

2.2 THE AIRCRAFT

The Boeing 767-200ER was a twin-engine, wide-body aircraft, 159 ft 2 in. long, with a wingspan of 156 ft 1 in. Empty, it weighed 183,500 lb. It could carry 181 passengers in its three-class seating configuration and 23,980 gal (158,200 lb) of jet fuel as it covered its maximum cruising range of 6,600 miles. The maximum total weight the plane could carry was specified at 395,000 lb; the typical cruising speed was 530 mph.

The 767-200ER aircraft had two fuel tanks that extended through most of the interior of the wings and a center tank between the wings in the bottom of the fuselage. A full fuel load would have filled all three tanks.

On that day, AA Flight 11 was much lighter. Bound from Boston for Los Angeles, some 3,000 miles away, it carried only about half the full load of jet fuel. When it hit the north tower, it likely contained about 10,000 gal (66,000 lb), evenly distributed between the right and left wing tanks. Because of the tight maneuvers as the plane approached the tower, the baffles in both tanks had directed the fuel toward the inboard side of each wing. The passenger cabin was more than half empty. The cargo bay, carrying less than a full load of luggage, contained 5 tons of luggage, mail, electronic equipment, and food. The total weight of the aircraft was estimated to be 283,600 lb.

2.3 THE IMMEDIATE DAMAGE

The aircraft flew almost straight toward the north tower, banked approximately 25 degrees to the left (i.e., the right wing elevated relative to the left wing) and descended at an angle of about 10 degrees at impact. Moving at about 440 mph, the nose hit the exterior of the tower at the 96th floor. The aircraft cut a gash that was over half the width of the building and extended from the 93rd floor to the 99th floor (Figures 2–2 and 2–3). All but the lowest of these floors were occupied by Marsh & McLennan, a worldwide insurance company, which also occupied the 100th floor. Marsh & McLennan shared the 93rd floor with Fred Alger Management, an investment portfolio management company.

There was relatively little impact damage to the 93rd floor, hit only by the outboard 10 ft of the left wing. Containing no jet fuel, the wing tip was shredded by the perimeter columns. The light debris did minimal damage to the columns or to the thermal insulation on the trusses of the composite floor system supporting the 94th floor.⁵ The trusses supporting the 94th floor were impacted by flying debris on the 93rd floor.

The 94th floor was more severely damaged. The midsection of the left wing, laden with jet fuel, and the left engine cut through the building façade, severing 17 of the perimeter columns and heavily damaging four more. The pieces of the aircraft continued inward, severing and heavily damaging core columns. The insulation applied to the floor trusses above and the columns was scraped off by shrapnel-like aircraft debris and building wall fragments over a wedge almost 100 ft wide at the north face of the tower and 50 ft wide at the south end of the building core.

⁵ The reader should bear in mind that the described damage to the building exterior was derived from eyewitness and photographic evidence. The described damage to the aircraft and the building interior was deemed most likely from the computer simulations and analysis carried out under the Investigation.