

2.3.6 Fire Behavior Following the Aircraft Strike

NIST NCSTAR 1-5A contains façade maps that summarize the visual analyses of window condition, fires, and smoke for the four faces of WTC 2 as a function of time. The fire behaviors are summarized here.

Compared to WTC 1, there was relatively little fire spread in WTC 2 during the 56 min between the impact of United Airlines Flight 175 and the collapse of the tower. One approach for characterizing the fire spread in WTC 2 was to compare integrated façade maps for the entire period from 9:03 a.m. to 9:59 a.m. with the initial fire distributions shortly after the aircraft impact.

Similar to the analysis for WTC 1, changes in window condition were used as a rough indicator of fire spread. This is less valuable for WTC 2, because the number of windows opened by the aircraft impact and subsequent fireballs was much larger than for WTC 1, and the ratio of windows open at the time of collapse was only about 40 percent larger than at 9:04 a.m. (Table 2–3). This is far smaller than the corresponding increase in WTC 1, which exceeded a factor of 4.5. This large difference reflects:

- In WTC 2, there were more windows broken by the aircraft impact and subsequent fireballs, particularly on the east face.
- The time available for the fires to break windows in WTC 2 was less than for WTC 1.
- The early rates of the development of fires were much slower for WTC 2 than for WTC 1.

As a result of the small increase in ventilation area, the effect of changes in the number of open windows was much less important for the fire behavior of WTC 2 than for WTC 1.

Table 2–3. Summary of open windows observed on faces (78th through 84th floors) of WTC 2 at 9:03 a.m. and 9:58 a.m.

Face	Number of Open Windows 9:03 a.m.	Number of Open Windows 9:58 a.m.
North	78	159
East	222	258
South	133	196
West	0	7
Total	433	620

2.3.7 Observed Fire Behavior in WTC 2

The following discussion of fire behavior in WTC 2 is broken into four time periods of roughly 15 min each. This summary focuses on fire observations, but includes some relevant structural observations. Details of the fire behavior as a function of time are documented in façade maps describing fire, smoke, and window condition observations included in Appendices G to J of NIST NCSTAR 1-5A. Detailed discussions of the fire observations, with numerous supporting images of the tower, and other related details such as window breakage, smoke flow, hanging objects (which may have been dislodged floors) observations, and unusual intense burning phases are available in the report.