

## Public Comments:

### A Structural Reevaluation of the Collapse of World Trade Center 7 – Draft Report

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INE Report 18.17

**Note: The following are public comments which are presented in the order that they were submitted. Names and contact information of commenters have been removed.**

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There was video of substantial WTC7 lobby damage earlier in the day, and witnesses like Barry Jennings reported internal explosions earlier in the day which he reported (paraphrasing) “cut his stairwell landing” and “blew an elevator car into the hallway”. Did the UAF study consider any prior damage or structural derangement aside from fire? Did you model for the concrete stairwells, and if not, would their presence or absence contribute significantly to expected collapse sequences?

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In your report, the penthouse fell a few seconds before the main structure, and I was wondering what the reason could be for that sequence. I see an antenna on the roof, but could not get a clear picture of it. Do you have a list of what antennas were installed on the roof of building 7? There had to be several antennas installed on the roof considering it was housing the command center for the city of New York. Many of the Firemen and Policemen have talked about the faulty Motorola Radios. Did all transmissions go through the command center, and could another “transmitter” on the roof cause interference with these radios on that day? I would guess if the type of antenna that I am theorizing was used, probably wouldn’t be on the list anyway, but if you had a diagram or better picture of the roof right before its collapse, there could be a few more questions presented. I have looked at pictures of the roof of the twin towers and the pentagon, and someone suggested that an antenna was positioned in one of the construction trailers in front of the pentagon, so they may have been disguised. In final, my question, what antennas were located on the roof of building 7 just prior to collapse?

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It is critically important that it be presented in meticulous scientific detail to the rest of the world. Please note that Page 73 of the PDF contains a typo: Whereas NIST asserted that the differential westward displacement of girder A2001 relative to Column 79 was 5.5 inches and later revised its calculation to 6.25 inches, we found that the westward displacement of girder A2001 relative to Column 79 would have been less

than 1 inch under the fire conditions reported by NIST (Figure 2.66). I believe that should be Figure 2.65 as there is no Figure 2.66 in the draft report.

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In your testing did you simulate the damage from the bottom corner of south side of WTC 7 that was caused when the other 2 buildings collapsed?

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Thank you for your comprehensive and persuasive draft report.

Please accept these comments in the spirit of improving it.

(1) page 36 - reference to Figure 2.15 omitted

Column 79 at Floor 13 was a built-up column consisting of W14×730 and two steel plates 2 inches thick by 26 inches wide welded on the sides. Figure shows the cross section of Column 79. Figure 2.16 shows the mechanical properties of steel against temperature

(2) page 47 - singular plural verb noun agreement - “Figures ... show”

solid elements. Figures 2.28 and 2.29 below shows the modeling of the floor slabs for the calculation of the equivalent material in another direction. That is, the floor slabs of WTC 7 had

(3) page 55 - reference to Figures 2.39 and 2.40 omitted, unnumbered figures appear duplicated

Seven types of connections were modeled using ABAQUS.

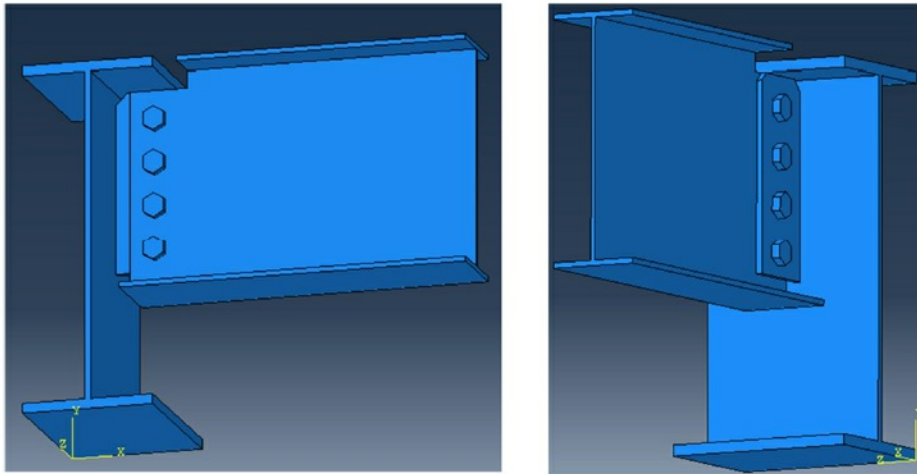


Figure is a fin connection sample between an interior girder and a beam. Figure is the

(4) page 75 - singular plural - “these phenomena” or “this phenomenon”

2. NIST assumed that shear studs on beams K3004, C3004, B3004, A3004, and G3005 were broken due to differential thermal movement. We analyzed this phenomena in our previous analyses and found that this would not have occurred.

(5) page 75 - singular plural - “these phenomena” or “this phenomenon”

4. NIST assumed that the bolts fastening girder A2001 to its seats at columns 44 and 79 were broken. We analyzed this phenomena in our previous analyses and found that this would not have occurred.

(6) page 79 - strange formatting

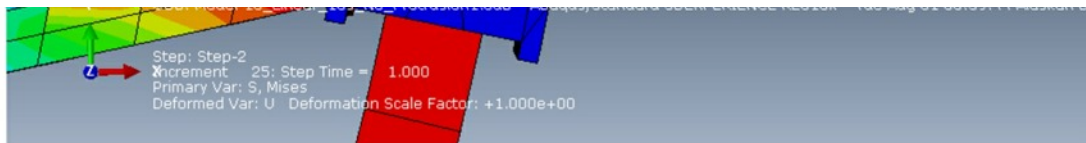


Figure 3.6 Plan view shows girder A2001 being pushed laterally past notched western side plate.

My remaining comment concerns the written style alone, for your consideration.

(7) pages 5, 45, 65, 74, 90 - “Substitute 'damn' every time you're inclined to write 'very;' your editor will delete it and the writing will be just as it should be.” Mark Twain

I look forward to your 3D data being made available. Thank you again for your report.

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In the last paragraph of your project summary, there is a grammatical error. Perhaps fixing it would give the report more credibility: “with the final report will (should be “to”) be released later this year.”

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This guy is expressing my questions far better than i could...

<https://www.metabunk.org/sept-3-2019-release-of-hulseys-wtc7-draft-report-analysis.t10890/>

what about these strange visualisations or animations? How could they be explained? I am convinced that WTC7 did not collapse due to fire, but these videos by Hulseys’s team are also causing question marks.

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I have a masters in architectural engineering from MIT. I'm unwilling to reveal my identity out of fear of losing my job (sorry, I have a family to feed). It is my belief that nearly all engineers are aware that WTC7 was brought down using some form of controlled demolition technology. The vast majority of us simply keep quiet out of fear of repercussions. I hold this belief for two reasons: 1. All of my colleagues with whom I have an especially close relationship have confided in me their understanding that WTC7 was demolished using some form of controlled demolition technology. 2. Only a very rudimentary understanding of physics or building engineering is required to see that WTC7 was demolished using some form of controlled demolition technology. I would like to sincerely thank AE911Truth and Prof. Hulseys & his team for their courage and hard work. Despite my unwillingness to reveal my identity, I will continue to make anonymous annual monetary contributions. Thank you

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Do you intend to publish these findings in a formal publication and/or have this study formally peer reviewed?

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Hi from Denmark is it possible that if explosives may have been used the office fires may have only be initiated around the explosives?????

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On page 62 of the draft report you write: „The WTC 7 fire loading analysis was based on NIST’s fire modeling for Floors 12 and 13, which we reviewed and determined to be a reasonable worst-case scenario.“ NIST NCSTAR 1-9 shows photographic evidence, however, that the fires in the north-east corner of floor 12, that would have been essential for the fire-loads assumed by NIST, had already burned out at about 3:44 pm (figure 5-134 on page 220, corroborated by figure 5-141 on page 228 and figures 5-168

and 5-172 on pages 252 and 253 respectively). NIST documents: „The observed fire activity gleaned from the photographs and videos was not a model input, and thus one should not expect a perfect correspondence between predicted high temperatures and observed fire activity.“ (p. 378) NIST also comments on the fact, that „the burning time near the north face was longer in the simulation than in the visual evidence“ (p. 382) without acknowledging that the empirical evidence renders the simulated assumption concerning fire-loads on the steel-members of the 13th floor rather implausible.

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What was the significance of the jerk implied by figure 4.23? [Velocity comparison between Chandler measurement (green plotted line) and UAF simulation (red plotted line). Bold green trend line illustrates free fall.] Downward acceleration at 1 g for 2.5 seconds. Then jerk. Downward acceleration continues at 1/2 g for 3/4 second. Another jerk. Then acceleration is 0: constant velocity of -31 m/s. 2. Per Draft Report, assume all columns on 8 floors taken out. This would indeed reproduce the 2.5 seconds of free fall. Then major jerk. Why don't we see video results of high order damage ejected from the 8 floors? (Similar to the violent lateral ejections seen on video of WTC 1 and 2.) Prior to free fall, do we even see windows blowing out over the 8 floors? 3. Is the conclusion that all columns over the whole building were taken out? Or just over the 8 floors? The Draft Report is confusing on this issue. 4. How much damage would you expect from the above mentioned jerk? For example, suppose all columns were taken out over the 8 floors. Then the building above follows in free-fall -how much damage on impact? Could that account for final state of building?

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Apart from a few minor typographic issues and at least 1 unnumbered figure which I'm sure you will pick up in finalisation of this report, I restrict myself to two areas. Chapter 4 Specifically -and forgive me if it should have been clearer to me from the report -I do not fully understand (a) how the floor slabs were modelled in the global collapse model, and (b) what is supposed to have happened to the considerable volume of material (primarily steel and concrete) collected at the base of columns 79/80/81, and (c) how you modelled the boundary conditions to represent the structure below floor 4? So we're clear, I am a mechanical engineer by background, I don't claim to be an expert in structural collapse of buildings. That said, it seems to me that the collapse of a sizeable part of each floor below the east penthouse would have resulted in quite a large amount of debris. Is it possible that this falling debris led to lateral loads sufficient to cause secondary collapse? That in turn brings me to the lower floors, already compromised by the known damage from Twin Towers' earlier collapse. Is it possible that the falling debris, together with the prior weakening of the lower floors, together with the "compromised" nature of the lower floors' design (due to the substation) might be so as to allow for progressive collapse of the lower parts of some of those columns, such collapse then "propagating upwards" leading to the observed failure? From an examination of other video such as <https://youtu.be/8WVNk674LZrI?t=50> it is apparent that WTC7 did not fall vertically quite as modelled, but instead somewhat imploded - there's appreciable angular displacement of the outer corners visible on that footage, suggesting a slightly different set of circumstances to those modelled. Even Figure

4.24a (simulation video) plainly does not match the actual footage. Looking at the left (as that video is shot) face of the facade, there is deformation and window breakage down to at least floor 35 directly following the east penthouse collapse. There's a notable displacement field across the entire elevation over those critical seconds, suggestive of progressive internal collapse leading to a "tipping point" effect. At <https://youtu.be/8WNk674LZrl?t=72> it is clear that the elevation has displaced considerably. Damage Modelling Generally How was the actual damage prior to collapse accounted-for? Is it possible that some damage had already occurred to, say, the lower parts of Column 79 prior to the effects of fire? Furthermore, how was the effect of the apparently completely-destroyed Column 20 modelled? See <https://wtc7fact.wordpress.com/2014/01/31/world-trade-center-7-the-gash/> for a discussion of the evidence of considerable damage there. The question must be whether there was collateral damage to, say, Column 69 and even the integrity of many of the girders in that area? It seems NIST also did not consider the effects of Column 20 damage; did your team go back to primary sources to establish pre-collapse damage? From my own experience, and your work, the importance of boundary conditions cannot be overstated. The evidence in the public domain of substantial damage (sufficient to have removed an entire column) does suggest that the boundary conditions in your own work may perhaps have also been not quite correct? If the perimeter of each floor is in effect compromised, the expansion field at floor 12/13 might look rather different? Would that have been sufficient to lead to the necessary deflection to unseat the connection at Column 79? I applaud your hugely detailed modelling work. I'm primarily concerned that the state of the building as-was (after impact damage from WTC1/2 but before fire) was not the same as that represented in your models. That being so, my fear is that a great deal of what follows on from that mis-match might be sufficient to obviate some of your results, or at the very least cast sufficient doubt over them as to prevent them from having the impact they might otherwise have.

