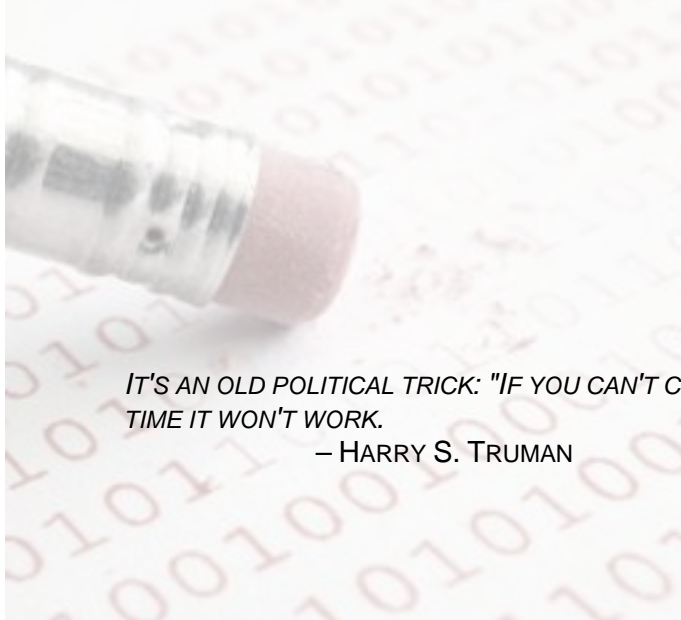# NIST WTC 7 FAQ alterations revealed

IT'S AN OLD POLITICAL TRICK: "IF YOU CAN'T CONVINCE 'EM, CONFUSE 'EM." BUT THIS TIME IT WON'T WORK.
– HARRY S. TRUMAN

AUTHOR: SNOWCRASH
DATE: 2010-30-11

Initial discovery

On NIST's current WTC 7 FAQ page, the headline reads: (emphasis mine)

> *Questions and Answers about the NIST WTC 7 Investigation (Updated 09/17/2010)*[1]

In order to preempt further alterations, I cached this version.[2] When I noticed the date of the update, I first tried to look for previous versions of the FAQ in the Wayback Machine.[3]

I was in for a disappointment: previous versions of the page had curiously vanished from the archive. Normally this means game over: there are no cached versions. To my knowledge, there is no alternative for the Wayback Machine. I tried to look for alternatives nonetheless.

Thankfully, I found one: Jim Hoffman had apparently cached an older version of NIST's FAQ on his website.[4] Apparently this version dates August 21, 2008. At the top, it shows the original source link of the cached version.[5]

The wildcard search in the Wayback Machine should have matched this page, but it didn't. Either it was never stored, there was an error in the database or somebody made a request to archive.org for removal. It's fortunate Jim Hoffman does so much caching: a good many of his cached sources are now unavailable anywhere else.

Having been involved in software development, I know how to compare two text files to each other, showing the alterations between the two. This is part and parcel of VCS, or Version Control Systems. I will show you how I did it, firstly because this is how I demonstrate my methods for reproduction and secondly, it's an instructive approach for others to use to their advantage in similar situations. It's boring and tedious work, but the results were intriguing.

Conforming both documents for comparison

In the rest of the analysis, for convenience I'll assume Jim Hoffman cached the old NIST FAQ himself. First problem: Jim's cached version looks awfully messy: this is usually the result of imperfect caching algorithms, and both Jim's version and NIST's version are HTML. What I need is raw text. I'm not interested in differences in HTML between two pages that look completely different visually, but are very similar textually. So I created two text files and copied the text of both web pages into them. I named Jim's version nist_faq_old.txt and NIST's version nist_faq_new.txt.

---

[1] NIST – "Questions and Answers about the NIST WTC 7 Investigation (Updated 09/17/2010)" – http://www.nist.gov/public_affairs/factsheet/wtc_qa_082108.cfm

[2] WebCite – "Questions and Answers about the NIST WTC 7 Investigation (Updated 09/17/2010)" – http://www.webcitation.org/5uKuH7kNe

[3] The query used was:
http://web.archive.org/web/*/http://www.nist.gov/public_affairs/factsheet/wtc*

[4] Jim Hoffman's mirror of the older NIST FAQ – http://911research.wtc7.net/mirrors/nist/wtc_qa_082108.html

[5] http://www.nist.gov/public_affairs/factsheet/wtc_qa_082108.html

It's a start, but I'm far from done. Computing the differences between two text files isn't feasible if every different space, every empty line, every different apostrophe is listed as a difference: it would increase the signal-to-noise ratio and still necessitate a manual human eyeball comparison. I don't want that: I want it done automatically, and I don't want to miss anything. And indeed: several differences popped up that weren't actual differences but the result of character encoding, notes from Jim in the document itself, general garbling of unordered lists, "alt text" from pictures and lost new lines.

