SEP 2 7 2007

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-

Distribution

Dear Sirs:

This letter is in response to your April 12, 2007 request for correction, pursuant to Section 515 of P.L. 106-544 (the Information Quality Act) that the National Institute of Standards and Technology (NIST) received on April 12, 2007. In your letter, you make several assertions regarding aspects of the final reports of the Federal Building and Fire Safety Investigation of the World Trade Center Disaster where you believe that the reports violate the Data Quality Act and NIST's Information Quality Standards. NIST's responses to your request for change are explained in detail below.

A. Rejection of the Less Severe Damage Estimates

In your letter, you assert that NIST violated the Information Quality Standard by rejecting the less severe damage estimates for both WTC 1 and WTC 2. In its analyses, NIST used an orthogonal factorial design approach (refer to NCSTAR 1-6, Chapter 5) to establish the influential parameters and reduce the total number of analyses that needed to be conducted. In the less severe damage case, while the damage to the exterior wall impacted by aircraft was in reasonable agreement with observable data, namely photographic evidence, agreement with other key observables was not achieved, in particular the shifting of building contents due to the aircraft impact. While none of the damage scenarios resulted in landing gear debris exiting the opposite face of the WTC 1 model, NIST documents in NCSTAR 1-2, chapter 7, the uncertainties in the configuration of the building interior on the floors of impact that could influence the modeling results and also documents the aspects of the model construction that also influence the model results. At every step of its analysis, NIST was able to validate the analytical results against the extensive collection of photographic and video evidence recorded on September 11. The NIST team, based on a careful analysis of the available visual evidence and engineering judgment, made the decision not to fully analyze the less severe case. NIST has fully documented the technical basis (refer to NCSTAR 1-6 (pp 290-294) and NCSTAR 1-2 Chapter 7 (pp.167-298) for not conducting a full analysis of the less severe damage case in its reports and is therefore denying your request to include a detailed computer simulation using the less severe damage estimate.

The statement in NCSTAR 1-2, page 167, "The less severe damage case did not meet two key observables: (1) no aircraft debris was calculated to exit the side opposite to impact and most of the debris was stopped prior to reaching that side, in contradiction to what was observed in photographs and videos of the impact event (see Section 7.10), and (2) the fire-structural and collapse initiation analyses of the damaged towers (NIST NCSTAR 1-6) indicated that the towers would not have collapsed had the less severe damage results been used," should have read, "The less severe damage case did not meet a key observable: no aircraft debris was calculated to exit the side opposite to impact and most of the debris was stopped prior to reaching that side, in contradiction to what was observed in photographs and videos of the impact event (see Section 7.10)." NIST has issued an erratum to correct this error which is posted to the NIST WTC web site at http://wtc.nist.gov/oct05NCSTAR1-2index.htm and is attached to this letter.

NIST

B. NIST Computer Simulations

In your letter you refer to Figures 9-2 and 9-3 in NCSTAR 1-6 that show the full analysis tree for influential parameter effects (Figure 9-2) and the resulting "pruned" analysis tree (Figure 9-3). As documented in NCSTAR 1-6, Chapter 5, the "pruned" analysis tree resulted from an orthogonal factorial design of experiments analysis to identify the most influential parameters.

You further assert in your letter that the exclusion of the less severe and base cases from the full structural analysis is an example of circular logic. NIST has used an extensive database of photographic and video evidence to validate the models used to analyze the behavior of the towers up to the point of initiation of collapse. The full analysis of the more severe case is therefore based upon a logical reduction in the full analysis tree through an orthogonal factorial design approach and through validation by comparison to the observable data. NIST has fully documented its analysis approach in its reports (refer to NCSTAR 1-6 (pp 290-294) and NCSTAR 1-2 Chapter 7 (pp.167-298) and is denying your request for inclusion of all computer simulations depicted in Figure 9-2 of NCSTAR 1-6 for the reasons given in the report.

C. Information in Figure 9-3 Violates the OMB and NIST IQS Objectivity Standards

Your letter asserts that because the isolated core models did not converge on a solution when subjected to Case B (WTC 1) and Case D (WTC 2) impact damage and fire conditions, the "pruned" analysis tree depicted in Figure 9-3 of NCSTAR 1-6 is incorrect. The isolated core model was used by NIST to inform its global analysis by analyzing this particular building subsystem, and the report documents the fact that this particular model did not include the hat truss, which was necessary to transfer load to the exterior columns. In section of 8.3 of NCSTAR 1-6, NIST documents that Cases B and D impact damage and fire conditions were used for the global analyses of WTC 1 and 2 respectively. Thus, there is no inconsistency between the text of NCSTAR 1-6 and the information depicted in Figure 9-3.