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There is so much evidence relating to the Nano Thermite recovered from the dust and powder and debris from ground Zero and from the surrounding area of the 911 is this discussed in your findings?

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What I do wonder is what is the ultimate goal of this re-evaluation? We know that if this was an event perpetrated upon the public for unscrupulous reasons, it will be a difficult thing to unravel in the minds of the patriotic masses. I wish you well with any endeavor.

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Review comments, Sept 27th, 2019, to the draft report: "A Structural Reevaluation of the Collapse of World Trade Center 7" by J.L. Hulse et al., Sept 3rd, 2019 This report provides a thorough analysis of what may or may not have caused the collapse of building 7 of the World Trade Center complex on Sept 11th, 2001. It demonstrates that previous reports about the collapse, specifically including the NIST report, suffer from substantial shortcomings and omissions, including the flexibility of the exterior wall, the stiffeners at the girders' ends, the studs that connected steel and concrete slabs, and

the unrealistic building deformation during the collapse. By addressing these shortcomings, the current report provides a more realistic analysis as a solid basis for its conclusion that the collapse of the building could not have been caused by fire, but instead was more likely caused by near simultaneous failure of nearly all columns. There are a few issues, both major and minor, as listed below that should be addressed in the report. Major comments: 1. On p.63 (PDF p.75) section 2.6.1 states: "Note that the models in this analysis consist only of Floors 12 and 13." It is not clearly stated anywhere in the report whether the restraint on column 79 by adjacent floors 11 and 14 was included in the analysis. It should be made clear whether, and if so, how that restraint by adjacent floors is included. If the restraint by adjacent floors on column 79 was not included in the analysis, this would be a major shortcoming of the analysis that would undermine the final conclusion. 2. On p.64 (PDF p.76) the analysis result is described: "The displacement at Column 79 in the x-direction was 1.915 inches east (and not west), and the displacement at Column 79 in the y-direction was 0.7293 inches." On p.71 (PDF p.83), the displacement relative to Column 79, this time assuming the NIST conditions including a rigid exterior wall, is reported to be 5.11 inches westward. This displacement is more than twice as much as the displacement found on p.64, while in both cases Column 79 is at a similar distance to the rigid part of the building model (i.e. the elevator shafts and the exterior wall, respectively). It would be appropriate to provide a clarification for this substantial difference in displacement, such as e.g. the difference in temperature on the east side compared to the west side of the column. But no clarification at all is provided in the report. 3. On p.5 (PDF p.17), the executive summary states: "columns 79, 80, 81 failed at the upper floors near the penthouse." In section 4.3, these upper floors are specified as "Floor 45 all the way up to the penthouse", which would add up to maximally 4 floors for a 47-story building with a penthouse. However, in videos that show the collapse of the penthouse, shattering windows are visible immediately after the penthouse collapse down until roughly 8 to 11 floors below the penthouse. It is important to include at least a hypothesis in the report that can explain both the collapse of the penthouse as well as these breaking windows in lower floors immediately after the penthouse collapse. 4. On p.91 (PDF p.103), section 4.1.1 states that "differential movements in the exterior would be extremely likely to have caused window breakage, cracking of the façade, and exterior deformation, none of which were observed". But window breakage is in fact observable clearly and abundantly. So this statement is incorrect and should be adapted. Minor comments: 5. On p.2 (PDF p.14), the executive summary states: "Near simultaneous failure of every column explains the collapse (secondary conclusion)." This statement should include that the "near simultaneous failure of every column" does not include the initial failure of the columns 79, 80 and 81 that caused the penthouse collapse nearly seven seconds before the final collapse of the building. 6. On p.55 (PDF p.67), section 2.5.2.1 starts with a Figure without caption and with 3 sentences that contain references to two Figures without mentioning the Figure numbers. 7. On p.66 (PDF p.78) the caption of Figure 2.57 refers to "displacement in the vertical direction". However, the figure shows displacement in the horizontal North-South direction. The vertical direction is orthogonal to the viewed plane. Figure 2.56 shows the horizontal displacement in East-West direction.

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Is it correct to say that the collapse of WTC7 was caused by "the near-simultaneous failure of every column in the building"? it's my understanding that this was true for eight floors but not all of the floors in the building. I.e., what was the time between the first column that failed in the very last? (excluding the isolated unrelated event at the East penthouse). I doubt that this would qualify as "near simultaneous". The language in the abstract and/or executive summary should probably be corrected.

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First of all I'd like to thank you very much for your great work. I am a German citizen and run the weblog <https://wunderhaft.blogspot.com>, where I translate particularly geopolitical and historical analyses of renowned scientists and journalists from English into German. I guess to be the first and only one who published your announcement of the final report on "A Structural Reevaluation of the Collapse of World Trade Center 7" into German (<https://wunderhaft.blogspot.com/2019/09/eine-strukturelle-neubewertung-des.html>) and I would like to know, if there are any considerations about a German edition of the final version of this report after you have published it in English? If so, I'd like to know who is in charge of this work and furthermore when and where this edition is to appear and will be available. If not, it would be a pleasure for me to work on the translation, btw. to perform this work.

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I understand that you team has reached the conclusion that World Trade Center Building 7 collapsed on September 11, 2001 due to a controlled demolition rather than as a result of the attack on the World Trade Center Buildings 1 and 2. I am not an engineer nor a physicist, nor have I read the report, but I would like to ask a couple of simple questions -1. Was the fact that the collapse of Building 1 and 2 each would have caused a local earthquake which, in turn, would have had an impact on the structure of Building 7 and, potentially, could have weakened its structural columns so that they would have collapsed? 2. Did you investigate if Building 7 had flaws in its design or construction so that it would be vulnerable to collapse if it were subjected to the stress of the high level of energy created by the collapse of Towers 1 and 2.? 3. My understanding is that your report had two primary conclusions -1. the heat from the fires at the World Trade Center site was not sufficient to cause Building 7 to collapse and 2. that it, therefore, must have collapsed due to a controlled demolition. If this be the case why did you 1. commit the logical fallacy that if one thing is true, therefore, another must be true and 2. why is there no sound recording of the explosives in building 7 going off prior to its collapse? Unless there is such a thing as silent explosives, you cannot logically or scientifically claim that Building 7 collapsed due to a controlled demolition

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You put a lot of work in that. But like all investigations and reports before, I think you underestimate the damage to the south side of the building. I'm not sure why, everybody is underestimating this. Because it's pretty obvious from what documents are there: [https://i662.photobucket.com/albums/uu347/911conspiracytv/GZ\\_WTC7\\_South\\_Tom\\_Franklin2.jpg](https://i662.photobucket.com/albums/uu347/911conspiracytv/GZ_WTC7_South_Tom_Franklin2.jpg) [http://www.911myths.com/html/wtc7\\_damage.html](http://www.911myths.com/html/wtc7_damage.html) It's likely that something

like what happened to the Deutsche Bank Buliding happened to WTC7. A big chunk of WTC1 debries sliced through the south front of WTC7 and was finally stopped at one floor. (And from the pictures it seems to be a lower floor) That floor (and probably one or two above) could have been sheared towards that stopping point, buckling a lot or all the columns to the above and below floors. Together with the fires, that could have brought that building down. You might be able to calculate such a scenario.

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In the acknowledgments the following paragraph appears: "In addition to the university and its personnel, we would like to thank Architects & Engineers for 9/11 Truth (AE911Truth) for providing the funding to conduct this research. We also want to thank John Thiel for approaching Dr. Hulsey to conduct this research as well as the independent, external reviewers who will review this report during the forthcoming public comment period." Comment: Richard Gage should be mentioned by name in this paragraph. AE would not be in existence where it not for his efforts on its behalf. 2. On page 2 of the Executive Summary the following paragraph appears. "Near-Simultaneous Failure of Every Column Explains the Collapse. The secondary conclusion of our study is that the collapse of WTC 7 was a global failure involving the near-simultaneous failure of every column in the building" Do not understand the need for the use of the "near" qualification to simultaneous. My read of the report failed to locate an explanation of this term. From my view of the collapse, the failure was uniform and designed to bring the building down at near free fall speed into its footprint. In that context, near appears to be appropriate. Would revise the paragraph to read: "Simultaneous Failure of Every Column Explains the Collapse" "The secondary conclusion of our study is that the collapse of WTC 7 was a global failure involving the simultaneous failure of every column in the building; i.e. controlled demolition." For support of the conclusion that the bring down was by controlled demolition research the opinion of Danny Jowenko. Danny paid for that opinion with his life. He deserves to be mentioned. And the report deserves the punch line. Note to AE: if Prof. Hulsey will not make the conclusion that controlled demolition was used, suggest, in addition to a cite to Danny Jowenko, you get Dr. Steven Jones to offer the opinion or cite his white paper titled "Why Indeed Did the World Trade Center Buildings Collapse" Griffin, David Ray, and Scott, Peter Dale, 9/11 and American Empire, Intellectuals Speak Out, Interlink Publishing Group, Northampton, MA 01060 (2006), ISBN 978-1-56656-659-9 (pbk), page 33.

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Overall, Leroy's (UAF team) study is excellent and so exciting to see this about ready to be released to the world. My comments are mainly centered on Chapter 5: Examination of the building collapse. I think it is great that the UAF team examined the various scenarios of partial collapse and global collapse. I see the conclusion that the WTC 7 collapse could not have been a "progressive collapse" but rather a global collapse initiated by severing all the columns on the 13th or the 19th floor. Per the report the SAP 2000 FEM program is used to model the building collapse and presumably generate the animated model. It would be very useful to expand the narrative further and describe the theory and capabilities of the SAP2000 program. For example:(1) How does the

program model the collapse? Does the model include the full structure with all the connections allowing modeling the linear as well as non-linear behavior of the materials/connections etc? Or were there simplifications made based on the prior analyses of the components that UAF made?(2)The program presumably models the deformation of the building as elements yield and buckle and that is how the team arrived at the conclusion that if the columns 79, 80 and 81 are removed, the building would lean to one side rather than collapse into its footprint.(3) Upon removal of the columns on the 13th floor in the mode;, does the program actually model free-fall of the upper stories of the building and the impact generated on the columns or impulse momentum forces? This then causes the upper levels to crush and buckle the columns traveling up the building and unzipping the connections as this happens.

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How big was the influence of AE9/11truth on your study? Because for AE9/11truth the controlled demolition was a fact before they contracted Dr Hulsey with the study. They said they have proof before the study. Which would make the study redundant. How much proof do you need? One proof would be enough, right?

Since they're already sure what happend that day, the study is sort of biased, since AE9/11truth paid Dr Hulsey's salary. I would think that they have an interest, that your study turns out in their favor. That is why it is important to know, how big their influence on your study was. The problem is, that whatever you say, for example that they had no influence, how can I be sure that this is true? Your study is therefore not independent and unbiased.