I set out to conform the two documents to each other so that a line-by-line comparison would only yield actual modifications by NIST. For this initial assessment, I used GNU diff and simply Windows Notepad. I did the following: (OT = old text, NT = new text)

- Made sure all question lines were preceded and followed by an empty line, to properly sync OT and NT
- Removed redundant empty lines from OT, also for syncing
- Replaced all occurrences of long dash with short dash in OT.
- Question marks in OT were often duplicate, i.e. "??" .. I had no idea why, so I replaced all instances of "??" with "?"
- Adjusted displaced and garbled unordered lists in OT
- Replaced question marks in the last line of OT with pipe (? -> |)
- Replaced fancy apostrophes (Hexadecimal 92) with normal ones in OT using Perl:

```
perl -pi.bak -e 's/\x92/'\''/g' nist_faq_old.txt
```

Removed the text block:

> *Typical WTC 7 floor showing locations of columns (numbered).*
> *Diagram 1-Typical WTC 7 floor showing locations of columns (numbered). The buckling of Column 79 was the initiating event that led to the collapse of WTC 7. The buckling resulted from fire-induced damage to floors around column 79, failure of the girder between Columns 79 and 44, and cascading floor failures.*

....from NT. This is "image alternative text", and thus irrelevant.

Corrected the difference between these two lines, in NT and OT respectively:

> *This is for one column . presumably*

> *This is for one column … presumably*

OT contained some special character for three dots, this was replaced by three actual dots in both documents.

 At the end of the following line in OT:

> *Given the fires that were observed that day, and the demonstrated structural response to the fires, NIST does not believe that thermite was used to fail any columns in WTC 7. NON SEQUITER*

...I removed "NON SEQUITER" [sic] and any additional whitespace. This was apparently a comment from Jim or whoever cached NIST's FAQ for him.

At the end of the following line in OT:

> *Analysis of the WTC steel for the elements in thermite/thermate would not necessarily have been conclusive. The metal compounds also would have been present in the construction materials making up the WTC buildings, and sulfur is present in the gypsum wallboard used for interior partitions. mmm*

...I removed "mmm", presumably another comment, and any additional whitespace.

In OT, corrected the following paragraph:

> *An emergency responder caught in the building between the 6th and 8th floors says he heard two loud booms. Isn't that evidence that there was an explosion? ?The sound levels reported by all witnesses do not match the sound level of an explosion that would have been required to cause the collapse of the building. If the two loud booms were due to explosions that were responsible for the collapse of WTC 7, the emergency responder-located somewhere between the 6th and 8th floors in WTC 7-would not have been able to survive the near immediate collapse and provide this witness account.*

To:

> *An emergency responder caught in the building between the 6th and 8th floors says he heard two loud booms. Isn't that evidence that there was an explosion?*
>
> *The sound levels reported by all witnesses do not match the sound level of an explosion that would have been required to cause the collapse of the building. If the two loud booms were due to explosions that were responsible for the collapse of WTC 7, the emergency responder-located somewhere between the 6th and 8th floors in WTC 7-would not have been able to survive the near immediate collapse and provide this witness account.*

Changed the fancy non ASCII quotes in the in OT:

> *7. Explicit adoption of the "structural frame" approach to fire resistance ratings that requires all members of the primary structural frame to have the higher fire resistance rating commonly required for columns. The primary structural frame includes the columns, other structural members including the girders, beams, trusses, and spandrels having direct connections to the columns, and bracing members designed to carry gravity loads.*

To:

> *7. Explicit adoption of the "structural frame" approach to fire resistance ratings that requires all members of the primary structural frame to have the higher fire resistance rating commonly required for columns. The primary structural frame includes the columns, other structural members including the girders, beams, trusses, and spandrels having direct connections to the columns, and bracing members designed to carry gravity loads.*

NIST's alterations revealed

So, shortly after September 11th 2010, NIST, for whatever reasons, decided it should make some alterations to its FAQ. I was now ready to reveal them.

To grease the process a little bit, I decided to use the graphical diff utility "P4Merge" from the free utility "Perforce". [6]

