

A Photo Analysis of the Claim that UA Flight 175 Did Not Hit the South Tower of the World Trade Center

Curtis Cameron
cc@ccdminoes.com
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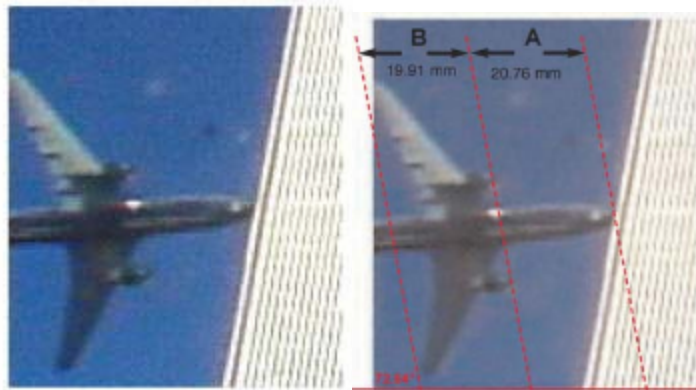
Introduction

Several Internet sites claim that United Flight 175 could not have been the plane that hit the WTC South Tower. Measurements are made (usually on blurry photographs) which seem to indicate that the proportions are wrong for the 767-200 model, but correct for the longer 767-300. United Flight 175 was a 767-200 model, so confirmation that the plane could not be flight 175 would be proof of a switched plane, and therefore a government conspiracy. An example site to see this claim made is <http://www.amics21.com/911/flight175/dud.html>.

This paper makes measurements in two different ways which show that the plane is consistent with a 767-200, and why the photo from the NIST would produce those results.

The Claim

The following image, a single-frame capture from a video taken by Scott Myers, was published in the NIST report¹ on the collapse of the WTC towers. It's commonly used as support for the "switched plane" theories.



A line is drawn connecting the trailing edge of the wingtips, and another connecting the fronts of the engine nacelles. Distances are measured from the nose tip to the engine fronts, from the engine fronts to the wingtips, and comparisons are made to known measurements of the 767-200 and 767-300.

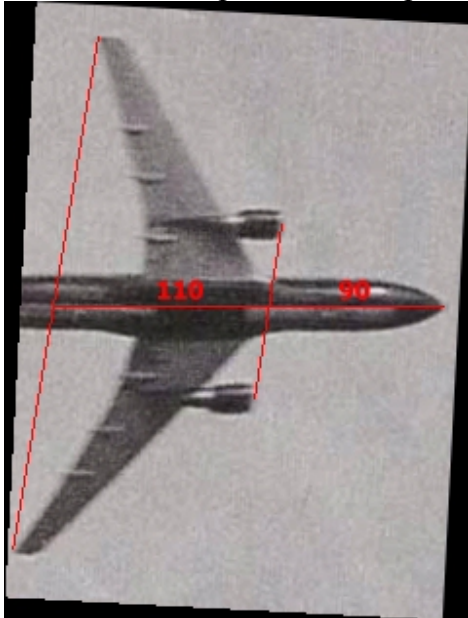
They then take the ratio of those (A to B in the photo), which is 1.04. In comparison, a 767-200 has this ratio as 0.95, and a 767-300 has the ratio 1.11. Since the plane in the photo has a ratio greater than 1.0 (A is greater than B), this must be a 767-300, and therefore cannot be flight 175.

Or can it?

The biggest potential problem with the above analysis is that the photo is taken from slightly toward the front of the plane (it has to go behind the East face of the tower before colliding with it, therefore the camera is somewhat in front of the plane). The wings are

carrying a large load, with the weight of the plane, plus g-forces from the bank, so the wingtips are flexed upwards. Viewed from an angle towards the front, this would tend to make the “B” measurement appear smaller, making the ratio higher than it should be.

Let’s do the same analysis on a view from slightly to the rear of the plane. This picture was published in New York Magazine, and is used by some pro-conspiracy theory web sites to show the presence of a “pod” under the wings:



I took the same measurements, and get a ratio of 0.82. The NIST picture from the front, which we know would tend to make the ratio too high, yielded 1.04, and this picture would tend to make the ratio too low by the same reasoning. Simply taking the value in the middle gives 0.93, which is very close to the 0.95 number that we would expect from a 767-200, and very far from the 1.11 that we would see if the plane had been a 767-300. It’s looking like the plane probably is a 767-200, and therefore really flight 175.

Another photo analysis

Aren’t there better ways to determine which kind of plane it is? Take a look at this photo:



We know that the tower is 208 feet on a side, so can't we use that comparison to the plane to get its length? Yes, but the plane and the building are at different view angles, so we'll need to compensate. The East side of the tower (the brightly lit side) is 111 pixels across in this photo, while the South side (the dark one) is 53 pixels across. The ratio of these is 0.477. If the tower is angled at 25.5 degrees, this would yield the same ratios of the sides ($\cos(64.5)/\cos(25.5)$ equals 0.477). If the building had been square to the camera, the East face would measure $111/\cos(25.5)$, or **123.0 pixels** instead.

The plane struck the tower at an angle instead of straight-on. I measured the diagram in the FEMA report on the collapse of the towers, which shows the plane striking the tower at an angle of 11.5 degrees away from straight-on. Using this number, and since the tower is angled 25.5 degrees to the camera, the plane must therefore be angled at 14 degrees to the camera. It measures 91 pixels across, and if we divide by the cosine of 14 degrees, we figure that the plane would have been **93.8 pixels** across had it been square to the camera.

So these are the numbers we can use to get a pretty good estimate of the length of the plane. 93.8 pixels, divided by 123.0 pixels, times the known width of the tower at 208 feet, gives an estimate of the plane's length as **158.6 feet**.

So is this closer to the length of a 767-200 or 767-300? According to www.airliners.net, a 767-200 is 155 feet from the tip of the nose to the tip of the tail, and a 767-300 is 176 feet, 1 inch. This analysis also indicates that the plane is a 767-200 and is consistent with flight 175 being that plane.

Footnotes:

1. NIST report, appendix H:
http://wtc.nist.gov/progress_report_june04/appendixh.pdf

Curtis Cameron is a skeptic who lives in Texas.