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I'm a 32-yearsold German who follows the discourse about the September 11 attacks with great interest. I would like to draw the attention of Professor Hulsey and his doctoral students to the criticism of a German nuclear physicist named Dr. Holm Gero Hümmler who published a strong criticism of the study on his Internet blog.Dr. Hümmler's criticism is in German, but I took the trouble to translate his whole article into English and would now like to send it to you. Although his article is full of polemics, there are still some interesting arguments in it. In his blog article, Dr. Hümmler quotes two other critical comments on Professor Hulsey's study. These two sources are: 1) West, Mick: Some Problems with the UAF/Hulsey/AE911Truth WTC 7 Draft Report. Published on Youtube on September8, 2019.Online here: <https://www.youtube.com/watch?v=7OClixCTdDw2>2)Kostack Studio: UAF WTC 7 Evaluation Simulation Plausibility Check (Leroy Hulsey, AE911Truth)Published on Youtube on September 8, 2019:Online here: <https://www.youtube.com/watch?v=jVE3YwRgU9k>Here is the translated article:<https://mail.cloudaccess.net/Main/frmMessage.aspx?mode=preview&folder=Inbox&messageid=91&mapped=False&user=publiccomment&fromSearch=False&rowNumber=3#>

[Translation of the blog article „Alle paar Jahre grüßt das 11.-September-Murmeltier“ by German nuclear physicist Dr. Holm Gero Hümmler, dating from September 19, 2019](#)

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The beginning of the collapse of WTC7 showed a kink in the roofline (and the north side of the building) visible from below. The kink seems to be a rather characteristic feature of the building's collapse, as it can be understood heuristically by the failure of the interior columns while the exterior columns are still stable for a moment. Therefore the exterior columns are pulled to the inside by the suddenly appearing additional weight of the building's core. However, this kink is not recognizable in the UAF global collapse simulation, although in the simulation the interior columns are removed 1.3 seconds prior to the exterior columns. Please, comment on this obvious discrepancy. In particular:-Under which circumstances would the computer model develop the missing kink?-Is it an error in the computer model —i.e. are some parameters more stable in the simulation than in reality? —or is an additional input of destruction necessary to obtain such a result?

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To:

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OBJECT: Public Comment Period for UAF WTC7 Draft Report - Second comment from Giorgio Corvasce - Air effect - UAF simulation compatible with NIST data set.

In the UAF Draft Report, §4.6, Pag. 106, it is written “Specifically, the simulated velocity and acceleration of the building in our SAP2000 model matches almost exactly with the motion measured by David Chandler (Chandler, 2010), including the approximately 2.5 seconds of free fall, shown in Figures 4.21, 4.22, and 4.23 below.”

This is Fig.4.23:

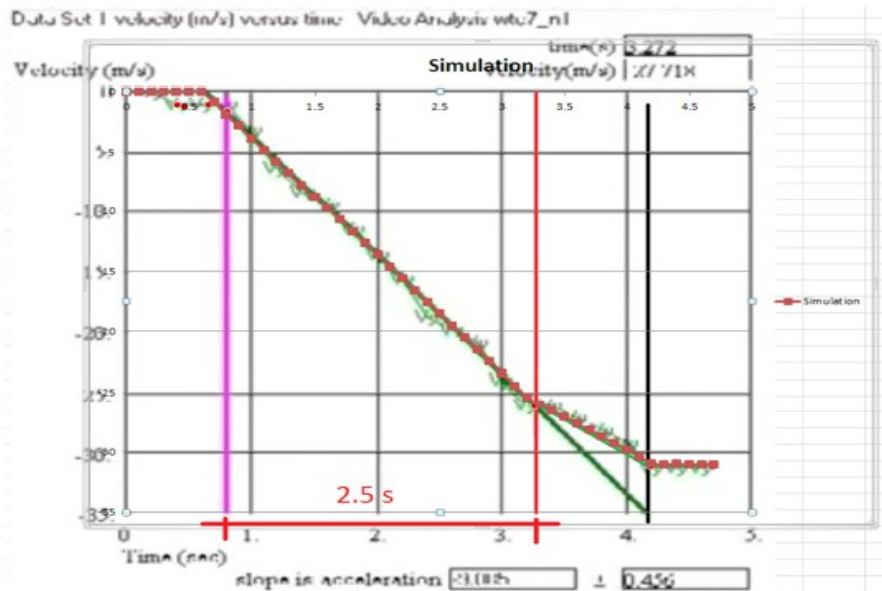
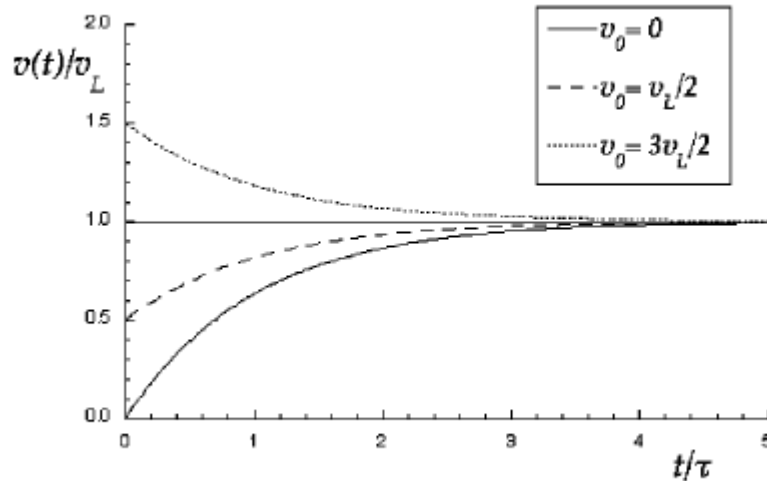


Figure 4.23: Velocity comparison between Chandler measurement (green plotted line) and UAF simulation (red plotted line). Bold green trend line illustrates free fall.

Moreover the UAF report says: “Bold green trend line illustrates free fall”.

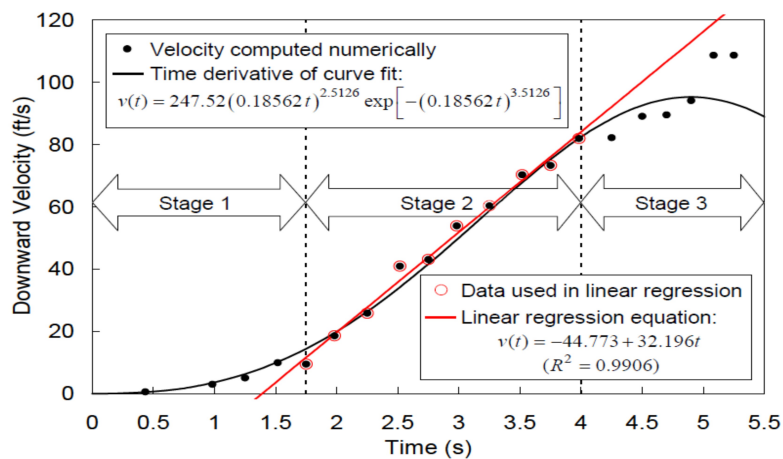
This is not accurate. Bold green trend line illustrates a free fall in the vacuum, so it is not realistic. Falling speed of WTC7 reached a velocity greater than 30m/s. At such speed it is not correct to ignore the presence of air, so velocity vs. time should not be linear. Free fall in the air must take into account a resistant force depending on the speed and which increases with speed. As a consequence, in a real free fall, velocity must tend asymptotically to the limit velocity  $v_L$  according to the following picture.



It is not easy to develop a model of a building falling in the air. Let's use the same method used by NIST (least square method). I already sent another comment based on the use of a discontinuous function to interpolate the NIST velocity vs. time data set. Some concepts are the same, sorry for that.

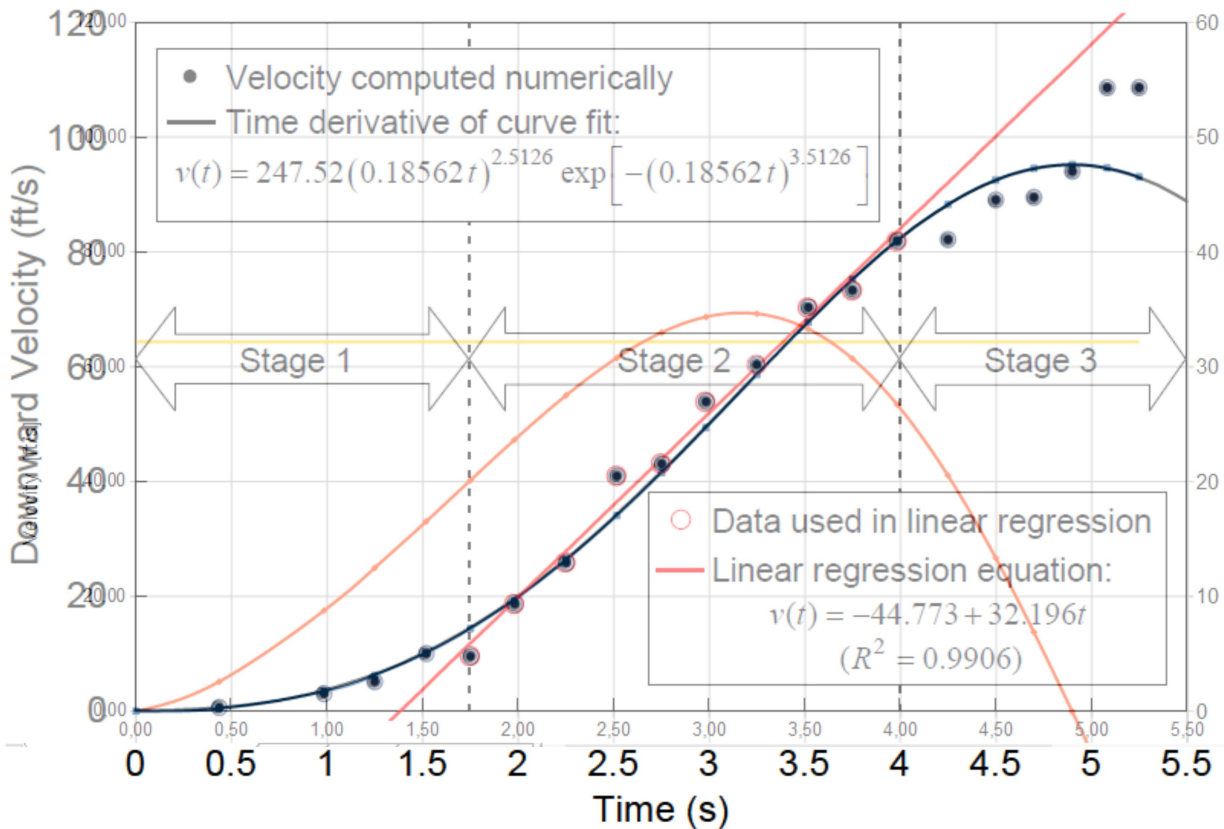
I performed the following five steps:

1) The first step is the extraction of the coordinates of the NIST measurement points from NIST NCSTAR 1A Figure 3-15.



In order to minimize measurement errors it is possible to print pag.46 of the document (pag. 88 of the pdf file) directly as high resolution (600 or 1200 dpi) image file, and then perform the measurement directly with photoshop. See appendix A.

2) The second step is the data set validation. It is performed overlapping Fig.3-15 and a graph of the data set obtained during the previous step (See appendix B).



The overlap of the 20 points is extremely good, so the data set is reliable.