Here's how it looks. To the left is the old WTC 7 FAQ, to the right the new version.
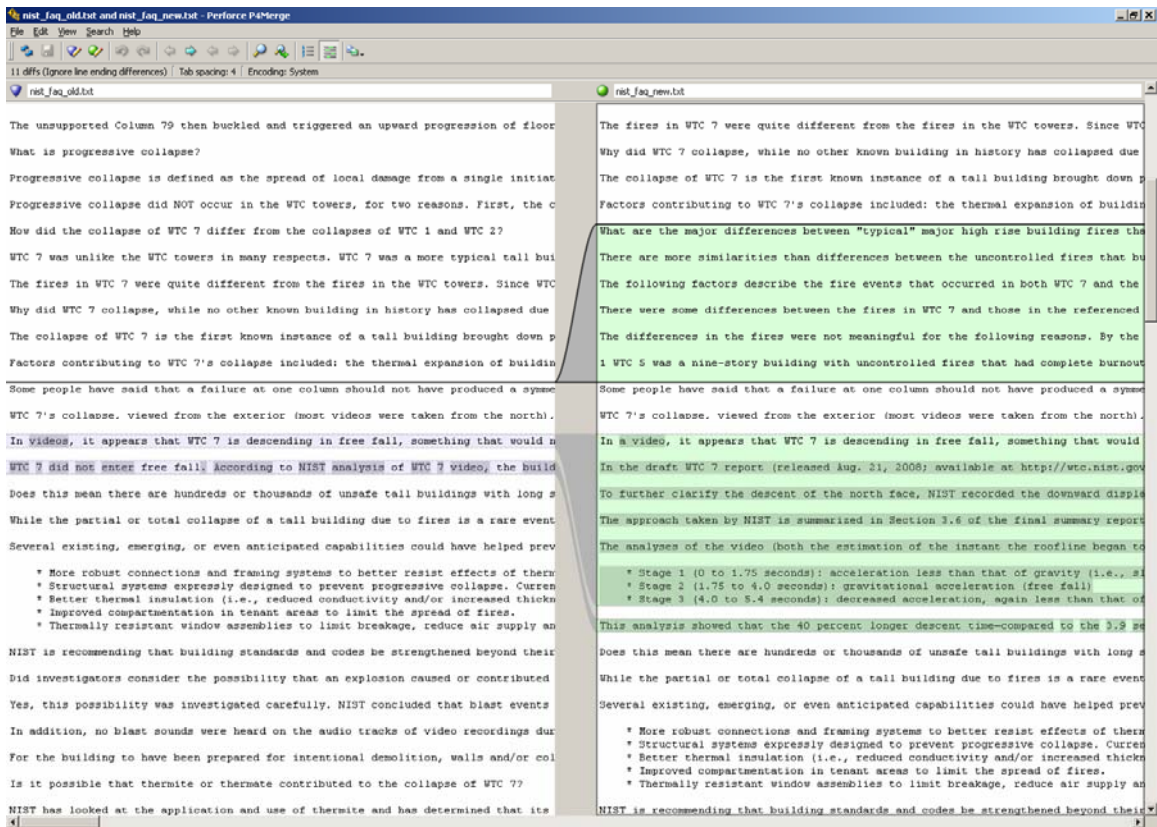
So… what changed?

Since there is a considerable time gap between Jim's cached version from 2008 and NIST's current version I can't know with certainty if the changes I report here were actually made on September 17 2010 or earlier. Nevertheless, at least one of the changes must have been.

To confuse matters further, the last line claims the page was "Last updated: October 5, 2010", conflicting with the date in the headline, and moreover was created "April 21, 2009". The latter is unremarkable: the new extension of the new FAQ page (cfm) probably indicates some kind of web server update or migration.

---

[6] Perforce Downloads: The Essentials –
http://www.perforce.com/perforce/downloads/index.html

Keeping all this in mind, I summarize all alterations below.

First modification

In between the questions:

> *Why did WTC 7 collapse, while no other known building in history has collapsed due to fires alone?*

And:

> *Some people have said that a failure at one column should not have produced a symmetrical fall like this one. What's your answer to those assertions?*

A new segment was added:

> *What are the major differences between "typical" major high rise building fires that have occurred in the United States and the fire in the WTC 7 building on September 11, 2001?*

> *There are more similarities than differences between the uncontrolled fires that burned in WTC 7 and those that occurred in the following buildings: First Interstate Bank Building (1988), One Meridian Plaza Building (1981), One New York Plaza (1970), and WTC 5 [1] (2001).*

> *The following factors describe the fire events that occurred in both WTC 7 and the referenced buildings: 1) the fuel for the fires was ordinary office combustibles at ordinary combustible load levels; 2) there was no use of accelerants; 3) the spread of fire from combustible to combustible was governed by ordinary fire physics; 4) fire-induced window breakage provided ventilation for continued fire spread and growth; 5) there were simultaneous fires on multiple floors; 6) the fires on each floor occupied a substantial portion of the floor; 7) the fires on each floor had passed the point of flashover and the structure was subjected to typical post-flashover temperatures; 8) the sprinklers were inoperative or ineffective; and 9) the fires burned for sufficient time to cause significant distortion and/or failure to the building structure.*

> *There were some differences between the fires in WTC 7 and those in the referenced buildings, but these differences were secondary to the fire factors that led to the collapse of WTC 7: 1) Fires in high rise buildings typically have a single point of origin on a single floor, whereas the fires in WTC 7 likely had a single point of origin on multiple (10) floors; 2); fires in other high rise buildings were due to isolated events, whereas the fires in WTC 7 followed the collapse of WTC 1; 3) water was available to fight fires in the other high rise buildings, but the water supply to fight fires in WTC 7 was impaired; and 4) while the fires in the other buildings were actively fought by fire fighters to the extent possible, in WTC 7, no efforts were made to fight the fires.*

> *The differences in the fires were not meaningful for the following reasons. By the time that WTC 7 collapsed, the fires in WTC 7 had advanced well beyond the likely points of origin on multiple floors (i.e., south and west faces) and originating*

points of fire origin had no bearing on the fire conditions when the building collapsed (i.e., in the northeast quadrant). Additionally, in each of the other referenced buildings, the fires burned out several floors, even with available water and fire fighting activities (except for WTC 5). Thus, whether the fire fighters fought the WTC 7 fires or not is not a meaningful point of dissimilarity from the other cited fires.

[1] WTC 5 was a nine-story building with uncontrolled fires that had complete burnout on a number of floors and partial collapse on four floors.

The last line appears to be a footnote, although it probably doesn't appear in the format NIST had in mind. I have identified and altered the number in the citation location to superscript in brackets, and the number in the footnote itself to include brackets as well.

