

7.6 FINDINGS

- The evacuation of WTC 7 was successful, as NIST identified no life-threatening injuries or fatalities of building occupants on September 11, 2001. Most of the occupants initiated their own evacuation shortly after WTC 1 was attacked, and the building was safely evacuated prior to the collapse of WTC 2. Evacuation took just over an hour to complete, which was somewhat longer than the minimum time expected if elevators and stairs were used to maximum advantage.
- While no occupants from WTC 7 were killed on September 11, 2001, evacuation management did not provide prompt evacuation instructions to building occupants during the event. Several key officials determined independently to evacuate WTC 7, from several minutes before WTC 2 was attacked ($\approx$ 9:00 a.m.) and shortly after WTC 2 was attacked ($\approx$ 9:05 a.m.), to shortly after the Pentagon was attacked ($\approx$ 9:45 a.m.). The decisions appear not to have resulted in actually delivering specific guidance to the occupants via the public address system until approximately 9:45 a.m.
- Considerable crowding in the lobby of WTC 7 occurred. Occupants arrived in the lobby from both stairwells, from the elevators, and from other WTC buildings, and were held in the lobby until a safe exterior exit was identified by emergency management officials.
- The calculated stairwell capacity was insufficient to meet the requirements of the NYCBC in effect during the design and construction period, if the building were occupied at the calculated maximum level ($\approx$ 14,000 people). The capacity was sufficient for the normal occupancy of the building ($\approx$ 8,000 workers plus visitors), estimated by NIST, and was more than sufficient for the occupancy on September 11, 2001 ($\approx$ 4,000 people), also estimated by NIST. The stairwell capacity met the requirement of the (subsequent) 2006 edition of the IBC, but not the 2003 edition of NFPA 5000.
- The separation of the stairwell doors met the requirement of the 1968 NYCBC. On some floors, the separation of the stairwell doors was below the remoteness requirements in the 2000 IBC and the 2003 NFPA 5000.
- Some specific people actions likely contributed to the speed and overall success of the evacuation. Evacuation drills had been conducted every six months in WTC 7. On September 11, 2001, the decision to prevent occupants from exiting the stairwells out into the streets where they could be impacted by debris from WTC 1 and WTC 2 likely prevented injuries or deaths. Using the loading dock exit to provide overhead protection, combined with the scaffolding protection along the other side of Washington Street, was an example of spontaneous decision-making on the part of the building management which likely contributed to the positive outcome.

7.7 REFERENCES

- Cantor 1985. Irwin G. Cantor P.C., Structural Engineers, Structural Drawings, 7 World Trade Center.
- Fire Safety Plan. Appendix A: Fire Safety Directors Duties. Approved 4/18/98. WTCI-13-NYC. Marked received by FDNY Nov 13, 2002).