

# Why the NIST Report on the World Trade Center Towers is False

by Kevin Ryan

The official account of the Twin Towers' destruction was produced by the National Institute of Standards and Technology (NIST) and released in September of 2005. Unfortunately, NIST's report provided only a hypothesis of the events leading up to the initiation of the collapses, or the "collapse initiation sequence." NIST did not attempt to explain how, once the collapses initiated, the upper sections of these 110-story skyscrapers would continue falling downward through the path of greatest resistance, instead simply asserting that, once each building was destabilized, "global collapse ensued." However, we can examine the general features of NIST's collapse initiation sequence for both Twin Towers to see if it is consistent with known facts, or is at least self-consistent.

The seven steps of NIST's collapse initiation sequence that are common to both Twin Towers are as follows:[1]

1. A number of columns were severed by aircraft impact.
2. Loads were redistributed to the remaining columns.
3. Fireproofing was "widely dislodged".
4. Columns and floor assemblies were softened by high temperatures.
5. Softened floor assemblies began to sag.
6. Sagging floors pulled the exterior columns inward, causing columns to buckle.
7. Instability spread around the exterior of the building.

The first two steps of this sequence are not surprising. With regard to step one, we can accept that approximately 15% of the columns were severed in each building by aircraft impact. This is quite low compared to original design claims reported in the mid-1960s by the *Engineering News-Record* that said the towers could lose more than 25% of their columns without having any problems. As for the second step, NIST says the loads actually decreased on some columns and increased slightly for others. Again, there is no problem here considering similar design claims that the exterior columns could withstand 2,000% increases in live load.[2]

With step three, we get to the core of NIST's collapse initiation argument. The report states that "The WTC towers likely would not have collapsed under the combined effects of aircraft impact damage and the extensive, multi-floor fires if the thermal insulation had not been widely dislodged or had been only minimally dislodged by aircraft impact." Considering that NIST depends so heavily on the concept of extensive fireproofing loss, you would think it would have spent a great deal of its time investigating this effect and communicating the details. That was not the case, however.

NIST's only test for fireproofing loss, never included in the draft reports, involved shooting a total of fifteen rounds from a shotgun at non-representative samples in a plywood box. Flat steel plates were used instead of column samples and no floor deck samples were tested at all. After criticism of the lack of testing provided in its draft report, NIST inserted the results into a 12-page appendix to the final report.[3]

These shotgun tests actually disproved NIST's findings. One reason is that there is no evidence that a Boeing 767 could transform into any number of shotgun blasts. Nearly 100,000 blasts would be needed based on NIST's own damage estimates, and these would have to be directed in a very symmetrical fashion to strip the columns and floors from all sides. It is much more likely that the aircraft debris was a distribution of sizes from very large chunks to a few smaller ones, and that it was directed asymmetrically along the path of the impacting airliner. Moreover, there is no indication that fireproofing could have been stripped from beneath the aluminum cladding on the exterior columns, but in subsequent steps of its explanation, NIST depends on this.

NIST's shotgun tests indicated that 1 MJ of energy was needed per square meter of surface area to shear the fireproofing off. For the areas in question—more than 6,000 square meters of column, floor deck and floor joist surface—the extra energy needed would be several times more than the entire amount of kinetic energy available to begin with. [4]

The problems with NIST's explanation continue in step four, where high temperatures were said to have softened the columns and floors. NIST did tests for this as well, but then abandoned the results. The first test, which examined paint deformation on steel samples chosen specifically from the fire zones, showed that less than 2% of the samples had seen temperatures above 250 °C. Another test gave the one-sided result that no samples saw temperatures above 600 °C. The obvious problem was that steel does not soften or lose significant strength at the low temperatures indicated, yet NIST's story depends on the softening or weakening of vast quantities of structural steel.

Fire resistance tests for the steel components used in the Twin Towers were performed by Underwriters Laboratories (UL) at the time of construction, and the results verified conformance to the New York City code requirements for multiple hours of fire resistance at the temperatures expected in a building fire.[5] On 9/11, according to NIST, the fires in the failure zones did not actually last very long. NIST's estimates indicate that the fires in the failure zones of the towers lasted for only about 45 minutes in each case, much less than the 3 or 4 hours of fire resistance required by the NYC code. [6]

As for step five, UL performed additional tests as part of the NIST investigation in order to establish the fire resistance of models of the WTC floor assemblies. The results were that the floor assembly models not only didn't collapse, invalidating the longstanding "Pancake Theory," but the floors barely sagged—only about 3 inches—despite the use of double the known floor load and two hours of fire exposure.[7] NIST then added this 3-inch of sag result to its computer model, and by way of an unknown transformation, it suddenly became 42-inches of extreme sagging.[8] This appears to have been a direct falsification of test results.