Second modification

NIST has changed its explanation for freefall from: (emphasis mine)

__In videos__, it appears that WTC 7 is descending in free fall, something that would not occur in the structural collapse that you describe. How can you ignore basic laws of physics?

WTC 7 did not enter free fall. According to NIST analysis of WTC 7 video, the building collapsed 18 stories in 5.3 seconds. If the building exhibited free fall, this process would have taken just 3.9 seconds. The actual collapse time exceeded the free fall time by 40 percent.

To:

__In a video__, it appears that WTC 7 is descending in free fall, something that would not occur in the structural collapse that you describe. How can you ignore basic laws of physics?

In the draft WTC 7 report (released Aug. 21, 2008; available at http://wtc.nist.gov/media/NIST_NCSTAR_1A_for_public_comment.pdf), NIST stated that the north face of the building descended 18 stories (the portion of the collapse visible in the video) in 5.4 seconds, based on video analysis of the building collapse. This time period is 40 percent longer than the 3.9 seconds this process would have taken if the north face of the building had descended solely under free fall conditions. During the public comment period on the draft report, NIST was asked to confirm this time difference and define the reasons for it in greater detail.

To further clarify the descent of the north face, NIST recorded the downward displacement of a point near the center of the roofline from first movement until the north face was no longer visible in the video. Numerical analyses were conducted to calculate the velocity and acceleration of the roofline point from the time-dependent displacement data. The instant at which vertical motion of the roofline first occurred was determined by tracking the numerical value of the brightness of a pixel (a single element in the video image) at the roofline. This pixel became brighter as the roofline began to descend because the color of the

pixel started to change from that of the building façade to the lighter color of the sky.

The approach taken by NIST is summarized in Section 3.6 of the final summary report, NCSTAR 1A (released Nov. 20, 2008; available at http://wtc.nist.gov/NCSTAR1/PDF/NCSTAR%201A.pdf) and detailed in Section 12.5.3 of NIST NCSTAR 1-9 (available at http://wtc.nist.gov/NCSTAR1/PDF/NCSTAR%201-9%20Vol%202.pdf).

The analyses of the video (both the estimation of the instant the roofline began to descend and the calculated velocity and acceleration of a point on the roofline) revealed three distinct stages characterizing the 5.4 seconds of collapse:

- *Stage 1 (0 to 1.75 seconds): acceleration less than that of gravity (i.e., slower than free fall).*
- *Stage 2 (1.75 to 4.0 seconds): gravitational acceleration (free fall)*
- *Stage 3 (4.0 to 5.4 seconds): decreased acceleration, again less than that of gravity*

This analysis showed that the 40 percent longer descent time—compared to the 3.9 second free fall time—was due primarily to Stage 1, which corresponded to the buckling of the exterior columns in the lower stories of the north face. During Stage 2, the north face descended essentially in free fall, indicating negligible support from the structure below. This is consistent with the structural analysis model which showed the exterior columns buckling and losing their capacity to support the loads from the structure above. In Stage 3, the acceleration decreased as the upper portion of the north face encountered increased resistance from the collapsed structure and the debris pile below.

Third modification

In between the questions:

An emergency responder caught in the building between the 6th and 8th floors says he heard two loud booms. Isn't that evidence that there was an explosion?

And:

Did fuel oil systems in WTC 7 contribute to its collapse?

A new segment was added:

In June 2009, NIST began releasing documents in response to a Freedom of Information Act (FOIA) request from the International Center for 9/11 Studies for "all of the photographs and videos collected, reviewed, cited or in any other way used by NIST during its investigation of the World Trade Center building collapses." One of the items released, a video obtained from NBC News , shows World Trade Center Building 7 (WTC 7) in the moments before it collapsed, then cuts to the collapse already in progress, with the building's east penthouse "disappearing" from the scene (as it had already fallen in the intervening time). Other videos of the WTC 7 collapse show the penthouse falling first, followed by

the rest of the building. Did NIST edit the NBC News video to remove the collapse of the penthouse?

The video footage released under the FOIA request was copied from the original video exactly as it was received from NBC News, with video documentation of the WTC 7 east penthouse collapse missing. The footage was not edited in any way by NIST.

Fourth modification

In between the questions:

Did fuel oil systems in WTC 7 contribute to its collapse?

And:

Why did the investigation take so long to complete?

A new segment was added:

Why did NIST model the sprayed fire resistive material (SFRM, also referred to as fireproofing) on the WTC 7 beams and columns as a "perfect" installation (i.e., without any gaps or damage in the SFRM coating), when realistically most buildings have some gaps or damage in the SFRM coating, either due to improper installation or deterioration over time?

NIST carefully considered the condition of the SFRM installation in WTC 7, including the applied thickness and evidence of gaps or damage in the SFRM. The SFRM in WTC 7 was modeled as undamaged except in the southwest region of the building where there was debris impact damage [2]. A uniform thickness equal to the specified SFRM thickness was used for the finite element thermal analyses of WTC 7 because 1) the variability in the SFRM thickness was small, 2) no evidence of significant damage to the SFRM was found, and 3) small areas of SFRM damage would not have affected the thermal or structural response of the structural framing system.