3) The third step is the Interpolation. It is necessary to try changing some parameters of a suitable function in order to minimize the Residual Sum of Squares.

I decided to use the following function (portion of sigmoid):

$$\left. \begin{aligned} &v(t) = 0 \quad | \quad t < t_0 \\ &v(t) = \left[ 4al \left( \frac{1}{1 + e^{-\frac{t-t_1}{l}}} - \frac{1}{1 + e^{-\frac{t_0-t_1}{l}}} \right) \right] \quad | \quad t \geq t_0 \end{aligned} \right\}$$

It is a 4 parameters function  $t_0$  (start of collapse);  $t_1$  (point of maximum acceleration);  $a$  (maximum acceleration);  $l$  time constant;

This function satisfy the following conditions:

- $v(t_0) = 0$ ; Initial velocity is zero; initial displacement is zero.
- it tend asymptotically to a limit, as any object falling in the air tend asymptotically to a "limit velocity";
- it shows a flex point at  $t=t_1$ , where acceleration is equal to  $a$ ; We already know that acceleration reached  $g$  so we can put directly  $a = g$ ;

- acceleration is never greater than  $g$ , while NIST function is unrealistic because acceleration became  $>g$ .
- The forces  $f(t)$  applied to the building are discontinuous at  $t=t_0$ , so the acceleration  $a(t) = f(t)/m$  is discontinuous at  $t=t_0$ .

Acceleration is:

$$\left. \begin{array}{l} a(t) = 0 \quad | \quad t < t_0 \\ \\ a(t) = \frac{4ae^{\frac{t-t_1}{\tau}}}{\left(e^{\frac{t-t_1}{\tau}} + 1\right)^2} \quad | \quad t \geq t_0 \end{array} \right\}$$

$a(t_0) = v'(t_0) > 0$  discontinuity;

$a(t_1) = v'(t_1) = a$ .

4) Fourth step. Minimize Residual Sum of Squares (RSS).

It is necessary to look for some values of the parameters able to minimize RSS. I found the following values:

$t_0$  (start of collapse) = 0,994;

$t_1$  (point of maximum acceleration) = 2,930;

1 time constant = 1,060 s.

With these values  $RSS = 261,1$  which is 58% better than NIST function ( $RSS_{NIST}=621,5$ ).

(see attached spreadsheet).

This means that the function is absolutely reliable.

As a consequence of the least square method we can see that “limit velocity” extrapolated by NIST data set is about 117,50 ft/s or 35,81 m/s.

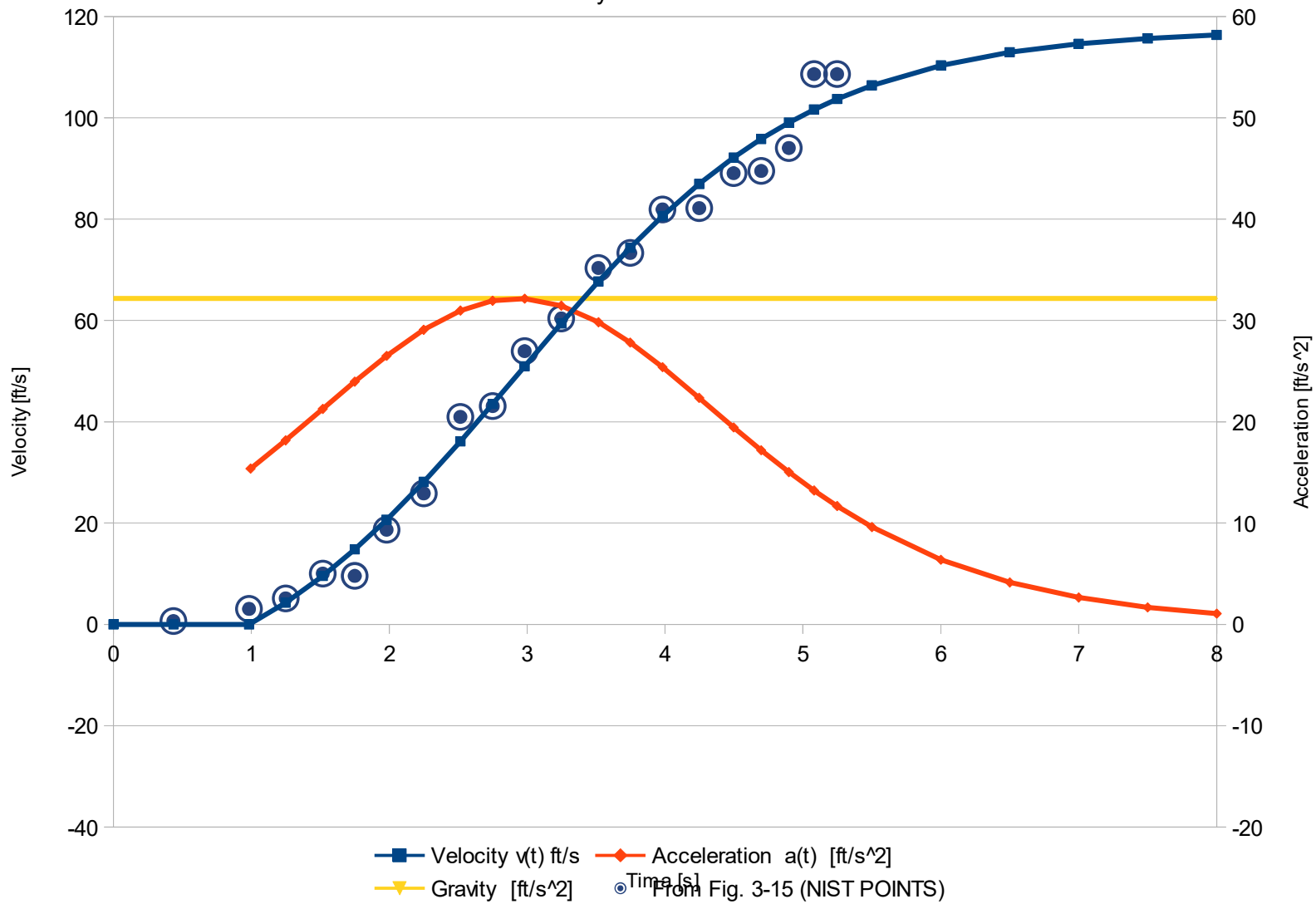
(see attached spreadsheet).

Velocity and acceleration are:

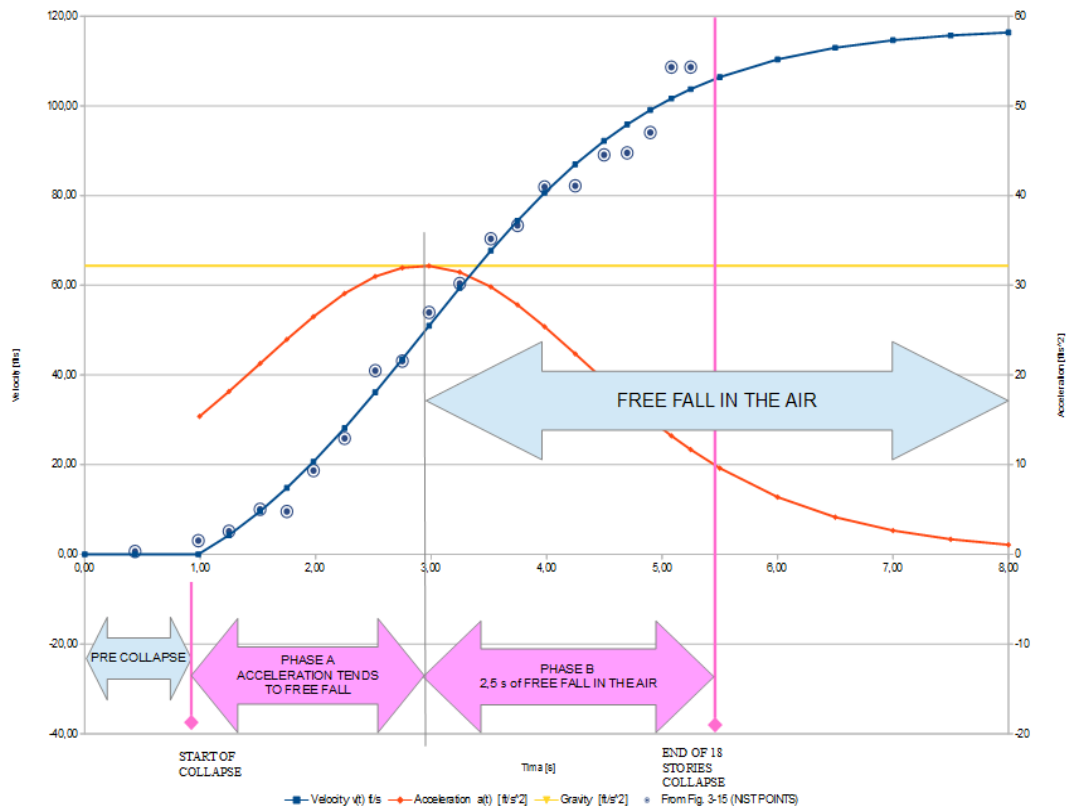


# Discontinuous Acceleration Curve

Velocity and Acceleration



A possible interpretation of the graph is the following:

