated finish), file storage, bookshelves, carpeting, chair, etc. Presumably there were a variety of amounts and locations of paper, both exposed on the work surfaces and contained within the file cabinets and bookshelves. These cubicles, as many as 200 or more per floor, were grouped in clusters or rows.

Unlike the case for the two WTC towers, there was no widespread spraying of jet fuel to ignite numerous workstations simultaneously. Rather, in the earlier hours of the WTC 7 fires, the fire would have spread from one individual workstation to another. Thus, the fire spread would have been dependent on the specific spacing of the cubicles and their ease of ignition. Replicating such fire growth was not feasible since (1) the information available on the office layouts was not sufficiently detailed, and (2) there was insufficient visual evidence to support such a detailed approach.

The combustible fuel load¹⁰ for the floors was estimated as follows.

- Floors 7 and 8. The architectural drawings showed densities of workstations similar to those on most of the fire floors in the WTC towers. (Recall that the south and east sides of the 7th floor were given to other uses.) The exact nature of the workstations was not known, nor was the mass of paper in each cubicle. Thus, the Investigation Team assumed the combustible masses (200 kg per workstation plus 50 kg of paper) were similar to those in the towers (NIST NCSTAR 1-5). For example, the architectural drawings of the 7th floor showed about 100 workstations on the north side of the 7th floor and about 130 workstations on the north side of the 8th floor, although the exact number of workstations on September 11, 2001 is not known. The floor area north of the building core was about 1500 m². Thus, the estimated combustible fuel load was about 20 kg/m³ (4 lb/ft²). Simulations of the fires with a higher combusted fuel load (Chapter 9) showed little effect on the rate of fire propagation.
- Floors 9 and 10. The floor plans did not indicate the number of workstations on these floors. As noted in Section 3.3.4, there would not have been excess paper on the desks or floors. Thus, the estimated combustible fuel load was the same as for the 7th and 8th floors (and the towers), about 20 kg/m³ (4 lb/ft²). No fire was observed on the 10th floor, and a sizable fire on the 9th floor was observed for only about an hour (Section 5.6). Thus, there was no means to estimate the effect of different combustible mass loadings on agreement with the observed fire growth patterns.

¹⁰ In the fire simulations, the entire combustible fuel load can be burned. In actuality, not all of, e.g., a wood desk is consumed. Thus, the combusted fuel loads estimated for these simulations are somewhat lower than the actual fuel loads in prior surveys (NIST NCSTAR 1-5).