Your letter further requests that NIST revise the report to state that the computer simulations did not predict that WTC 2 would collapse from the aircraft impact damage and the resulting fires or revise the statement that "significant weakening of the core due to aircraft damage and thermal effects" was "necessary" for structural collapse. Section 8.5 of NCSTAR 1-6 documents the results of the WTC 2 analysis and the sequence of events leading up to the initiation of collapse. Further, the statement that significant weakening of the core due to aircraft damage and thermal effects was necessary for structural collapse is based on the results of the analysis of both the damaged structure and the undamaged structure subjected to the same fire conditions. We believe this statement is correct and useful, and do not plan to make revisions as requested.

D. Floor Sagging

Your letter asserts that the amount of floor sagging calculated by computer models and the amount of floor sagging measured during tests conducted in accordance with the ASTM E119 standard are clearly inconsistent with each other. As a part of its investigation, NIST conducted four tests of floor assemblies representative of WTC floor construction. Two of these tests were conducted on

17 ft long specimens in a thermally restrained condition with two different fireproofing thicknesses (refer to NCSTAR 1-6, Chapter 3). Two specimens 35 ft in length were also tested, one in a thermally restrained condition and one in a thermally unrestrained condition. The 35 ft specimens were similar in length to the floor assemblies on the short sides of the WTC Towers. The ASTM E119 test follows a prescribed thermal profile as specified by the standard and is used to obtain a fire resistance rating for floor assemblies. However, it is not possible to compare the floor sagging observed during the ASTM E119 tests with the floor sagging calculated by the analysis models. The ASTM E119 furnace profile is not representative of real fire condition. In addition the specimens had been fireproofed which prevented the steel from heating as quickly as it would in an unprotected condition as was modeled based on the estimated damage to the fireproofing due to debris impact. Finally, deflection of the floor assemblies undergoing the ASTM E119 testing was limited to prevent damage to instrumentation. Visual data of the WTC Towers confirmed significant floor sagging at several locations in the towers. NIST has fully documented the ASTM E119 tests and the analysis modeling in its reports (NCSTAR 1-6, 1-6B, and 1-6D). There is no inconsistency present in these results, and therefore your request for correction is being denied.

E. The WTC Steel Temperature

Your letter asserts that temperatures reached by steel recovered by NIST for the investigation, directly contradicts the temperatures calculated by the analytical models. NIST has stated that, "the steel recovered is sufficient for determining the quality of the steel and, in combination with published literature, for determining mechanical properties as input to models of building performance" (NCSTAR 1-3, Section E.2). NIST noted in NCSTAR 1-3 that the core columns recovered from floors where fires were known to have occurred represent 1 percent of the columns in those areas. While NIST did not find evidence that any of the recovered core columns experienced temperatures in excess of 250° C, it is not possible to extrapolate from such a small sample size to state that none of the core columns on the fire affected floors reached temperatures in excess of 250° C. Further, the analytical models of the fire growth and spread are consistent with the observable data for the WTC Towers. On this basis, your request that NIST revise NCSTAR 1-6 to make its computer simulation conditions consistent with the conditions used for fire resistance rating tests of the floor assembly is being denied.

F. The Goal of the WTC Report and Its Overall Analysis

The final section of your request asserts that the WTC Report's stated goal and overall analysis violates the Data Quality Act and OMB/NIST Information Quality Standards. The basis given for this assertion is that NIST did not fulfill its responsibilities under the NCST Act because the focus of the investigation was on the sequence of events from the instant of aircraft impact to the initiation of collapse for each tower. The NCST Act, as you note in your letter, requires NIST to "establish the likely technical cause or causes of the building failure." In the case of the WTC Towers, NIST has established that the failures initiated in the floors affected by the aircraft impact damage and the ensuing fires resulted in the collapses of the towers. This conclusion is supported by large body of visual evidence collected by NIST. Your letter suggests that NIST should have used computer models to analyze the collapse of the towers. NIST carried its analysis to the point where the buildings reached global instability. At this point, because of the magnitude of the deflections and the number of failures occurring, the computer models are not able to converge on a solution.

Your letter contends that NIST's report violates the Information Quality Standard of "utility." NIST believes that the report has utility. In fact, the codes and standards bodies are already taking actions to improve building and fire codes and standards based on the findings of the WTC Investigation. As we mentioned previously, we are unable to provide a full explanation- of the total collapse.

Your letter also contends that the NIST report is biased because it considered only the scenario of fuel laden commercial jetliners impacting the towers, yet contrary to all available data, you offer no evidence that this scenario did not occur. Statement of this fact in the report establishes the cause of the initial damage state and the source of ignition for the fires in the towers. It does not introduce a bias into the findings of the investigation.