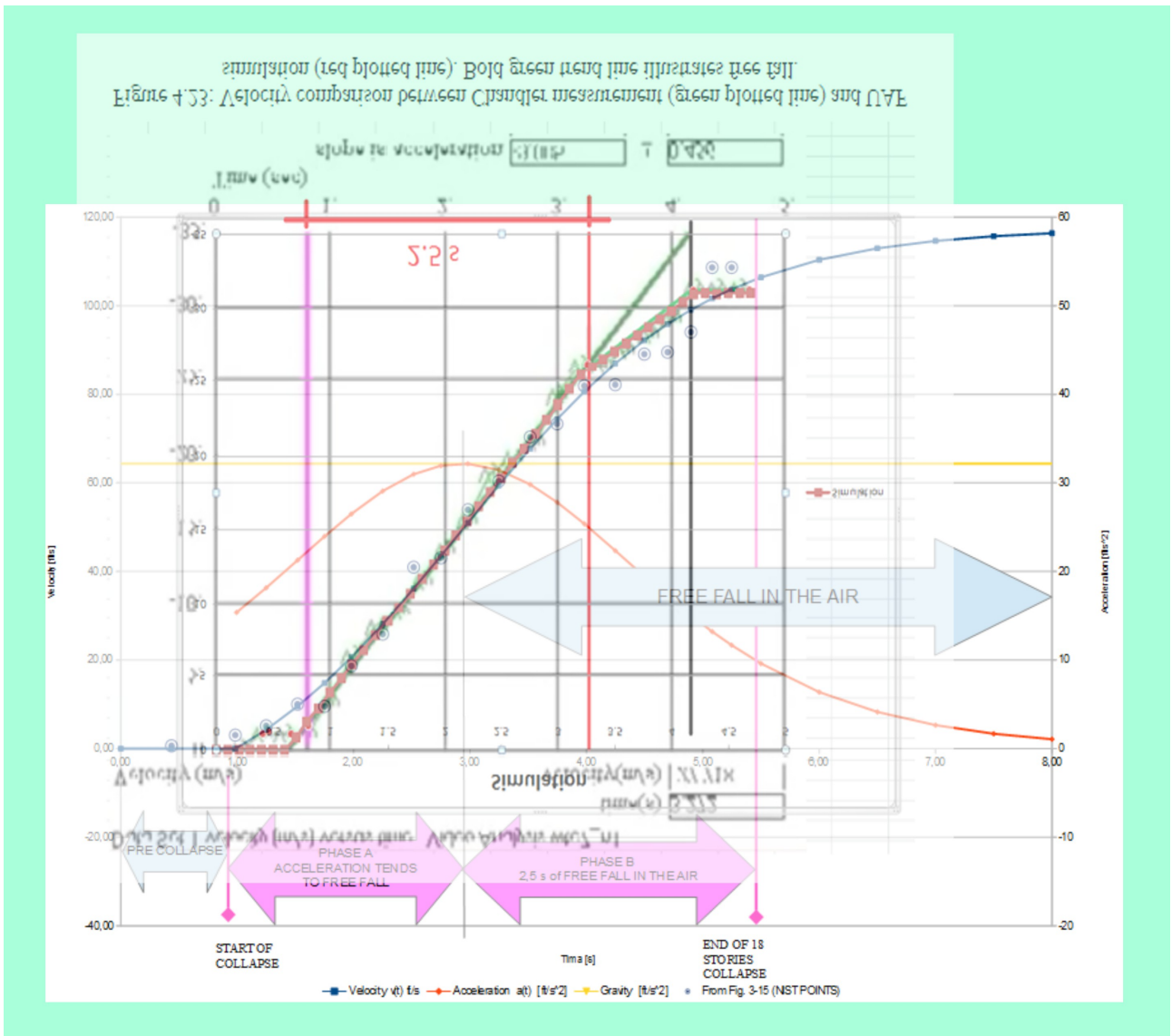


Phase A: The building collapse. Acceleration tends to free fall. Some residual resistant structures are destroyed by the enormous weight of the building. Few columns that are still melting give way, the partitions crumble, the stairs are shattered. In a couple of seconds acceleration grows till  $g$ . Acceleration  $=g$  means that there are no (or neglectable) forces opposed to collapse, so the upper part of WTC7 is suspended in the air without any load bearing structure. Effect of air presence is neglectable because the velocity is low.

Phase B: free fall in the air, acceleration is almost  $g$  and decreases while the velocity increase.

5) fifth step. Compare interpolation with UAF simulation.

In the following there is an overlap between presious figure and UAF report Fig.4.23:



As you can see the function which interpolate NIST data set is extremely similar to both UAF simulation and David Chandler measurement.

**Conclusions:**

It is useless to compare the UAF simulation with a free fall in the vacuum.

In fig.3-15 NIST used a continuous function to interpolate data of a discontinuous phenomenon. In fact RSS is quite high. I demonstrated that a portion of a sigmoid function best fits the NIST data points. This function tend asymptotically to a limit velocity, as in a real free fall. RSS of this function is 58% better than NIST function.

Overlap between UAF simulation, David Chandler measurement and this function, based on NIST data set, shows how all three methods lead to the same outcome:

Collapse started at t about 1;

Collapse time was about 4,4 s;

Acceleration reached  $g \Rightarrow$  no any force opposed to the collapse.

Convergence of UAF simulation with NIST measurements, as well as those of David Chandler, confirms the reliability of the UAF study.

End of comment

---

Appendix A. NIST data set (unofficial).

Measurement from Fig. 3-15		
Point	Time (s)	Velocity (ft/s) yi
A	0,44	0,64
B	0,98	3,05
C	1,25	5,14
D	1,52	10,04
E	1,75	9,56
F	1,98	18,67
G	2,25	25,86
H	2,52	40,96
I	2,75	43,09
L	2,98	53,94
M	3,25	60,39
N	3,52	70,36
O	3,75	73,33
P	3,98	81,93
Q	4,25	82,17
R	4,50	89,08
S	4,70	89,52
T	4,90	94,06
U	5,08	108,63
V	5,25	108,63

Error from Fig 3-15 is

<= +/- 0,01 s Time

<= +/- 0,10 ft/s Velocity

Appendix B. Replica of Fig. 3-15 from NIST

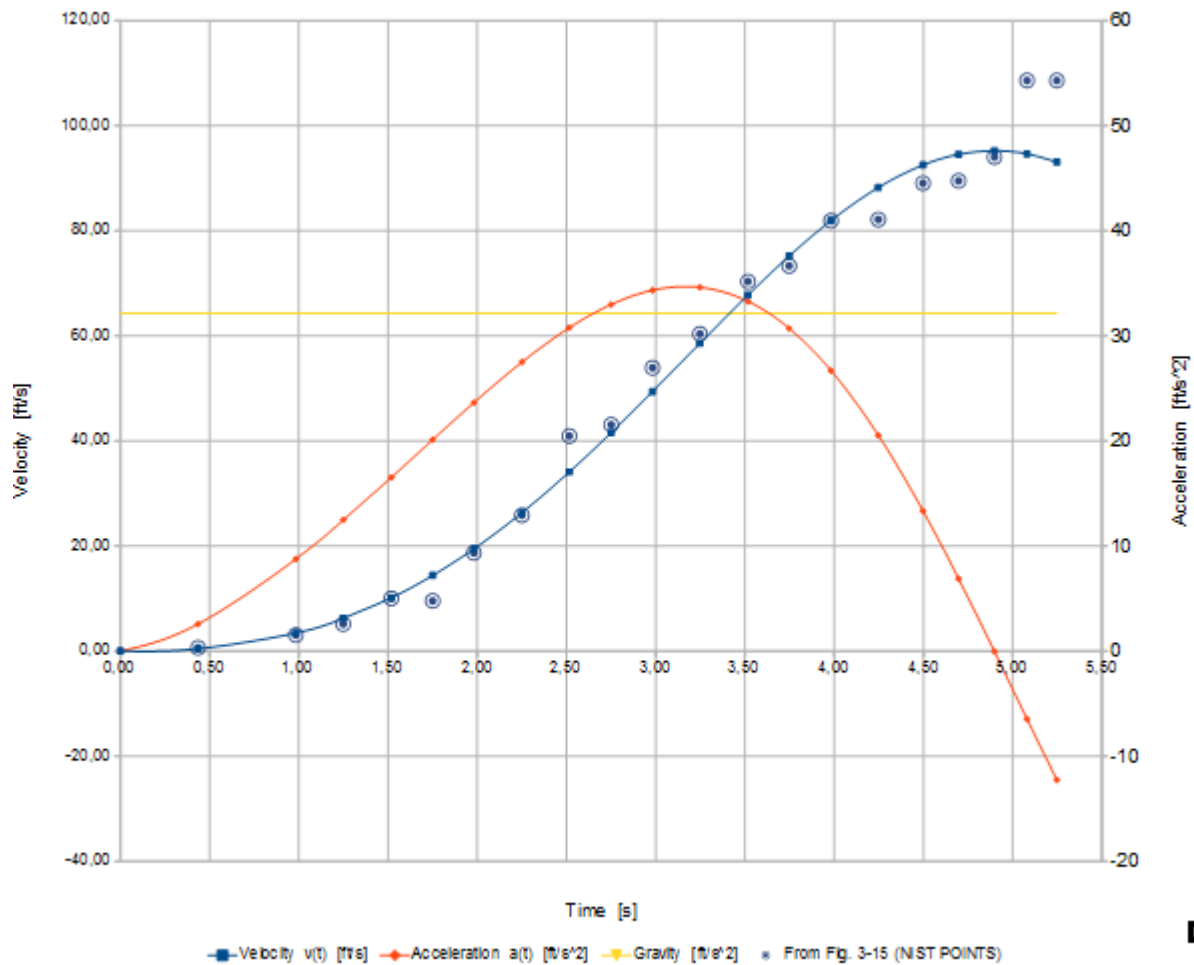


Figure 1 OpenOffice Calc

I'm the Italian electronic engineer. I already sent a comment on 4/11/2019. I would like to provide another comment to the UAF WTC7 Draft Report. You can find as attachments two .pdf and one .png files.

To:

Architects & Engineers for 9/11 Truth  
[publiccomment@AE911Truth.org](mailto:publiccomment@AE911Truth.org)

Copy to:

Department of Civil and Environmental  
Engineering  
College of Engineering and Mines  
Institute of Northern Engineering  
University of Alaska Fairbanks  
[uaf-cem@alaska.edu](mailto:uaf-cem@alaska.edu)

OBJECT: Public Comment Period for UAF WTC7 Draft Report

In the UAF Draft Report there is the explicit reference to the NIST, NCSTAR 1A, Fig. 3-15, (see. Fig. 1.6 pag.12).

Results of UAF study poses severe doubts on the reliability of this NIST velocity model and to the validity of Fig.3-15, and it should be mentioned in the conclusions.

In particular, simultaneous failure of all core columns followed by the simultaneous failure of all exterior columns produces major discontinuities in the forces applied to the building.

NIST calculated that the time that the roofline took to fall 18 stories or 73.8m was approximately 5.4s (see NIST NCSTAR 1A - Final Report on WTC7 collapse - 3.6 timing of collapse initiation and progression). This results has been obtained using a continuous function of the form  $z(t)=A \{1 - \exp[-(t/\lambda)^k]\}$  which satisfy the initial conditions of zero displacement, zero velocity and zero acceleration (see note 3 on Pag.45). This last assumption (zero acceleration) **is wrong** if all the exterior columns collapsed simultaneously because at  $t=t_0$  the downward acceleration could suddenly change from zero ( $t<t_0$ ) to  $a(t)$  ( $t\geq t_0$ ). Discontinuous functions which satisfy initial condition of zero displacement, zero velocity and unknown downward acceleration must than be used for least square fitting. So the model used by NIST is inadequate.

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End of Comment

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Demonstration Example

In the following I will provide a comparison between the NIST velocity function and a discontinuous function (portion of sigmoid. Details are provided as attachment).

Using a sigmoid function for the velocity (adequately scaled and shifted), adding a discontinuity in the acceleration at  $t=t_0$ , and leaving the start of collapse  $t_0$  as an unknown parameter, it is possible to significantly reduce the residual sum of the square. I reached a 58% reduction and this means a much better model of the phenomenon.

I started measuring the data set of the 20 reference points of NIST NCSTAR 1A Final Report Fig. 3-15 (Pag.46) on an high resolution computer image. I got the following values:

Measurement from Fig. 3-15		
Point	Time (s)	Velocity (ft/s) y <sub>i</sub>
A	0,44	0,64
B	0,98	3,05
C	1,25	5,14
D	1,52	10,04
E	1,75	9,56
F	1,98	18,67
G	2,25	25,86
H	2,52	40,96
I	2,75	43,09
L	2,98	53,94
M	3,25	60,39
N	3,52	70,36
O	3,75	73,33
P	3,98	81,93
Q	4,25	82,17
R	4,50	89,08
S	4,70	89,52
T	4,90	94,06
U	5,08	108,63
V	5,25	108,63

Unofficial data set of NIST points

Than I inserted these data and the NIST velocity function inside a spreadsheet. In the following you can see NIST Fig.3-15, our Figure 1 Openoffice and an overlap between them.



