

8.9 OTHER COLLAPSE-RELATED POSSIBILITIES

8.9.1 Fuel Oil Fires

There were several emergency generator installations located on several different floors of WTC 7 which were supplied by either day tanks or pressurized loop fuel delivery systems. NIST investigated the possibility that rupture of one of the fuel lines might have provided a continuous supply of sufficient fuel to affect a critical column or floor system. Section 3.4.2 describes the fuel systems and their status on September 11, 2001. Section 9.2 describes a set of hypothetical, extreme diesel fuel fire scenarios and their potential consequences. Simulations showed that pool fires associated with ruptured diesel fuel lines (a) would have raised the temperatures near the generators to the point where the generators would have failed, cutting off power to the fuel pumps, (b) could not be sustained long enough or generated too little heat to raise the temperatures of the steel and concrete structure to the point of significant loss of strength or stiffness, and/or (c) would have exhausted smoke from the exhaust louvers, in conflict with the photographic evidence which showed none.

NIST also found that the day tanks on Floors 5, 7, and 9 that supplied the emergency generators on those floors did not contain enough fuel to be significant contributors to the combustible load on the fire floors, and it was unlikely that the tanks could have been re-supplied because of multiple safeguards in the fuel delivery system. Further, none of the day tanks were located near the location of critical Column 79.

Thus, it was concluded that the hypothetical fuel oil fires on the 5th floor, or hypothetical fires on Floors 5, 7, and 9 involving day tanks, did not contribute to the collapse of WTC 7.

8.9.2 Hypothetical Blast Events

To determine whether explosives could have been used to cause the collapse of WTC 7, a hypothetical blast event was considered. This work is reported in detail in Appendix D and is summarized here.

Scenarios of a hypothetical blast event that could have occurred in WTC 7 on September 11, 2001, were assessed, including blast location, size, and timing. Identification and analysis of hypothetical blast scenarios was conducted in three phases, with the results from each phase being used as input to the next phase. The three phases were:

- Phase I: Identify hypothetical blast scenarios to initiate structural collapse.
- Phase II: Assess the blast wave propagation inside the building and the corresponding response of the WTC 7 windows.
- Phase III: Assess the approximate distance from the building that the blast would have been audible in an urban setting.

In Phase I, hypothetical blast scenarios to initiate structural collapse were identified. A scenario with the minimum amount of required explosive was identified, which included cutting of columns sections as part of the preparations. Other scenarios were considered, but the amount of explosive material would have been larger, with the amount depending on the type and degree of column preparations conducted.