Your letter further asserts that NIST failed to take into account interviews of emergency personnel that suggested the presence of bombs in the towers. NIST reviewed all of the interviews conducted by the FDNY of firefighters (500 interviews) and in addition conducted its own set of interviews with emergency responders and building occupants. Taken as a whole, the interviews did not support the contention that explosives played a role in the collapse of the WTC Towers.

Your letter requests several corrections based upon these assertions. The first five of these requested corrections address removing bias toward finding that the impact of jet airliners plus the resulting fires were the only cause of collapse of the WTC Towers. The WTC Investigation was conducted in a manner fully consistent with the NCST Act and the utility of the recommendations has been established by the codes and standards community which has already moved to adopt changes to codes and standards based on the recommendations. NIST has reviewed the full body of firefighter interviews and conducted its own interviews of first responders and building occupants and taken as a whole, these first person accounts do not support the assertion of blasts occurring below the impact zone. Finally, as NIST has noted in the frequently asked questions page on the NIST WTC website, http://wtc.nist.gov, NIST did not test for the presence of explosive residue and such tests would not necessarily have been conclusive. Therefore, your requests for corrections (Items a-e in your letter) are denied.

Your letter also makes three requests for changes to Section 6.14.4 under the objectivity standard to include: (1) supporting data with transparent documentation and identification of error sources, with regards to the potential energy released during the downward movement of the upper stories, the absorptive capacity of the intact structure below the collapse zone, and the increase in the falling mass below the collapse zone; (2) to revise the section if NIST finds the absorptive capacity of the intact structure below the collapse zone was greater than the energy released by the falling stories; and (3) to include the results of tests for explosive residue. With regard to the first request, NIST has stated that it did not analyze the collapse of the towers. NIST's analysis was carried to the point of collapse initiation. The text of section 6.14.4 is based upon the analysis of photographic and video evidence of the collapses from several vantage points. With respect to the second request for change, it was most critical for NIST to explain why the collapse initiated. Once the collapse initiated, it is clear from the available evidence that the building was unable to resist the falling mass of the upper stories of the towers. Finally, NIST has stated that it found no corroborating evidence to suggest that explosives were used to bring down the buildings. NIST did not conduct tests for

explosive residue and as noted above, such tests would not necessarily have been conclusive. Therefore, your requests for corrections (items f-h) are denied.

The final request for change in your letter is for NIST to revise the WTC Report to make the information useful in accordance with the information quality standards. As noted previously in this letter, the codes and standards development organizations have already begun taking action to adopt changes to building and fire codes and standards that respond directly to the NIST recommendations. Codes and standards are established by the private sector, although NIST research and in this case the findings of a failure investigation provide the technical basis for these changes. Clearly, the report has utility with the professional community that will implement the recommendations. On this basis, this request for change is denied.

If you are dissatisfied with this decision, you may submit an appeal within 30 calendar days of the date of the initial decision. Such an appeal must be made in writing and addressed to:

Deputy Director
National Institute of Standards and Technology
100 Bureau Drive, Mail Stop 1000
Gaithersburg, MD 20899-1000

An appeal of an initial denial must include:

a. the requester's name, current home or business address, and telephone number or electronic mail address;
b. a copy of the original request and any correspondence regarding the initial denial; and
c. a statement of the reasons why the requester believes the initial denial was in error.

Thank you for your interest. If you have questions or concerns, you may contact me at info.quality@nist.gov. Please refer to http://www.nist.gov/director/quality_standards.htm for additional information.

Sincerely,

Catherine S. Fletcher
Chief, Management and Organization Division

Distribution:
Bob McIlvaine
Bill Doyle
Dr. Steven Jones
Kevin Ryan
Richard Gage
Scholars for 9/11 Truth and Justice c/o Frank Legge

cc: James Gourley

Erratum

Baseline Structural Performance and Aircraft Impact Damage Analysis of the World Trade Center Towers (NCSTAR 1-2)

Page 167, Paragraph 1, Line 8

Original Text:

The less severe damage case did not meet two key observables: (1) no aircraft debris was calculated to exit the side opposite to impact and most of the debris was stopped prior to reaching that side, in contradiction to what was observed in photographs and videos of the impact event (see Section 7.10), and (2) the fire-structural and collapse initiation analyses of the damaged towers (NIST NCSTAR 1-6) indicated that the towers would not have collapsed had the less severe damage results been used.

Corrected Text:

The less severe damage case did not meet a key observable: no aircraft debris was calculated to exit the side opposite to impact and most of the debris was stopped prior to reaching that side, in contradiction to what was observed in photographs and videos of the impact event (see Section 7.10).

This change corrects an inconsistency between the statement in NCSTAR 1-2 and NCSTAR 1-6.