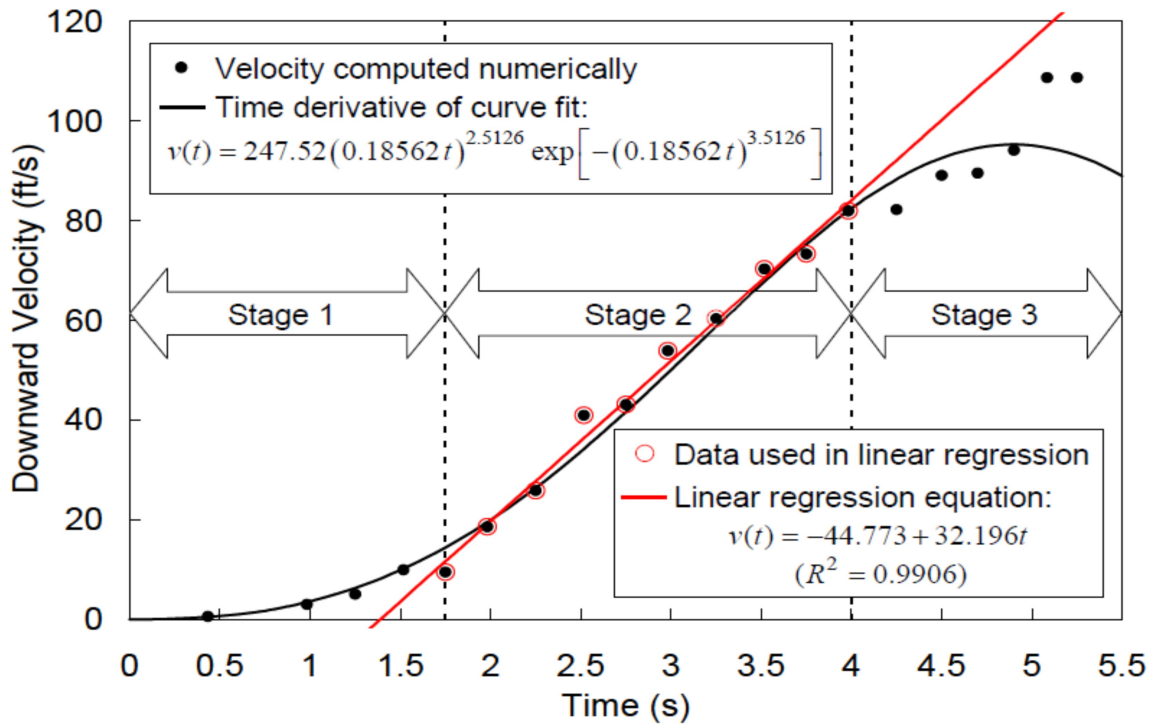


Figure 3-15 from NIST

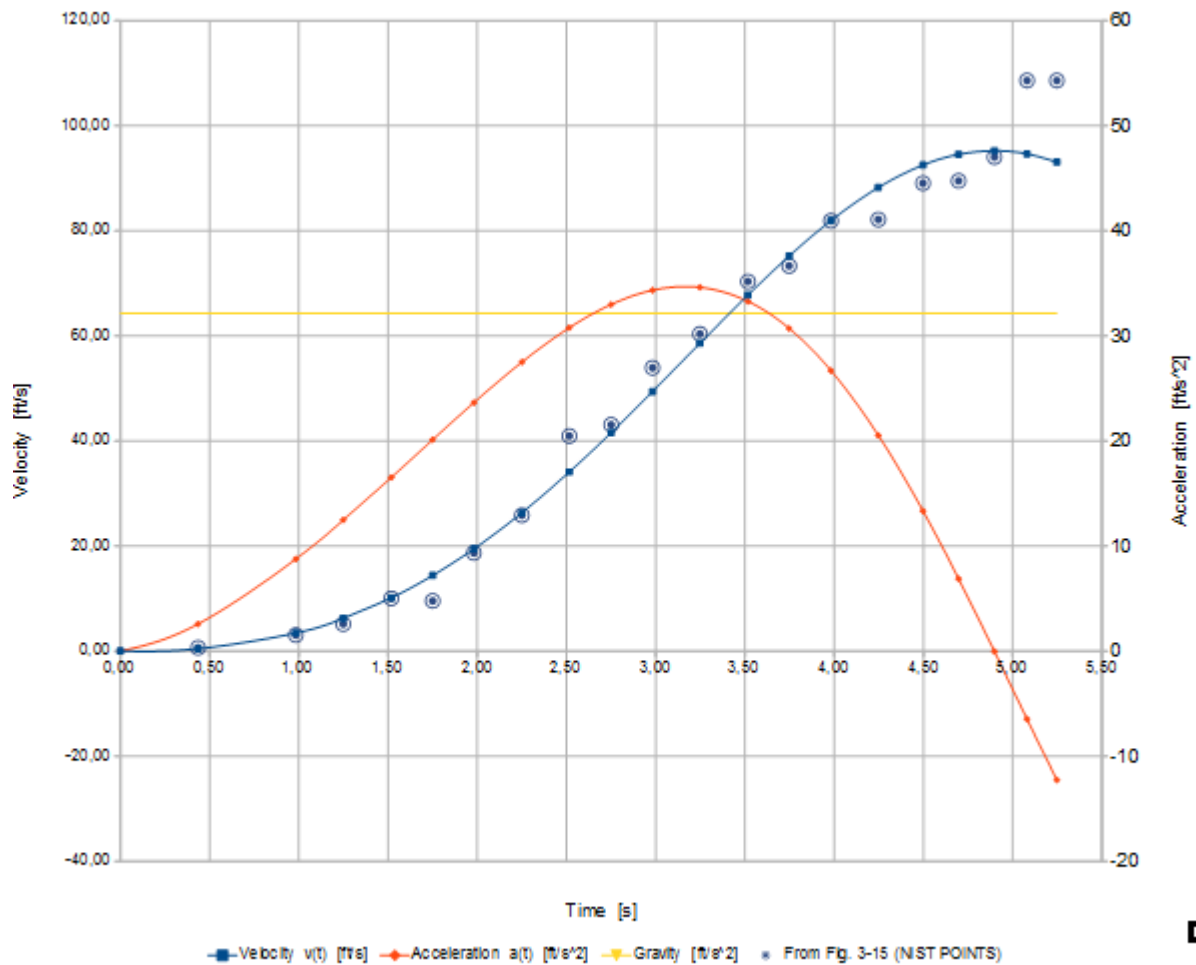
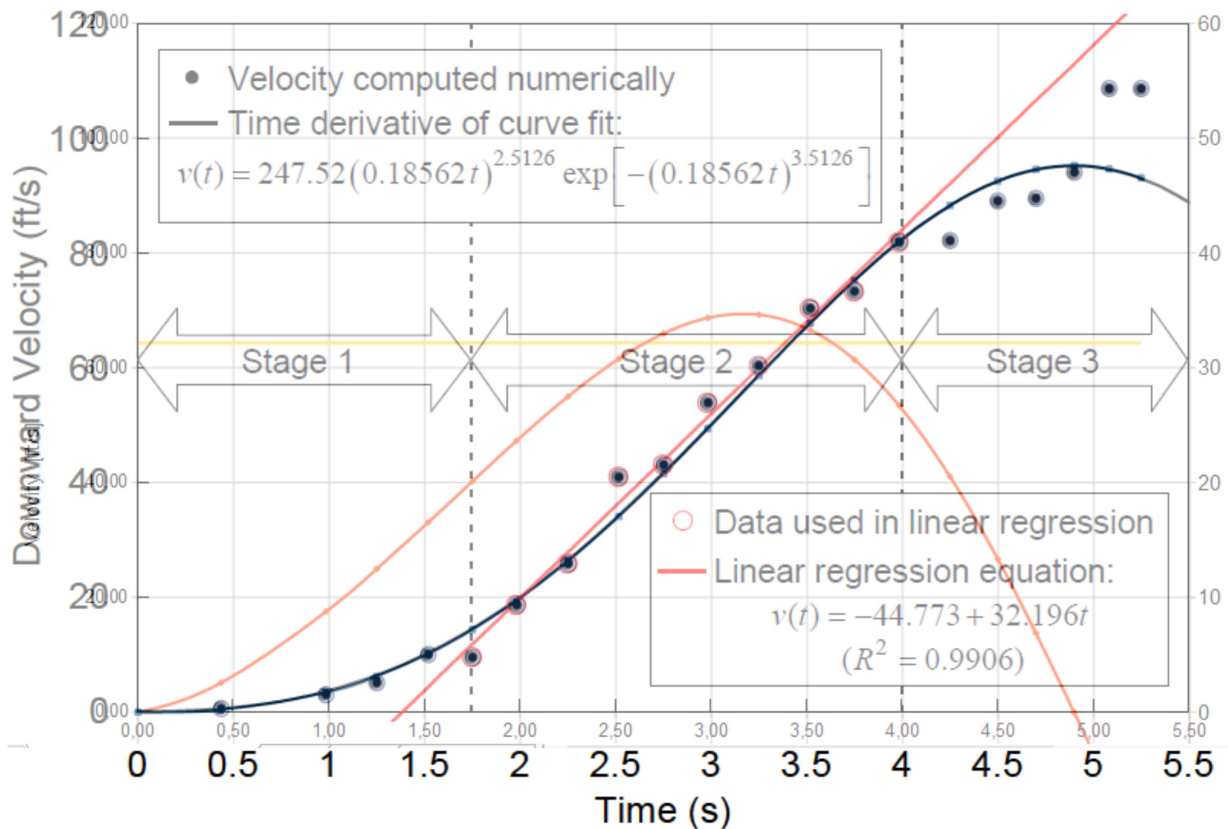


Figure 1 OpenOffice Calc



Overlap between previous 2 figures

As you can see from the overlap, the points data set is reliable. If in the future NIST will release the official data set we will appreciate it.

Residual Sum of Squares of NIST function is 621,5.

I tried to use a portion of a sigmoid function for the velocity, shifted horizontally and vertically in order to best fit the NIST data points.

$$\left[ 4al \left( \frac{1}{1 + e^{-\frac{t-t_1}{l}}} - \frac{1}{1 + e^{-\frac{t_0-t_1}{l}}} \right) \right]$$

$l$  is parameter;

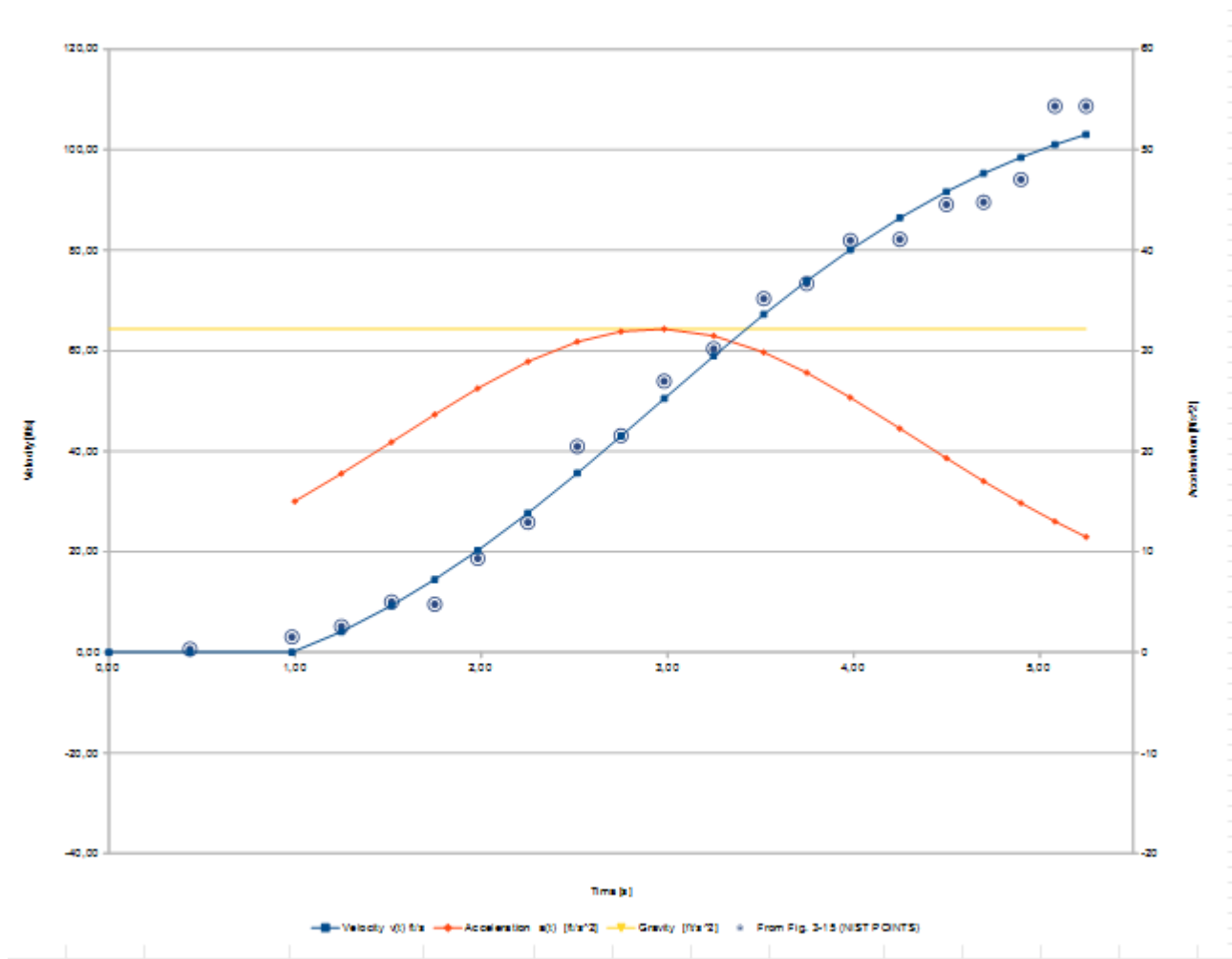
$t_0$  is the start of collapse (velocity equal to zero); we will assume  $v(t) = 0$  for  $t < t_0$ ;