A number of factors were considered when determining the condition of the SFRM application to the WTC 7 beams and columns:

- *Available measurements of SFRM thickness from inspections made during the SFRM application showed that the SFRM as applied was consistent with the required thickness and that the variability in the applied SFRM thickness was small. (NIST NCSTAR 1-9, Table 2-2)*
- *Review of photographs of WTC 7 beams and columns taken during renovations showed that the SFRM appeared uniform, and there was no evidence of spalling or gaps. (NIST NCSTAR 1-9, Figures 2-27 to 2-29.)*
- *Inspection of the building at 130 Liberty Street (formerly Bankers Trust or Deutsche Bank building) found no damage to the SFRM after impact by debris from the collapse of WTC 2, except in the immediate vicinity of the debris impact. (NIST NCSTAR1-9, Section 2.5.3)*

- *An analysis of the SFRM thickness for trusses in the WTC towers showed that the average measured thickness exceeded the specified thickness and that use of the specified uniform thickness in the thermal analyses accounted for the effect of variability in the SFRM thickness. (NIST NCSTAR 1-6A, Chapter 5)*
- *A thermal analysis of a steel plate (e.g., modeling a beam flange) with gaps in the SFRM showed that occasional gaps in the SFRM did not significantly alter the thermal response of the structural member. (NIST NCSTAR 1-6, Chapter 2)*

[2] A different set of analyses for WTC 1 and WTC 2 led to a similar approach for modeling the SFRM, i.e., the SFRM was modeled as undamaged, except for areas subjected to direct debris damage from the aircraft impact.)

Again, the last line appears to be a footnote, and I have again identified and altered the place of citation to superscript in brackets, and the number in the footnote itself to include brackets as well.

Fifth modification

NIST changed the line:

Why is NIST studying the collapse of WTC 7?

To:

Why did NIST study the collapse of WTC 7?

Then, the following section was removed:

How can I provide comments on the report?

NIST welcomes comments on the draft report and recommendations-available online at http://wtc.nist.gov. Comments must be received by noon Eastern Daylight Time on Sept.15, 2008. Comments may be submitted via:

- *e-mail to wtc@nist.gov;*
- *fax to (301) 869-6275; or*
- *surface mail to WTC Technical Information Repository, Attn: Stephen Cauffman, NIST, 100 Bureau Dr., Stop 8611, Gaithersburg, Md. 20899-8610.*

Instructions for submitting comments are available at http://wtc.nist.gov.

And it was replaced with:

How does the final report on WTC 7 issued on Nov. 23, 2008, differ from the draft report that was released for public comment on Aug. 21, 2008?

The final report is strengthened by clarifications and supplemental text suggested by organizations and individuals worldwide in response to the draft WTC 7 report, but the revisions did not alter the investigation team's major findings and

recommendations, which include identification of fire as the primary cause for the building's failure.

The extensive three-year scientific and technical building and fire safety investigation found that the fires on multiple floors in WTC 7, which were uncontrolled but otherwise similar to fires experienced in other tall buildings, caused an extraordinary event. Heating of floor beams and girders caused a critical support column to fail, initiating a fire-induced progressive collapse that brought the building down.

In response to comments from the building community, NIST conducted an additional computer analysis. The goal was to see if the loss of WTC 7's Column 79—the structural component identified as the one whose failure on 9/11 started the progressive collapse—would still have led to a complete loss of the building if fire or damage from the falling debris of the nearby WTC 1 tower were not factors. The investigation team concluded that the column's failure under any circumstance would have initiated the destructive sequence of events.

Other revisions to the final WTC 7 report included:

- *Expanding the discussion of firestopping, the material placed between floors to prevent floor-to-floor fire spread;*
- *Clarifying the description of thermal expansion as it related to WTC 7's shear studs and floor beams; and*
- *Explaining in greater detail the computer modeling approach used to define where and when the fire in WTC 7 started and the extent of window breakage as a result of fire.*

Sixth modification

Finally, the last line of the FAQ was altered from:

Date created: 8/21/08 | Last updated: 8/21/08 | Contact: inquiries@nist.gov

To:

The National Institute of Standards and Technology (NIST) is an agency of the U.S. Commerce Department.

Privacy policy / security notice / accessibility statement / Disclaimer / Freedom of Information Act (FOIA) / No Fear Act Policy / ExpectMore.gov (performance of federal programs) / NIST Information Quality Standards

Date created: April 21, 2009 | Last updated: October 5, 2010   Contact: Webmaster

Discussion

NIST has updated and altered its WTC 7 FAQ. The exact text (and perhaps, picture) alterations from one version to another are obscured from the public; previous versions

are unavailable from the Wayback Machine. Such alterations apparently must be revealed by independent inquiry.

First modification

The first new modification, a whole new segment, addresses the question why WTC 7 would suffer an unprecedented fire-induced progressive collapse, while similar skyscrapers suffering comparable or worse fires did not. Buildings named are First Interstate Bank Building (1988), One Meridian Plaza Building (1981), One New York Plaza (1970), and WTC 5 (2001). In its response to this question, with the exception of firefighting efforts, NIST appears to be arguing against its own conclusions. These examples are also discussed in the report, but unlike the FAQ, the Cardington fire tests are included in the list of examples.[7]

Second modification

The second modification attempts to explain why WTC 7 fell at freefall acceleration for a significant time and distance. The plural "videos" is altered to the singular "video", suggesting NIST no longer believes multiple videos show WTC 7 descending in freefall, just one.