Step six says that sagging floors pulled exterior columns inward. To support this, NIST evaluated nine different scenarios within its computer model, with just one of those producing any inward bowing. To do this, NIST had to take a computer mock-up of a 9-story high by 9-column wide section of steel wall and perform manipulations that had no relevance to the events at the World Trade Center. NIST removed the virtual steel from its web of support by "disconnection," stripped off all the fireproofing, exposed it to twice the known fire time (i.e. 90 minutes), and then applied an unspecified, utterly miraculous inward pull.[9] It is difficult to understand how an inward pull force could be applied to columns that have been disconnected from the floors. It is the floors that are supposed to have applied the inward force on the columns.

NIST's final collapse initiation step states that, after all of these unscientific manipulations, "instability spread" around the entire building. Since the buildings came down uniformly into their footprints, and did so in approximately 10 seconds, there was precious little time for instability spread. If we allot half a second to accomplish this, the instability would have had to move at nearly twice the speed of sound. That is, of course, not realistic.

After providing a false collapse initiation sequence, NIST left us to ponder the idea that "global collapse ensued." With this statement, NIST avoided analyzing the actual collapse dynamics, perhaps because they knew the observed phenomena violated everything we know about physics and the performance of steel skyscrapers, unless the use of explosives is allowed for consideration.

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## References

[1] See NIST NCSTAR1, Final Report on the Collapse of the World Trade Center Towers, Principal Findings, 175 (<http://wtc.nist.gov/NISTNCSTAR1CollapseofTowers.pdf>) and, in more detail, NCSTAR 1-6, Probable Collapse Sequences, p 299 to 309 (<http://wtc.nist.gov/NISTNCSTAR1-6.pdf>)

[2] For the original design claims, see "Structures Can Be Beautiful, World's Tallest Buildings Pose Esthetic and Structural Challenge to John Skilling," and "How Columns Will Be Designed for 110-Story Buildings," Engineering News-Record, April 2, 1964. The exact comments were that "live

loads on these [perimeter] columns can be increased more than 2000% before failure occurs” and “one could cut away all the first-story columns on one side of the building, and part way from the corners of the perpendicular sides, and the building could still withstand design live loads and a 100-mph wind force from any direction.”

[3] See NIST NCSTAR 1-6A, Appendix C, <http://wtc.nist.gov/NISTNCSTAR1-6A.pdf>

[4] NIST gave 2,500 MJ as the kinetic energy provided by the aircraft impacting the north tower. Professor Tomasz Wierzbicki from MIT, in a report called Aircraft Impact Damage, calculated that all of this energy was consumed in damaging the aircraft and the building, with no energy remaining.

[5] See Kevin Ryan, Propping Up the War on Terror: Lies About the WTC by NIST and Underwriters Laboratories, in David Ray Griffin and Peter Dale Scott, eds., 9/11 and American Empire: Intellectuals Speak Out (Northampton, Mass.: Interlink Books, Fall 2006).

[6] In NCSTAR 1-6, section 9.4.3 (p 322) and section 10.9.4 (p 338), NIST says “The fires in WTC 2 reached the east side of the building more quickly, within 10 to 20 minutes, than the 50 to 60 minutes it took the fires in WTC 1 to reach the south side.”<http://wtc.nist.gov/oct05NCSTAR1-6index.htm> In both cases, this would leave approximately 45 minutes of fire time in the failure zone.

[7] In NCSTAR 1-6, it says “...four standard fire resistance tests (ASTM E119) of the floor truss assemblies with twice the floor load that was on the WTC floors.” Chapter 10, p 332, Finding 17.

[8] The extent of the floor deck sagging after the unrealistic time of two hours can be seen in NCSTAR 1-6 Figure 3-11 (p 49). The 3-inch result is visible there or, based on the 45-minute duration of fires in the failure zones, it can be seen in the graph of Figure 3-15 (p 52). The unsupported computer result of 42-inches of sagging is noted in the same report, Chapter 9, Figure 9-6 (p 297).

[9] NIST’s Case 8, the “DBARE” result, was finally successful at causing inward bowing of a highly manipulated computer mock-up. It is described in NCSTAR 1-6, Chapter 4, tables 41-14 and 4-15 and pages 111 to 115.