$t_1$  is the inflection point of the function (point of maximum acceleration);

$a$  is the acceleration at  $t = t_1$ :

$$\frac{4ae^{-\frac{t-t_1}{l}}}{\left(e^{-\frac{t-t_1}{l}} + 1\right)^2}$$

It is possible to achieve the following results:



As you can see  $a(t)$  is 0 for  $t < 0$ . Moreover  $a(t)$  is greater than 0 starting from  $t_0$ .  $t_0$  can be considered the start of collapse.  $a(t)$  is discontinuous.

- Residual Sum of Squares decrease from 621,5 to 261,1 (-58,0%). Much better model;
- Collapse starts at 0,994 s;  
(18 stories collapse takes 4,4s instead of 5,4s)
- Estimated  $a(t_0) = 15,38 \text{ ft/s}^2$ , about half of  $g$ .
- acceleration become equal to  $g = \text{free fall}$  at  $t=2,93\text{s}$ ;
- acceleration is never greater than  $g$ . Please note that NIST function shows an acceleration greater than  $g$ , and this is physically impossible!

(See attached file: “Calcolo della velocità e dell'accelerazione NIST5.pdf”)

From:

Giorgio Converse  
gconverse@inwind.it  
ITALY

**Continuous Original NIST Function - 3 parameters function**  
Spostamento Z in funzione del tempo t  
NIST POINTS obtained from Fig. 3-15 NIST Final Report

NIST displacement function

$$z(t) = a \left( 1 - e^{-\left(\frac{t}{\lambda}\right)^k} \right)$$

NIST velocity function

$$v(t) = \frac{ak \left(\frac{t}{\lambda}\right)^{k-1} e^{-\left(\frac{t}{\lambda}\right)^k}}{\lambda}$$

parameters for z(t) and v(t)		A * B * K
A	379.627	247.520
B = (1/A)	0.18562	0.18562
K	3.5126	3.5126
		0.001
		ε

Unofficial Data Set  
Measurements from image  
From Fig. 3-15 (NIST POINTS)

Point	Time (s)	Velocity (ft/s)
A	0.44	0.64
B	0.98	3.05
C	1.25	5.14
D	1.52	10.04
E	1.75	9.56
F	1.98	18.67
G	2.25	25.86
H	2.52	40.96
I	2.75	43.09
L	2.98	53.94
M	3.25	60.39
N	3.52	70.36
O	3.75	73.33
P	3.98	81.83
Q	4.25	82.17
R	4.50	89.08
S	4.70	89.52
T	4.90	94.06
U	5.08	108.63
V	5.25	108.63

NIST Curve				
Time t [s]	Displ z(t) [ft]	Velocity v(t) [ft/s]	Vel v(t+ε)	[y-v(t)]^2
0.00	0.00	0.00	0.00	0.000
0.44	0.06	0.44	0.45	0.039
0.98	0.96	3.44	3.45	0.149
1.25	2.23	6.25	6.26	1.230
1.52	4.41	10.15	10.16	0.012
1.75	7.24	14.40	14.42	23.407
1.98	11.13	19.45	19.47	0.597
2.25	17.27	26.34	26.37	0.228
2.52	25.28	34.10	34.13	47.179
2.75	34.14	41.58	41.61	2.262
2.98	44.68	49.41	49.44	20.490
3.25	59.03	58.60	58.64	3.204
3.52	76.05	67.78	67.82	6.642
3.75	92.56	75.20	75.23	3.470
3.98	110.99	81.96	81.98	0.001
4.25	133.64	88.27	88.29	37.170
4.50	156.27	92.53	92.54	11.912
4.70	174.96	94.56	94.56	25.393
4.90	194.03	95.25	95.25	1.430
5.08	211.40	94.66	94.65	195.259
5.25	227.09	93.10	93.08	241.415

Acceleration a(t) [ft/s^2]	Gravity [ft/s^2]
0.000	32.174
2.970	32.174
8.762	32.174
12.478	32.174
16.526	32.174
20.121	32.174
23.659	32.174
27.507	32.174
30.779	32.174
32.991	32.174 (*)
34.345	32.174 (*)
34.626	32.174 (*)
33.286	32.174 (*)
30.711	32.174
26.700	32.174
20.528	32.174
13.344	32.174
6.878	32.174
-0.038	32.174
-6.467	32.174
-12.282	32.174

RESIDUAL SUM OF SQUARES NIST CURVE  
**621,5**

(\*) Acceleration greater than g in NIST solution. Quite strange.

**NIST Interpolation Curve**

Velocity and Acceleration

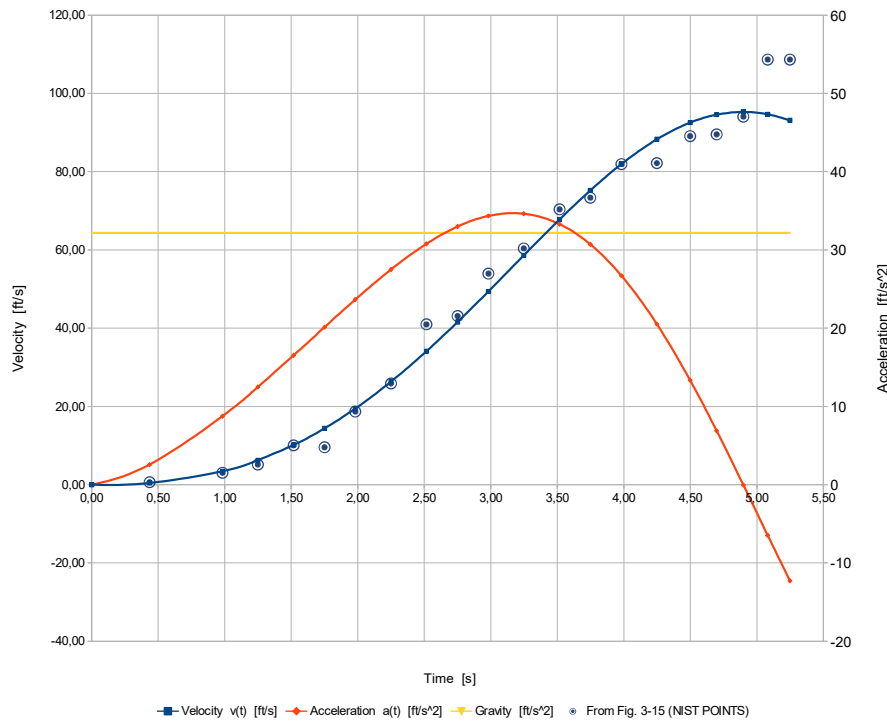


Figure 1 OpenOffice Calc

Calcolo della velocità e dell'accelerazione NIST9

**PORTION OF SHIFTED SIGMOID FUNCTION FOR THE VELOCITY**  
Discontinuous Function with  $a(t_0) < 0$  - 4 parameters function (A, L,  $t_0$ ,  $t_1$ )  
Spostamento Z in funzione del tempo t  
X0 START OF COLLAPSE NEW UNKNOWN PARAMETER

Simple Sigmoid Function

$$\left[ \frac{1}{1 + e^{-\frac{t}{i}}} \right]$$

Shifted Hor & Vert +  
Apply following discontinuity:  
 $z(t)=0, v(t)=0, a(t)=0$  for  $t < t_0$   
 $z(t)=0, v(t)=0, a(t_0) > 0$  for  $t = t_0$

$$v(t) = \left[ 4al \left( \frac{1}{1 + e^{-\frac{t-t_1}{i}}} - \frac{1}{1 + e^{-\frac{t_0-t_1}{i}}} \right) \right]$$

parameters for v(t) and a(t)

A	32.174
L	1.062
t0	0.994
t1	2.93

Acceleration at t0  
**15,38**

Limit Velocity **117,50** ft/s = **35,81** m/s = **128,93** Km/h  
ε 0,001

Portion of Sigmoid Function				
Time	Velocity v(t) ft/s	Vel v(t+ε)	[y-v(t)]^2	Acceleration a(t) [ft/s^2]
0.00	0.00	0.00	0.00	0.000
0.44	0.00	0.00	0.413	0.000
0.98	0.00	0.00	8.316	0.000
1.25	4.27	4.28	0.764	18.160
1.52	9.57	9.59	0.221	21.288
1.75	14.82	14.84	27.644	23.960
1.98	20.64	20.67	3.868	26.562
2.25	28.13	28.16	5.159	29.083
2.52	36.13	36.16	23.390	30.978
2.75	43.51	43.55	6.179	31.944
2.98	50.96	51.00	8.830	32.154
3.25	59.43	59.47	0.916	31.460
3.52	67.71	67.73	7.056	29.826
3.75	74.37	74.39	1.068	27.821
3.98	80.61	80.63	1.738	25.386
4.25	86.96	86.98	22.916	22.358
4.50	92.18	92.20	9.647	19.447
4.70	95.84	95.85	39.921	17.187
4.90	99.07	99.08	25.126	15.034
5.08	101.65	101.66	48.813	13.213
5.25	103.73	103.74	24.092	11.879

RESIDUAL SUM OF SQUARES SHIFTED SIGMOID FUNCTION  
**261,1**

**58,0%**  
BETTER THAN NIST

Time	Velocity v(t) ft/s	Vel v(t+ε)	[y-v(t)]^2	Acceleration a(t) [ft/s^2]	Gravity [ft/s^2]
5.50	106.41	106.42	0.611	9.611	32.174
6.00	110.36	110.37	6.381	6.381	32.174
6.50	112.96	112.96	4.143	4.143	32.174
7.00	114.63	114.63	2.651	2.651	32.174
7.50	115.70	115.70	1.680	1.680	32.174
8.00	116.37	116.37	1.059	1.059	32.174