The crucial subject of WTC 7's accelerative behavior deserves special attention, so I will discuss it here at length. To justify freefall, NIST trots out the 'hollow shell' hypothesis by referencing its "structural analysis model". Presumably, NIST refers to paragraph 12.4.4 from NIST NCSTAR 1-9 volume 2, i.e. "Global Analysis Results with Best Estimate Debris Impact Damage", one of four models constructed by NIST, with varying input conditions.

In this simulation, the entire core had failed at 22.3 seconds into the simulation[8] and buckling of exterior columns commenced at 21.5 seconds.[9] Moreover, according to NIST's simulation, this exterior column buckling occurred between floors 7 and 14, too low to be observed by the many cameras pointed at the building. NIST acknowledges this explicitly when comparing the results of its simulation scenarios: (emphasis mine)

> *The exterior column failures were sensitive to the extent of the estimated initial structural damage in WTC 7 due to debris impact from the collapse of WTC 1.*
>
> *For the debris impact damage scenario, the exterior column buckling began at the southwest corner Column 14, adjacent to the WTC 1 debris impact zone, between Floors 10 and 12. The exterior columns adjacent to the (seven) columns severed in the southwest region due to the collapse of WTC 1 were the first to buckle because additional load was distributed to them as a result of the damage. The analysis with debris impact damage closely simulated the observed failure of the exterior façade, where the façade moved downward as a single unit.*
>
> *For the no debris impact damage scenario, the exterior columns buckled near mid-height of the building, approximately between Floors 17 and 29. **If the exterior columns had buckled at mid-height, it would have been visible in***

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[7] NCSTAR 1-9 volume 1, page 331, paragraph 8.5
[8] NCSTAR 1-9 volume 2, figure 12-59
[9] NCSTAR 1-9 volume 2, page 586

> **the videographic records.** *The analysis without debris impact damage did not closely simulate the observed failure of the exterior façade.*
>
> *The observed behavior of the exterior columns during the global collapse was more closely simulated by the analysis with debris impact damage.* [10]

Just above this paragraph NIST admits that the characteristics of its comparative "no debris impact damage scenario" suggest that "*the damage scenario that was imposed in the best estimate analysis was slightly more severe than actually occurred.*" [11]

In other sections of the WTC 7 report, NIST makes several claims about the accuracy of the simulations: (emphasis mine)

> *Given the complexity of the modeled behavior, the global collapse analyses matched the observed behavior reasonably well.* [12]
>
> *The best estimate simulation led to global collapse of WTC 7 and provided a reasonable sequence and timing of the events leading to the initiation of global collapse. As expected, there were some deviations from the observable evidence at computation times after the global collapse was underway.* [13]
>
> *Computer simulations of the fires, the thermal heating of the structure, the thermally induced damage to the structure, and the structural collapse can be used to predict a complex degradation and collapse of a building. The overall features and timing of the prediction were consistent with the videographic evidence.* [14]
>
> *It was recognized that uncertainties existed in the fire simulations, thermal analyses, analyses of the structural response to fires, and the analyses of global collapse, including assumptions made where data were not available. The propagation of uncertainties in the inter-dependent analyses was minimized by conducting sensitivity studies and multiple analyses with a range of values for critical parameters,* **and by determining the best fit between the analysis results and observed events from photographic and videographic evidence.** *The occurrence and timing of the analytical results closely matched the observed events (e.g., east penthouse descent, followed by global collapse), which demonstrates the effectiveness of this approach for the interdependent analyses.*
>
> *There are greater uncertainties in predicting the precise progression of the collapse sequence as the analysis proceeded due to the random nature of the interaction, break up, disintegration, and falling of the debris. The uncertainties deriving from these random processes increasingly influenced the deterministic physics-based collapse process. Thus, the details of the progression of horizontal failure and final global collapse were sensitive to the uncertainties in*

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[10] NCSTAR 1-9 volume 2, page 606
[11] NCSTAR 1-9 volume 2, page 606
[12] NCSTAR 1-9 volume 2, page 600
[13] NCSTAR 1-9 volume 2, page 604
[14] NCSTAR 1-9 volume 2, page 625

how the building materials (steel, concrete) and building systems and contents interact, break up, and disintegrate.[15]

*The kink in the north face and rotation of the northeast façade occurred 2 s to 3 s after the exterior façade had begun to move downward, as a result of the global collapse. The simulations do show the formation of the kink, **but any subsequent movement of the building is beyond the reliability of the physics in the model.** [16]*

The collapse mechanism induced by the 'best estimate' analysis is also explained on page 588:

As the interior columns buckled across the building, the exterior columns were left laterally unsupported normal to the east, south, and north faces. Exterior column buckling spread from column to column, as loads were redistributed, until all the exterior columns had buckled between Floors 7 and 14 within approximately 2 s.

