

- An over-ventilated fire, in which the fuel burning could have been sustained for approximately seven hours between the collapse of WTC 1 and the collapse of WTC 7. Result: The gas temperatures around all nine diesel generators would have quickly exceeded the generator operating limit, and there would have been no power to continue pumping fuel. Thus, the fire could not have been sustained.
- An over-ventilated fire, in which the burning rate was doubled, representing a higher intensity fire of shorter duration. Result: The fire could not have been sustained for the same reason as in the previous case.
- An under-ventilated fire, in which the air handling system was turned off and the louvers were closed. The initial fuel burning rate was fit to the air availability. Result: The sustained air temperatures were not high enough to compromise the structure.
- An under-ventilated fire, in which the air handling system was turned off, but the louvers were open. Result: Smoke would have exhausted through the east louvers, and the imagery showed no such effluent.

An additional simulation was performed of an over-ventilated fire near the breach in the south wall. Result: The fire might have been able to damage the nearby columns, especially if their thermal insulation had been damaged by the debris from WTC 1. However, as will be seen later, the collapse of WTC 7 originated on the east side of the building, and there was no path for the hot gases to reach and weaken the structure on that side.

The diesel fuel in the day tank on Floor 5 was only equivalent to a few percent of the combustible furnishings on a tenant floor. It was unlikely that the tank would have been re-supplied because of multiple safeguards in the fuel delivery system.

NIST determined that a spray fire of the diesel fuel would have been less damaging than a pool fire, even though the spray fire temperature would have been a few hundred degrees higher. A fuel spray would have resulted from a small leak in the fuel supply piping, so the fuel escape rate would have been far less than in the over-ventilated pool fire scenarios. Had this small burning spray hit Column 79 directly, it would only have heated a small area of the column. NIST calculations (NIST NCSTAR 1-9, Chapter 4) showed that even if the entire column had been immersed in a 1400 °C (2550 °F) flame, it would have taken 6 h to heat the column to the point of significant loss of strength and stiffness.

NIST also evaluated the possible contribution of diesel fuel from the day tanks on Floors 7 and 9 to the fires on those floors. The amount of fuel available within the day tanks was insignificant compared to the mass of other combustibles on those floors. Nearly all the diesel fuel in the tanks that supplied the day tank on the 9th floor was recovered months after the WTC 7 collapse. The diesel fuel could have contributed to the initial ignition and spread of the fire on the south side of Floor 7 and on the west side of Floor 9, but these fires would have been far removed from the critical structural systems on the east side of WTC 7.