**Discontinuous Acceleration Curve**

Velocity and Acceleration

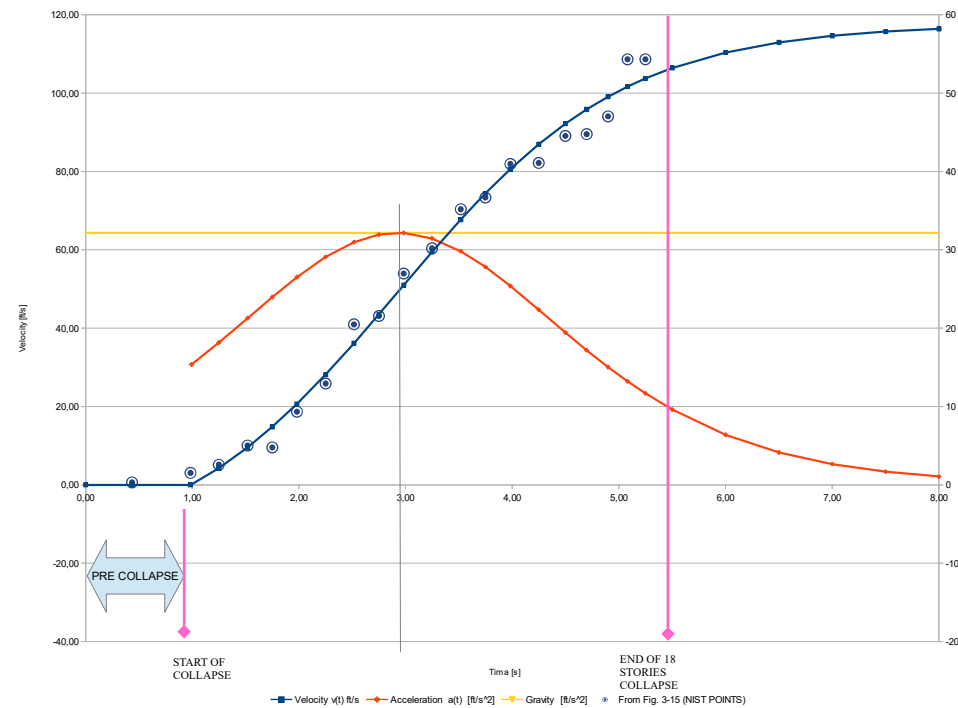
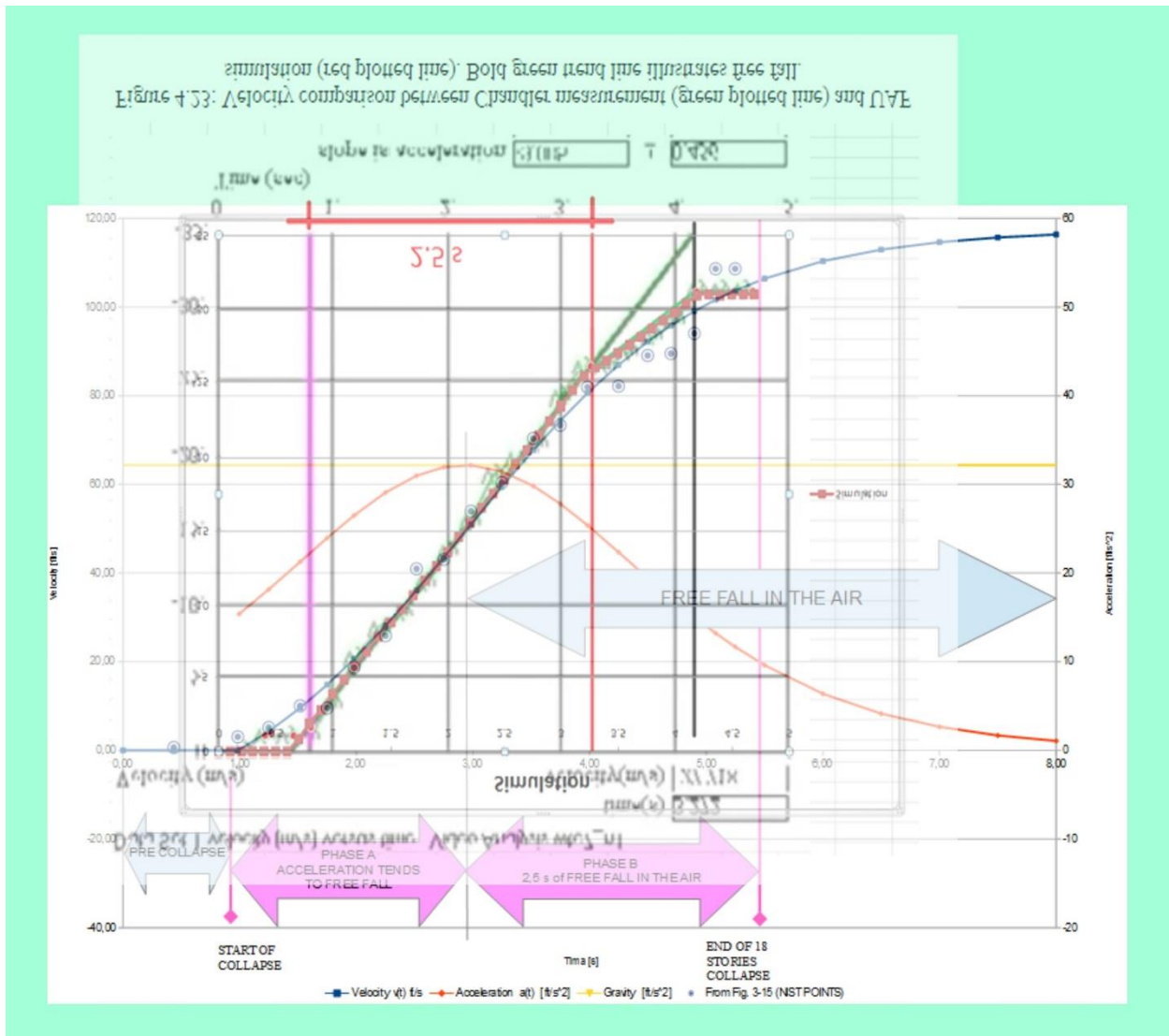


Figure 2 OpenOffice Calc

I'm the Italian electronic engineer. I already sent a comment on 4/11/2019. I would like to provide another comment to the UAF WTC7 Draft Report. I'm the Italian electronic engineer. I already sent a comment on 4/11/2019. I would like to provide another comment to the UAF WTC7 Draft Report. You can find as attachments two .pdf and one .png files.



.....

Please consider the following comments:

1. Please clarify the loading of the building applied in each analytical approach.

Considering:

a. Section 1.5 of the Draft Report does not appear to describe how the building was loaded for each approach analyzed.

b. In the presentation “A Structural Reevaluation of the Collapse of World Trade Center 7” by Dr. Leroy Hulsey on September 3, 2019, he mentioned there was no live load at the time of the collapse since building occupants had been evacuated. However, testimony of eyewitnesses (e.g. Barry Jennings and Michael Hess) indicates that furnishings were present in the building after it had been evacuated, which should contribute to a live load in the building.

c. Daily project report entries in the work diary of Zhili Quan describe imposing 10,000- kip loads in the building.

2. A theory circulating in the fire protection engineering community hypothesizes that the subject structure failure was initiated with the cooling phase of the structure, after fire had subsided (ref. Truong, Pham and Chu, “Failure of Building Structural Members During Cooling Phase of a Fire” (21FEB2018) Int’l Conf. on Advances in Computational Mechanics). This theory asserts that rather than expanding off its seat, the girder shrunk and retracted, pulling off the seat.

Based on your analysis:

a. What is the most probable outcome of such a failure mode at Column 79?

b. How widespread and simultaneous would effects of the cooling phase of the fire need to be in order for the structure to collapse in the manner witnessed?

.....

Thank you for inviting me to review this great report. My expertise is on geotechnical engineering, so I invited Dr. \_\_\_\_\_ in structural engineering to review this report with me together.

We agree with the findings of this technical report based on the methodology used to conduct this investigation and the explanation provided to address the research gap from previous investigation conducted by NIST, ARUP and Norderson.

The report highlighted the basic understanding of how hypotheses are implemented in an investigation and also acknowledged the limitations. The hypotheses in the report were consistent with literature and corroborated with findings in other reports where they concur.

Primarily, the finite element investigation conducted in the studies were very detailed, however, assumptions in finite element models are mostly permitted. Are there any different assumptions used by NIST and in other reports? Different assumptions may lead to different results. Comparison and more justification look needed. Indeed, we agree with the finite element results in this report, but a counter argument could be raised by NIST and others.

.....

It is with great interest and appreciation for the work of you and your project team, that I have read at the website [ine.uaf.edu/projects/wtc7](http://ine.uaf.edu/projects/wtc7) about your important valuable research into what happened to WTC building 7 on 9/11 in 2001. I consider your work the best and most detailed scientific research that I know of, that refutes the official narrative about what happened to building 7. In the presentation of your progress report ([youtube.com/watch?v=NJAWI8unZeA](https://youtube.com/watch?v=NJAWI8unZeA)), I was happy to hear you mention that you worked towards decisions and arguments that are defensible purely through science (5'50" into the video) and that you welcome questions and input (8'15" and 1h06'35"). I hope there is still some opportunity for questions, as I fully agree that if any part of the research in this controversial subject would not be defensible through science, it would jeopardize the effect of the entire study. I have two concrete questions that I hope you will consider:

1. At the bottom of the abovementioned website, the project summary states: "Building failure simulations show that, to match observation, the entire inner core of this building failed nearly simultaneously." However, in videos demonstrating the collapse of WTC7 (e.g. [youtu.be/KitPimk7W7w](https://youtu.be/KitPimk7W7w)), I clearly observe a delay between the collapse initiation and the collapse of the rest of the building. Immediately after the collapse initiation at the east side of the penthouse (~1" into the video), several windows were damaged in the section of WTC7 well below the penthouse. Then, about six seconds after the collapse initiation, the west side of the penthouse and the rest of the building collapsed (~7" into the video). Does this observation correspond to a nearly simultaneous failure of the entire inner core, or should the final phrase of the project summary be reformulated to reflect that part of the inner core failed several seconds before the rest of the building collapsed simultaneously? Note, that this point has already been used as opposing material to David Chandler's work (e.g. [youtu.be/1rhY9c\\_lemA](https://youtu.be/1rhY9c_lemA), 1'55").
2. In your presentation, you explain that you used SAP2000 and ABAQUS to look at the framing at floors 12 and 13 for fire damage in plan view (10'50") from which you conclude that column 79 moved by about 2 inches in the same direction as girder A2001 (1h00'00"). In this analysis, did you consider the 3D structure of the building and the restraint that the structural components of adjacent floors of the building (above and below floors 12 and 13) imposed upon column 79, whereas any expansion and movement of the girder was mainly determined by processes on the same floor 13 only? My main hope is that you will seriously consider to what extent these questions have been addressed or need to be addressed further within your research before publication, to avoid that the above questions will be used as arguments to reject your entire work. Obviously, if you have the opportunity, I would also greatly appreciate to read your response. In that case, to give you an idea of my knowledge level, I have a MSc degree in both physics and mechanical engineering as well as a PhD in physics (medical imaging). So I am familiar with general engineering terminology though not necessarily an expert on e.g. terminology related to tooling for structural engineering. Also, if you need any clarification of my questions, please don't hesitate to ask. Many thanks for your consideration and for your valuable work, for which you have my full support.