When all the exterior columns had buckled, as shown in Figure 12–62, the entire building above the buckled-column region moved downward as a single unit, resulting in the global collapse of WTC 7. [17]

Note that NIST claims the exterior columns buckled *"within approximately 2 s"* … not instantaneously throughout the width of the building. Note also that this is the moment when David Chandler starts measuring the downward acceleration of the roofline, because it starts to move downward. Indeed, while NIST is rather wishy-washy about the definition of global collapse, at least once they define it as follows:

Global collapse occurred as the entire building above the buckled region moved downward as a single unit. [18]

So, while progressive collapse was initiated by the buckling of column 79, and while debunkers often vociferously lament that Chandler and his peers should start timing when the east penthouse collapses, this is not the point of Chandler's analysis: Chandler is using the roofline of WTC 7 as an instrument for measuring the building's structural resistance to *global collapse*, that is, when the building moves down *as a single unit*.

NIST's response to this is the 'hollow shell' hypothesis: there is no structural resistance because *there is no resisting structure*. Sadly, we have no way of verifying the key assertions of NIST's 'best estimate' simulation, because its key characteristics, a completely collapsed core and a façade buckling between floors 7 and 14, are almost all hidden from view. Neither does NIST, to the best of my knowledge, cite any witness statements in support of this proposed external column buckling in this region. Last but certainly not least, there was *no physical evidence whatsoever* used by NIST to reality check their largely simulation-based hypothesis. As stated in NCSTAR 1A:

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[15] NCSTAR 1-9 volume 2, page 613
[16] NCSTAR 1A, page 44
[17] NCSTAR 1-9 volume 2, page 588
[18] NCSTAR 1-9 volume 2, page 618

*The report is the result of an extensive, state-of-the-art reconstruction of the events that affected WTC 7 and eventually led to its collapse. Numerous facts and data were obtained, then combined with validated computer modeling to produce an account that captures the key features of what actually occurred. **However, the reader should keep in mind that the building and the records kept within it were destroyed, and the remains of all the WTC buildings were disposed of before congressional action and funding was available for this Investigation to begin.** As a result, there are some facts that could not be discerned and, thus, there are uncertainties in this accounting.* [19]

Yet, in the final sentence of the paragraph, NIST hand waves this glaring abnormality with stunning nonchalance:

Nonetheless, NIST was able to gather sufficient evidence and documentation to conduct a full investigation upon which to reach firm findings and recommendations. [20]

And again, in the FAQ:

In general, much less evidence existed for WTC 7 than for the two WTC towers. The steel for WTC 1 and WTC 2 contained distinguishing characteristics that enabled it to be identified once removed from the site during recovery efforts. However, the same was not true for the WTC 7 steel. Certainly, there is a lot less visual and audio evidence of the WTC 7 collapse compared to the collapses of the WTC 1 and WTC 2 towers, which were much more widely photographed.

Nonetheless, the NIST investigation of WTC 7 is based on a huge amount of data. These data come from extensive research, interviews, and studies of the building, including audio and video recordings of the collapse. Rigorous, state-of-the-art computer methods were designed to study and model the building's collapse. These validated computer models produced a collapse sequence that was confirmed by observations of what actually occurred. In addition to using its in-house expertise, NIST relied upon private sector technical experts; accumulated copious documents, photographs and videos of this disaster; conducted first-person interviews of building occupants and emergency responders; analyzed the evacuation and emergency response operations in and around WTC 7; performed computer simulations of the behavior of WTC 7 on Sept. 11, 2001, and combined the knowledge gained into a probable collapse sequence. [21]

Long on proof by bragging and boasting, but still short on physical evidence.

NIST had no columns to examine, no beams, no girders, no floor connections, nothing that could verify the 'best estimate' scenario, but instead relies on a computer model most probably designed to match its expectations.

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[19] NCSTAR 1A, page xxxv
[20] Ibid
[21] NIST – "Questions and Answers about the NIST WTC 7 Investigation (Updated 09/17/2010)" – http://www.nist.gov/public_affairs/factsheet/wtc_qa_082108.cfm
Cached version – http://www.webcitation.org/5uKuH7kNe

To conclude: sometimes building 7's perimeter is dismissively referred to as a 'curtain wall' by critics of NIST's critics. A curtain wall has a decorative function only and carries no gravitational load. It is sometimes asserted that the curtain wall would not show deformations of the perimeter columns. This is an obfuscation: while WTC 7 indeed had a curtain wall with granite panels, it was obviously firmly attached to the load bearing perimeter, as the NIST report explains[22] and these photos[23] demonstrate:

- Photograph of floor 33, taken 1989-03-30

- Photograph of floor 36, taken 1989-06-30

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[22] NCSTAR 1-9 volume 1, page 100
[23] Bernstein Associates – NIST NCSTAR 1-9 volume 1, page 37/38

Quoting NIST: (emphasis mine)

> The vertical (gravity) load resisting system comprised the core **and exterior columns, which received gravity loads from the floor framing**. Of particular note were the three core columns on the east side of the building (Columns 79, 80, and 81), which supported large span floor areas with approximately 15 m (50 ft) spans on at least one side. [24]

The gravity loads carried by the exterior columns were approximately the same as the core:

> The gravity loads were supported **roughly equally** by the 58 exterior columns and the 24 interior columns. [25]

Given the reasoning in this critique of NIST's freefall assertions so far, if it is to be claimed that the collapse of WTC 7 was the result of a controlled demolition, then by logic,

1. Either façade buckling at freefall over approximately 7 to 8 stories is physically possible,
2. Or the façade structure was visibly demolished over this same vertical distance, in approximately the same region,
3. Or the building did not actually fall at freefall for the Chandler/NIST affirmed duration [26]

The questions almost ask themselves:

1. Even if there was no core structure left to help resist a global collapse, would these heavy, load bearing perimeter columns simply provide 'negligent' resistance during stage 2, while buckling? According to mechanical engineer Tony Szamboti, column buckling is asymptotic: resistance never goes to zero. Rather the columns supply 30% to 70% of their static load carrying capacity to the incoming dynamic load.[27]
2. Was there any physical evidence that supports buckling of the perimeter between floors 7 – 14?
3. Why do NIST's simulation videos show two-thirds of the core structure still present after global collapse initiation, in contradiction to NCSTAR 1-9; why do perimeter columns show deformations that are invisible on the available video footage even granting that WTC 7 has a curtain wall, but also acknowledging that NIST has admitted at least once that perimeter buckling would be visible *"in the videographic record"*, and finally, why do the simulation videos stop prematurely?
4. How could the core almost completely collapse, pulling in the exterior columns through the floor system, without visible clues on the façade?

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[24] NCSTAR 1A, page 58
[25] NIST Technical Briefing, November 19, 2008, page 8 –
http://wtc.nist.gov/media/WTC7RevisedTechnicalBriefing111908.pdf
[26] The 9/11 Forum – WTC 7 Trace Data – http://the911forum.freeforums.org/wtc-7-trace-data-t353.html
[27] The 9/11 Forum – Tony Szamboti – http://the911forum.freeforums.org/wtc-7-a-logical-problem-t431-45.html#p13817

5. If NIST insists that all structural resistance had been removed before the onset of stage 2, then could they explain why the upper block would patiently wait for permission to obey the law of gravity while its supports gave up the ghost in sequence?
6. How do the previous objections allow for a stage 2 descent in freefall?
7. If all it took to trigger global progressive collapse (although several surrounding buildings were indeed damaged) was the failure of column 79 [28], then what currently excludes a column cutting scenario, given that NIST's already untenable 'big boom, big sound' objection now officially no longer holds? [29] …Where is column 79?
8. If we, the 9/11 truth movement, like NIST, suspect that the collapse of the east penthouse signified a key event in the structural compromise of the building, then how we explain the lack of noticeable façade deformation at that time?

Third modification

The third major modification involves the International Center for 9/11 Studies, and allegations against NIST of video evidence tampering. NIST essentially blames NBC for the missing footage. Truth be told, NIST never claimed to have this missing footage in the first place, so if this is a lie, the lie was born years ago.[30]

NIST does not address the audible explosion in one of the newly released videos of WTC 7 [31], or how there could be such a discrepancy in the audio tracks of two seemingly identical videos provided by NIST. Until now, NIST has staunchly denied there was any such explosive sound whatsoever, which might turn out to be the weakest and perhaps most offensive feat of willful ignorance in the report.

Fourth modification

The fourth major modification describes the effects of NIST's assumptions about WTC 7's fireproofing on its fire simulations. It seems crafted to buttress NIST's fire simulation by formulating a loaded question, followed by the helpful reply that even with perfect fireproofing conditions a fire-induced progressive collapse was inevitable. It mentions renovations to the building as also described in the report; these might be of interest to 9/11 researchers.

NIST notes that less ideal fireproofing conditions wouldn't have yielded a different outcome: this is interesting in light of NIST's assertions about the key role of damaged fireproofing in determining the probability of collapse initiation in WTC 1 and 2. For the Twin Towers, NIST simulated the effects of plane impact on fireproofing by shooting at fireproofing with a shotgun. This method of testing was criticized in depth by Kevin Ryan in a response to Ryan Mackey.[32]

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[28] NCSTAR 1-9 volume 2, paragraph 12.4.7, page 594
[29] Youtube – AE911Truth – "Huge explosion before the destruction of building 7 WTC .mov " – http://www.youtube.com/watch?v=783mtK_0zhE
[30] NCSTAR 1-9 volume 1, page 262, table 5-2
[31] Ibid
[32] Journal Of Nine-Eleven Studies – "The Short Reign of Ryan Mackey" – http://www.journalof911studies.com/letters/b/MackeyLetter.pdf

Fifth modification

In the fifth major modification NIST explains the differences between the draft and the final version of the report, and it labels its own thermal expansion hypothesis an 'extraordinary event'. It also asserts that the loss of column 79 under any circumstances would have caused a chain reaction leading to full progressive collapse

Sixth modification

Lastly, the final alteration mentions that NIST "is an agency of the U.S. Commerce Department."

Conclusion

Besides reactive, NIST's communication department is increasingly proactive and preemptive. The subtle change of the plural 'videos' to 'video', in reference to footage said to demonstrate freefall acceleration may indicate that NIST is keeping tabs on ongoing technical 9/11 research.

The choice of topics altered or added reveals priorities: IC911Studies, accusations of FOIA obstruction and evidence tampering, comparative high rise fires before and on 9/11 that did not result in full collapse, fireproofing, and, of course, the freefall conundrum.

I haven't been able to pinpoint exactly what change(s) to the FAQ were applied on September 17, but it stands to reason that NIST expects increased website hits around 9/11 each year, and that some kind of publicity for 9/11 Truth triggered a response.